

**INGHAM TOWNSHIP  
INGHAM COUNTY, MICHIGAN  
WIND ENERGY ZONING ORDINANCE AMENDMENTS**

**Ordinance No. Z2022-01**

At a meeting of the Ingham Township Board, Ingham County, Michigan, held at the Township Hall on July 18, 2022, at 7:00 p.m., Member Harns moved to adopt the following Ordinance, whose motion was seconded by Member Braman:

*An Ordinance to amend the Ingham Township Zoning Ordinance, as amended, to authorize Small Wind Energy Conversion Systems as special uses in certain Zoning Districts, authorize Wind Parks as special land uses in certain Zoning Districts, and establish standards for these uses to maintain the public health, safety, and welfare of the citizens of Ingham Township.*

INGHAM TOWNSHIP, INGHAM COUNTY, MICHIGAN ORDAINS:

**SECTION 1. AMENDMENT OF ARTICLE TWO, SECTION 202, DEFINITIONS:** The Ingham Township Zoning Ordinance Article Two, Section 202, Definitions, is amended to add the following definitions, including but not limited to definitions for “Wind Energy Conversion System (WECS),” “WECS for On-Site Service Only, Single,” “WECS Height,” and “Wind Park,” and shall include the following:

***Ambient:*** Ambient is defined as the sound pressure level exceeded 90% of the time over a 96-hour measurement period with daytime / nighttime division.

***ANSI:*** the American National Standards Institute

***Decibel (dB):*** The practical unit of measurement for sound pressure level; the number of decibels of a measured sound is equal to 20 times the logarithm to the base 10 of the ratio of the sound pressure of the measured sound to the sound pressure of a standard sound (20 micro Pascals)

***dB(A):*** The A-weighted sound level.

***dB(C):*** the C-weighted sound level.

***Equivalent Sound Level (or Leq):*** The sound level measured in decibels with an integrating sound level meter and averaged on an energy basis of a specific duration.

***Meteorological Tower:*** A free standing tower with meteorological measuring instruments designed to provide wind data in preparation, evaluation, or operation of a wind energy conversion system, including but not limited to thermometers, anemometers, wind direction vanes, and pressure sensors. Also known as a MET Tower or MET Mast.

**Occupied Building:** A residence, school, office, business, hospital, church, public library, or any other building habitually occupied by human presence.

**Participating Property:** With respect to a Wind Park or Wind Energy Conversion System, a parcel of property which is owned by a person(s) and/or entity(ies) which have authorized the use of their property for a Wind Energy Conversion System or as part of a Wind Park and which right has been recorded with the Ingham County Register of Deeds. Any other property shall be referred to as a “**Non-Participating Property.**” Unless otherwise demonstrated to the Township Board by an applicant, owner, or operator, all properties outside of township boundaries shall be considered Non-Participating for the purposes of applying ordinances.

**Shadow Flicker:** Alternating changes in light intensity caused by the moving blades of a Wind Energy Conversion System casting shadows on the ground and stationary objects, such as but not limited to a window of an occupied building.

**Wind Energy Conversion System (WECS):** A wind-powered device for the generation of energy, commonly referred to as a wind generating tower, wind turbine, windmill, or wind-powered generator, consisting of a combination of: (a) The surface area (typically a blade, rotor, or similar device), either variable or fixed, for utilizing the wind for electrical generating powers; and (b) A shaft, gearing, belt, or coupling utilized to convert the rotation of the surface area into a form suitable for driving a generator, alternator, or other electricity-producing device; and (c) The generator, alternator, or other device to convert the mechanical energy of the surface area into electrical energy; and (d) The tower, pylon or other structure upon which any, all, or some combination of the above are mounted. A WECS can also include other components not listed above but associated with the normal construction, operation, and maintenance of a wind energy conversion system.

**WECS for On-Site Service Only, Small (“Small WECS”):** A single WECS placed upon a lot or parcel with the intent to service the energy needs of or supplement other energy sources for only that lot or parcel upon which the Small WECS is placed, with a generating capacity less than 25 kW.

**WECS Height:** The distance between the ground (at a normal grade) and the highest point of the WECS, as measured from the ground (at a normal grade), plus the length by which the rotor blade on a horizontal mounted WECS exceeds the structure which supports the rotor and blades (normally, the tower). Or put another way, the distance between the ground (at a normal grade) and highest point of the WECS (being the tip of the blade, when the blade in the full vertical position).

**Wind Park:** One or more WECS placed upon one or more contiguous lots or parcels with the intent to sell or provide electricity to a utility or for resale at retail or wholesale on the electric transmission grid. Although the WECS within a Wind Park may or may not be owned by the owner of the property or properties within the Wind Park, the Wind Park shall consist of all the lots and parcels located within the Township that are in whole or in part within a radius of 2,000 feet from the bases of any and all WECS within the Wind Park, unless the Township expressly provides in the special use permit that the applicant, owner, or operator may use a

smaller radius or that any properties may be excluded from the Wind Park. If the Township Board permits any properties within the approved radius to be excluded from the Wind Park, then such properties shall be treated for all purposes as outside the Wind Park under this Ordinance.

**SECTION 2. AMENDMENT TO ARTICLE THREE, SECTION 312, PERMITTED USES:**  
 Zoning Ordinance Article Three, Section 312, Permitted Uses, is amended to add “Small WECS for on-site service only” as special uses in the Agricultural Enterprise District and the Rural Residential District and to add both Wind Park and Meteorological Tower as special uses in the Limited Industrial District.

Section 312 PERMITTED USES

Key: Y= Permitted by right  
 S = Permitted by Special Use Permit  
 N = Not permitted  
 Numbers denote minimum lot size in acres

USE	A G	R R	R 1	C	I
Single family residential dwelling unit	Y	Y	Y	N	N
Public and private conservation areas and structures for the development, protection and conservation of open space, watersheds, water, soil, forests, and wildlife resources	Y	Y3	N	N	N
General and specialized farming and agricultural activities including the raising or growing of crops, bees, products and foodstuffs and any attendant structures	Y	Y	N	N	N
Raising or keeping of livestock for private use and any attendant structures	Y	Y3 S2	Y3 S2	N	N
Raising or keeping of livestock for commercial purposes and any attendant structures	Y	S1	N	N	N

Roadside stand for incidental sale of agricultural produce raised on the property	Y	Y	Y	N	N
Home occupation	Y	Y	Y	N	N
Accessory structures associated with single family dwelling units, such as garages, shed for yard tools, play house, boat house, etc.	Y	Y	Y	N	N
Garden nurseries and greenhouses	S	S	S	Y	N
USE	A G	R R	R I	C	I
The removal of soil, sand, gravel and other materials	S	N	N	N	N
Public and private parks, camps, golf courses, clubs and commercial stables, <u>excluding</u> miniature golf courses and driving ranges	S	S	S	N	N
Airports	S	N	N	N	N
Public utility structures and substations	S	S	S	Y	Y
Veterinarian's Offices, commercial kennels and animal clinics	S	S	N	S	N
Public or private sanitary land fills or junk yards	S10	N	N	N	S
Bulk feed and fertilizer outlets and distribution centers	S	N	N	S	N
Farm machinery and equipment sales	N	N	N	S	N
ECHO housing units in accordance with the provisions of Article Five	S	S	S	N	N

Duplex or two-family residential dwellings	S	S	S	N	N
Structures containing three (3) or more living units	N	N	S	N	N
Bed and breakfast establishments	S	S	S	N	N
Any retail business whose principal activity is the sale of merchandise in an enclosed building	N	N	N	Y	N
Service establishments which perform services on the premises, such as but not limited to: repair shops, beauty parlors or barber shops, dry cleaning, self-service laundries, and photographic studios	N	N	N	Y	N
USE	A G	R R	R I	C	I
Non-resident offices for personal or business services such as but not limited to: medical doctors, dentist, insurance sales, attorneys, and banks	N	N	N	Y	N
Funeral homes	N	N	N	Y	N
Indoor theaters	N	N	N	Y	N
Restaurants, except drive-ins	N	N	N	Y	N
Shopping centers	N	N	N	Y	N
Drive – in restaurants	N	N	N	S	N
Taverns and nightclubs	N	N	N	S	N

USE	A G	R R	R 1	C	I
Outdoor motor vehicle, boat, mobile home sales, rental, repair and display or storage	N	N	N	S	N
Hotels, motels, motor hotels	N	N	N	S	N
Bowling alleys, pool halls, and mechanical amusement centers	N	N	N	S	N
Outdoor theaters, miniature golf courses and golf driving ranges	N	N	N	S	N
Car washes, automatic and self-serve	N	N	N	S	N
Gasoline service stations	N	N	N	S	N
Transient amusement enterprises such as carnivals, circuses and then shows	N	N	N	S	N
Commercial beaches	N	N	N	S	N
Any production, processing, cleaning, testing, repair, storage and distribution of materials, goods, foodstuffs and products not involving a retail activity on the same site	N	N	N	N	Y
Wholesale warehousing, storage or transfer structures including refrigerated and general storage facilities; excluding the storage of bulk petroleum or related products, or garbage or rubbish	N	N	N	N	Y
USE	AG	R R	R 1	C	I
Storage of bulk petroleum or related products for commercial sale	S	N	N	S	S
Truck terminals including maintenance and service facilities	N	N	N	N	Y

USE	A G	R R	R I	C	I
Retail sales typically incidental to contractors establishments which require a workshop and retail outlet or showroom as accessory uses, including: plumbing and electrical, building material suppliers and wholesalers such as lumber yards, carpenter shops including door, sash or trim manufacturing, jobbing and repair machine shops, commercial garage, plastic products forming and conditioning and heating dealers, furniture reupholstering and refinishing establishments	N	N	N	N	Y
Non-manufacturing research and development establishments	N	N	N	Y	Y
Municipal buildings	N	N	N	Y	Y
Accessory uses relating directly to the servicing of the principal use of the site, including: restaurant or cafeteria for employees, office facilities	N	N	N	Y	Y
Private Roads	S	S	S	N	N
Small WECS for on-site service only	S	S	N	N	N
Wind Park * May also be permitted by special use permit in the Wind Energy Overlay	N	N	N	N	S
Meteorological Tower * May also be permitted by special use permit in the Wind Energy Overlay	N	N	N	N	S

**SECTION 3. AMENDMENT TO ARTICLE THREE, TO ADD SECTION 313, WIND ENERGY OVERLAY DISTRICT:** Zoning Ordinance Article Three, shall be amended to add Section 313, Wind Energy Overlay District, providing as follows:

A. Purpose

The Wind Energy Overlay District is intended to provide for Wind Parks, WECS, and Meteorological Towers within appropriate open spaces within the Township while preserving and protecting primary agricultural land within the Township.

B. Wind Energy Overlay District

The Wind Energy Overlay District is established and may be located as an overlay district over portions of the Agricultural Enterprise District, AG, as may be designed by the Township under the Michigan Zoning Enabling Act. Land located within such overlay district may be developed according to the provisions of the underlying zoning district or according to the provisions of this Section.

C. Uses Permitted by Special Use Permit

1. Meteorological Tower
2. Wind Park

D. Required Notice

In order to facilitate public notice and the unique nature of WECs, an applicant or property owner of any property considered for inclusion within the Wind Energy Overlay District shall erect on each parcel a sign or signs in a place clearly visible and available to the public at least 15 days before a public hearing on the request describing the nature of the request; the address of the property subject to the request, if any; and the date, time, and place of the public hearing. If any property is considered for inclusion within the Wind Energy Overlay District, then the Township will mail notice with the information under this subsection to all properties within the Township as shown on the most recent assessment-roll.

**SECTION 4. AMENDMENT TO ARTICLE FIVE, TO ADD SECTION 507:** Zoning Ordinance Article Five is amended to add Section 507, entitled “Small WECS for On-Site Service Only,” providing as follows:

**Section 507. Small WECS for On-Site Service Only:**

- A. Small WECS applications of wind energy conversion systems to service the energy needs of only the property where the structure is located may be approved in a zoning district as a special use subject to minor site plan review, provided the property upon which the WECS is located is at least three and one-half (3-1/2) acres in size and complies with all applicable federal, state, and local laws, rules, and regulations.
- B. Small WECS are subject to the minor site plan review and approval procedures and standards/criteria of this Ordinance, as well as the following:



1. The sketch plan as required under this Ordinance shall be signed and sealed by a registered surveyor or professional engineer, including:
  - i. Proposed location and overall height of the Small WECS and all associated and supporting structures, improvements, or guy wires.
  - ii. Lot lines and dimensions of the subject property.
  - iii. Location of any rights of way abutting the subject property.
  - iv. Setbacks as required by this Ordinance.
2. The tower shall not exceed 100 feet.
3. The blade diameter (tip to tip) shall not exceed 60 feet.
4. The WECS Height of the Small WECS shall not exceed 130 feet above ground level (at a normal grade).
5. The distance of the structure from all property lines and other Small WECS on a parcel shall be at least 150% of the WECS Height (including the blade in the vertical position) of the Small WECS.
6. Tower Access: The Small WECS shall be constructed and maintained in a manner intended to prevent unauthorized climbing. The methods utilized to prevent unauthorized climbing shall be included with the application and may include one or more of the following:
  - i. Enclosure by a locked protective fence at least ten (10) feet high topped with barbed or razor wire fence.
  - ii. External tower climbing apparatus or footholds shall not be located within twelve (12) feet of the ground.
  - iii. A locked anti-climb device shall be installed and maintained.

**SECTION 5. AMENDMENT TO ARTICLE FIVE, TO ADD SECTION 508:** Zoning Ordinance Article Five is amended to add Section 508, entitled “Meteorological Tower” providing as follows:

**Section 508. Meteorological Towers:**

- A. Purpose: The purpose of this Section is to establish standards for the siting, installation, operation, and removal or repair of Meteorological Towers within Wind Parks as a special use.
- B. Application Materials
  1. The tenancy, ownership, or other legal interest in the subject property, including copies of any executed property leases or other land evidence of a legal interest in the subject property.
  2. Proposed construction schedule.

3. Narrative outlining the use and purpose of the Meteorological Tower, including the entire proposed lifespan of the tower from pre-construction through decommissioning, the anticipated active data collection period, and a description of how existing uses and purposes of the subject property will be preserved.
4. The sketch plan as required under this Ordinance shall be signed and sealed by a registered surveyor or professional engineer, including:
  - i. Proposed location and overall height of the Meteorological Tower and all associated and supporting structures, improvements, or guy wires.
  - ii. Lot lines and dimensions of the subject property.
  - iii. Location and dimension of access roads for the Meteorological Tower.
  - iv. Location of any rights of way abutting the subject property.
  - v. Setbacks as required by this Ordinance.
5. Security Plan, including methods utilized to prevent unauthorized climbing.
6. Decommissioning Plan.
7. Lighting Plan.

C. Design Standards and Operations:

1. Setbacks: No part of a Meteorological Tower (including guy wire anchors) shall be located closer than 400 feet or 200% of the Meteorological Tower height, whichever is greater, to any occupied building or property line and no closer than 150% of the Meteorological Tower height to any road or utility.
2. Height: No Meteorological Tower (including guy wire anchors) shall be higher than 200 feet.
3. Lighting Plan: The lighting plan shall conform to all Federal Aviation Administration (FAA) rules, requirements, or guidelines.
4. Wind Data Report: All actual and complete wind speed data collected by any Meteorological Tower must be provided to the Township every six months, along with an accurate summary of said data.
5. Visibility: The Meteorological Tower shall comply with all FAA, Michigan Tall Structures Act, and any local jurisdiction airport overlay requirements, regulations, recommendations, or guidelines regarding visibility of the Meteorological Tower and accessories including lighting, painting, flagging, marker balls, visibility sleeves or any other method of visibility. Guy wires shall be clearly visible from its anchor at ground level through a height of six feet with additional visibility required by this subsection.
6. Tower Access: The Meteorological Tower shall be constructed and maintained in a manner intended to prevent unauthorized climbing. The methods utilized to prevent unauthorized climbing shall be included with the application and may include one or more of the following:

- i. Enclosure by a locked protective fence at least ten (10) feet high topped with barbed or razor wire fence.
  - ii. External tower climbing apparatus or footholds shall not be located within twelve (12) feet of the ground.
  - iii. A locked anti-climb device shall be installed and maintained.
7. Duration of SUP: The Zoning or Planning Commission may specifically limit the duration of a special use permit.

**SECTION 6. AMENDMENT TO ARTICLE FIVE, TO ADD SECTION 509:** Zoning Ordinance Article Five is amended to add Section 509, entitled “Wind Parks” providing as follows:

**Section 509 Wind Parks:**

- A. Purpose: The purpose of this Section is to establish standards for the siting, installation, operation, and removal or repair of WECS within Wind Parks as a special use.
- B. Application Materials:
1. Application; Signatures: The application for special use for a Wind Park shall be submitted on a form prepared for that purpose by the Township. The application shall include individual, notarized contracts with all property owners within the Wind Park for all Participating Properties within the Wind Park. Any properties not so identified shall be presumed to be non-participating properties and shall not be part of the Wind Park.
  2. Submission Requirements: The applicant, owner, or operator shall submit one electronic and seven (7) physical copies of the application and all supporting materials to the Township Zoning Administrator. The Zoning Administrator will cause the application to be placed on the Planning Commission’s next regular meeting agenda.
  3. Site Plan Drawing and Supporting Materials: All applications for a Wind Park special use must be accompanied by a detailed Site Plan, drawn to scale and dimensioned, and signed and sealed by a registered professional engineer licensed in the State of Michigan, displaying the following information.
    - i. All requirements for a site plan contained in this Ordinance.
    - ii. All requirements of the design standards contained in this Section.
    - iii. All lot lines and dimensions, including a legal description of each lot or parcel within the Wind Park.
    - iv. Names of owners of each participating property, lot, or parcel within the Township that is proposed to be within the Wind Park including any document recorded in connection with the Wind Park. Recorded documents include but

are not limited to standard utility easement agreements and memorandums of lease.

- v. Location and height of all proposed buildings, structures, electrical lines, towers, guy wires, guy wire anchors, security fencing, and all above ground structures associated with each WECS.
- vi. The designed energy capacity of each WECS in the Wind Park and total designed capacity for the Wind Park.
- vii. Location and height of all buildings, structures, and above ground utilities located or proposed within 1,000 feet of a WECS in the Wind Park.
- viii. Specific distances to all onsite buildings, structures, and utilities shall be provided.
- ix. Location of all existing and proposed overhead and underground electrical transmission or distribution lines within the Wind Park. All collection lines must be on a participating property.
- x. Proposed setbacks between each WECS and from each WECS to all existing and proposed structures within the Wind Park.
- xi. Land elevations at each proposed WECS location and its relationship to the land elevations of all existing and proposed structures within the Wind Park.
- xii. Access driveways to each WECS, together with a detailed narrative regarding dimensions, composition, and maintenance of each proposed driveway. All access driveways shall be subject to Ingham Road Commission approval, and the use of the drives shall be planned so as to minimize the use of lands for that purpose.
- xiii. Existing drainage ways and proposed changes to drainage ways, including calculations of current and future stormwater runoff or drainage from any proposed WECS, impervious surface, access road, temporary or permanent construction sites, or temporary or permanent roadway improvements.
- xiv. The location of all farmland within the Wind Park that is designated for preservation, a written description of the plan for preservation of farmland within the Wind Park, and copies of all easements, restrictive covenants and other documents proposed to be used to achieve that plan.
- xv. Planned security measures to prevent unauthorized trespass and access and to warn of potential dangers, during the construction, operation, removal, remodeling or repair of the WECS.
- xvi. A written description of the maintenance program to be used to maintain each WECS, including removal when determined to be obsolete or abandoned. The description shall include maintenance schedules, the types of maintenance to be performed, and removal procedures and schedules should the WECS become obsolete or abandoned.
- xvii. A copy of the manufacturer's safety measures to prevent uncontrolled rotation or over speeding.

- xviii. Planned lighting protection measures.
- xix. Additional detail(s) and information as required by the special use requirements of the Zoning Ordinance, or as requested by the Planning Commission.

4. Sound Modeling & Pre-Project Sound Study.

- i. As part of the application and prior to installation, the applicant, owner, or operator shall provide modeling and analysis that will confirm that the WECS will not exceed the maximum permitted sound pressure levels. Modeling and analysis shall conform to IEC 61400 and ISO 9613
- ii. Any applicant must conduct a pre-project sound study to measure ambient sound pressure levels for both daytime and evening (after 8:00 p.m.) with measurements in the spring, summer, fall, and winter. For the purposes of this subsection, the measurements shall be conducted between the 1st and 15th of the following months: April, July, and October, and January. The seasonal pre-project sound study must be submitted to the Planning Commission along with the initial application.

5. Environmental Impact Assessment:

- i. The applicant, owner, or operator shall fund an environmental assessment or impact study and other relevant report(s) or studies requested by the Township which shall be conducted by an independent third-party, qualified professional who is approved by the Township as part of the application.
- ii. The assessment, studies, and reports shall assess the existing ecosystem, habitats, wildlife, and wetlands of the Wind Park and surrounding areas and shall assess the potential impacts of the Wind Park as proposed on the ecosystem, habitats, wildlife, and wetlands of the Wind Park. They shall include a thorough review of existing species, habitats, and potential habitats. They shall include potential effects on species listed under the federal endangered species act and Michigan's endangered species protection law.
- iii. The Township may request any additional environmental assessments, studies, and reports. They may consider (but not be limited to) assessments of birds, eagles, raptors, bats, plants, woodlands, wooded ridge tops, bird migration pathways, areas that have landscape features known to attract large numbers of eagles or raptors, bat hibernacula, sites that are or may be frequented by federally or state listed endangered species of birds or bats, and general avian use. A tree or woodland survey signed and sealed by a forester registered in the State of Michigan may be required to identify trees for transplant or replacement as required by this subsection.
- iv. Each assessment, study, report and any additional or supplementary assessment, study, or report shall be provided to the Planning Commission or Township

Board prior to their recommendation or final decision regarding the special use permit.

- v. To provide for the preservation, replacement, and maintenance of the existing ecosystem, habitats, wildlife, and wetlands in the Wind Park, including avian habitat, the applicant, owner, or operator shall prepare environmental mitigation plans to offset impacts from the Wind Park which shall be provided to the Township along with the Application. The Township may approve alternate environmental preservation and mitigation plans for a specific site on good cause shown by the applicant, owner, or operator.
  - vi. Applicant shall evaluate the proposed site of each proposed WECS in coordination with and in accordance with the Land-Based Wild Energy Guidelines, Tiered Approach from the U.S. Fish and Wildlife Service. Each question must be analyzed, answered, and submitted to the U.S. Fish and Wildlife Service and the Township with appropriate supporting data before and during project construction.
6. Application Escrow Account: An escrow account shall be funded by the applicant, owner, or operator when the applicant applies for a special use permit for a Wind Park. The monetary amount placed by the applicant in escrow with the Township shall be estimated by the Township to cover all reasonable costs and expenses associated with the special use permit review and approval process, which costs can include, but are not limited to, reasonable fees of the Township Attorney, Township Planner and Township Engineer, as well as costs for any assessments, reports, or studies which the Township anticipates it may have done that are reasonably related to the zoning review process for the particular application. Such escrow amount shall be in addition to any filing or application fees established by resolution. At any point during the special use permit review process, the Township may require that the applicant, owner, or operator place additional monies into escrow with the Township should the existing escrow amount filed by the applicant prove insufficient. If the escrow account needs replenishing and the applicant refuses to do so promptly, the special use permit review and approval process shall cease until and unless the applicant makes the required escrow deposit. Any applicable zoning escrow resolutions or other ordinances adopted by the Township shall also be applicable.
- C. Construction Codes, Towers & Interconnection Standards: Each WECS shall comply with all applicable state construction codes, as well as Federal Aviation Administration (FAA) requirements, the Michigan Airport Zoning Act, the Michigan Tall Structures Act, and local jurisdiction airport overlay zone regulations. The tower shaft shall not be illuminated unless required by the FAA. Each WECS shall comply with the applicable utility, Michigan Public Service Commission and Federal Energy Regulatory Commission interconnection standards.

D. Preservation: Property located within the Wind Park that is not designated as an immediate location of any WECS and WECS accessory structures is encouraged to be preserved for its existing uses and purposes through the execution and recording of appropriate easements, restrictive covenants, or other documents approved by the Township Board. Although such preservation measures are not required, they will be favorably considered by the Township Board in the review of a special use application under this Section.

E. Design Standards and Operation:

1. Height: The permitted maximum WECS Height (i.e., total height of each WECS) shall be 400 feet including the blade in the vertical position.
  - i. State and federal regulations may require a lesser height.
  - ii. As a condition of approval, the Township may require a lesser height for WECS if it is determined that it is reasonably necessary.
  - iii. Each WECS shall be constructed with a tubular tower, not a lattice tower.
2. Setbacks: No part of a WECS (including guy wire anchors) shall be located closer than 250% of the WECS height to any occupied building, property line, or other WECS and no closer than 200% of the WECS height to any road or utility.
3. Isolation from Non-Participating Properties:
  - i. No WECS shall be located closer than 2,640 feet to the property line of any non-participating property, unless the Township Board otherwise expressly provides in the special use permit.
  - ii. If the applicant, owner, or operator seeks a reduction to the 2,640 foot isolation distance, the applicant, owner, or operator shall demonstrate with clear and convincing evidence that:
    1. The property cannot reasonably be used in a manner consistent with the isolation distance; and
    2. The reduction is needed due to the unique circumstances of the specific property and not because of general conditions in the wind park; and
    3. The reduction of the isolation distance will not alter the essential character of the local area; and
    4. The reduction is not the result of the applicant, owner, or operator's own actions; and
    5. The proposed WECS will have no material adverse effects on any non-participating properties within the requested isolation distance from the WECS, as determined by a licensed qualified professional evidenced by state-of the-art modeling, monitoring and measurement techniques. Such evidence shall include, at a minimum, demonstration of data, modeling and analysis of noise emissions conforming to this Section.
  - iii. If any reduction in the isolation distance is requested under this subsection, then the Township will mail notice of the request to all properties within one mile of the property on which the WECS is located.
  - iv. Any reduction in the isolation distance under this subsection shall not be greater than 10% of the isolation distance.

4. Rotor or Blade Clearance: Blade arcs created by a WECS shall have a minimum of seventy-five (75) feet of clearance over and from any structure, adjoining property or tree. The minimum blade or rotor clearance above ground level shall be at least seventy-five (75) feet.
5. Rotor or Blade Safety: Each WECS shall be equipped with both a manual and automatic braking device capable of stopping the WECS operation in high winds. Turbines shall have multiple systems for detecting ice buildup and shall have heated turbine blades or other anti-icing system to prevent icing on the WECS.
6. Tower Access: To prevent unauthorized climbing, WECS shall be enclosed by a locked protective fence at least ten (10) feet high topped with barbed or razor wire fence and must comply with at least one of the following provisions:
  - i. External tower climbing apparatus shall not be located within twelve (12) feet of the ground.
  - ii. A locked anti-climb device shall be installed and maintained.
7. Signs: Each WECS shall have one sign of an appropriate size approved by the Planning Commission posted at the base of the tower on the protective fence. The sign shall contain at least the following:
  - i. Warning: High Voltage.
  - ii. Warning: Falling Ice.
  - iii. Manufacturer's name.
  - iv. Emergency numbers (list more than one number).
  - v. FAA regulated sign with precise description with latitude and longitude and shall also contain both the applicant, owner, or operator's current telephone number and the current telephone number for the FAA's regional office having jurisdiction over the Township.
8. Lighting: A lighting plan for each WECS shall be approved by the Township Board. The lighting plan must utilize and include detailed plans for an Aircraft Detection Lighting System (ADLS) that manages the WECS' aircraft detection lighting to reduce their illumination when unnecessary. Such plans must describe all lighting that will be utilized, including any lighting that may be required by the FAA. Such a plan shall include but is not limited to the planned number and location of lights, light color and whether any lights will be flashing. All tower lighting will comply with FAA regulations and guidance and shall be consistent with USFWS/MDNR guidelines, if any.
9. Signal Interference: Each WECS shall be designed, constructed, and operated to not cause radio, television, and other wireless or electromagnetic signal interference. The Township may require a report by an independent third-party, qualified professional of existing radio, television, wireless, or other electromagnetic signals in the Township and project area prior to construction. If radio, television, or other signal interference or quality deterioration compared to the conditions prior to the installation of the Wind



Park is experienced by properties outside the Wind Park, the WECS owner shall provide alternate service meeting or exceeding prior performance to each individual resident or property owner affected. The WECS owner may submit the signal interference complaint to the complaint resolution procedures of this Section and may utilize an expert and relevant facts, data, and reliable scientific principles and methods to provide alternate service or show the WECS is not the cause of the complained interference or service deterioration. A property owner may utilize their own expert and relevant facts, data, and reliable scientific principles and methods and if a property owner or resident is successful in demonstrating degradation of their radio, television, or other wireless signal reception caused by a WECS, then the WECS owner shall also reimburse the property owner or resident for their reasonable costs and fees incurred to prove the existence and cause of the interference or degradation.

10. Noise Emissions: Any WECS shall comply with all of the following:

- i. All WECS shall be manufactured and constructed with the best available noise reduction technology available at the time of their construction.
- ii. Maximum Sound Level. The Lmax sound pressure level generated by a WECS shall not exceed 50 dB(A)/55dB(C) as measured at a participating occupied building, 45 dB(A)/50dB(C) as measured both at any non-participating property line and inside any non-participating occupied building.
- iii. Average Leq. The sound pressure level generated by a WECS shall not exceed 40 dB(A) at Leq over a one (1) hour period as measured both at any non-participating property line and inside any non-participating occupied building. Further, the sound pressure level generated by a WECS shall not exceed 45 dB(C) at Leq over a one (1) hour period as measured both at any non-participating property line and inside any non-participating occupied building.
- iv. If the ambient sound pressure level exceeds a minimum requirement of this Section, the standard shall be ambient dB(A) plus 5 dB(A) and ambient dB(C) plus 5 dB(C).

11. Sound Studies

- i. Post-Project Sound Study. After installation of the WECS, sound pressure level measurements shall be done by an independent third-party, qualified professional approved by the Township according to the procedures in the most current version of ANSI S12.18 (Outdoor Measurement of Sound Pressure Level) and ANSI 12.9 (Description and Measurement of Environmental Sound) with applicable normative references. 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 I sound meter. Sound pressure level measurements shall be completed each year before the anniversary of the initial report.
- ii. Post-Project Sound Study Timeframe. Documentation of the actual sound pressure level measurements shall be provided to the Township within 6 months

of the commercial operation of the project. Sound pressure level measurements shall be provided to the Township within 60 days of the testing date.

12. Shadow Flicker:

- i. No shadow flicker is permitted on a public roadway or on the ground of or on any structure or object on a non-participating property.
- ii. The application for special use permit shall contain an analysis on potential shadow flicker at or on any structure. The analysis shall identify the locations of shadow flicker that may be caused by the project—whether on a participating property or on a non-participating property—and the expected durations of the shadow flicker at these locations from sunrise to sunset over the course of a year.
- iii. On a participating property, all reasonable efforts shall be made not to affect any occupied building with shadow flicker in the operation of any WECS.
- iv. Shadow flicker of an occupied building shall only be permitted on a participating property and WECS shall be placed such that shadow flicker to any occupied buildings occurs no more than 30 hours per year.

13. Color: A WECS shall be painted a non-obtrusive (light environmental color such as beige or gray) color that is non-reflective. The wind turbine base and blades shall be of a color consistent with all other turbines in the area. No lettering, company insignia, advertising, or graphics shall be on any part of the tower, hub, or blades.

14. Vibrations or Wind Currents: Under no circumstances shall a WECS produce vibrations or wind currents perceptible to a reasonable person of normal sensitivities on a non-participating property.

15. Stray Voltage: The applicant, owner, or operator shall be responsible for compensation for damages due to any stray voltage caused by a WECS in accordance with the rules of the Michigan Public Service Commission.

16. Continuing Environmental Impact & Assessment:

- i. Any tree removed, damaged, or destroyed during construction, transport, or maintenance of a WECS or the Wind Park shall be replaced or transplanted. As part of the environmental mitigation plan, the applicant, owner, or operator shall identify any tree at risk of removal or damage with a DBH between 6 inches and 24 inches and such trees shall be replaced by the applicant, owner, or operator with a nursery grown native tree with a minimum caliper of four inches. Any tree at risk of removal or damage with a DBH greater than 24 inches shall be replaced by at least three nursery grown native trees, each with a minimum caliper of four inches. The applicant, owner, or operator may transplant a tree in lieu of replacement. All trees planted or transplanted under

this subsection shall be guaranteed for a minimum of two years. The Township may approve alternate environmental preservation and mitigation plans for a specific site on good cause shown by the applicant. All trees cut down, damaged, or removed during the construction, transport, or maintenance or a WEC or the Wind Park shall be removed at the applicant, owner, or operator's expense.

- ii. For the purposes of this sub-section, "diameter at breast height" ("DBH") means the diameter in inches of the tree measured at four feet above the existing grade and "Caliper" means the diameter of a tree trunk measured six inches (15 cm) above ground level for trees up to four-inch caliper and 12 inches above the ground for larger sizes.
- iii. Applicant shall continue to evaluate the site of each WECS in coordination with the U.S. Fish and Wildlife Service in accordance with the Land-Based Wild Energy Guidelines. Post-Construction studies must be implemented including fatality studies involving searching for bird and bat carcasses beneath WECS to estimate the number and species composition of fatalities.
- iv. Post-Construction studies shall be submitted to the Township as often as recommended by the U.S. Fish and Wildlife Service but no less often than annually.

17. Distribution; Transmission and Interconnection: All collection lines and interconnections from the WECS to the electrical substation shall be located and maintained underground inside the Wind Park at a minimum depth of six feet and shall comply with all current and applicable code standards. The electrical substation shall be located inside the Wind Park. The Township Board may waive the requirement that collection lines and interconnections be located and maintained underground if the Township Board determines that it would be impractical to install, place, or maintain such collection lines and interconnections underground. Any above-ground lines, transformers, or conductors shall consider aesthetics, current and future land uses, and shall be designed to prevent avian mortality, including but not limited to compliance with the Avian Power Line Interaction Committee published standards.

- F. Approval Standards: In addition to the other requirements and standards contained in this section, the Township Board shall not approve any Wind Park special use unless it finds that all of the following standards are met:
1. The general special use standards contained in this Ordinance; and
  2. The Wind Park will not pose a safety hazard or unreasonable risk of harm to the occupants of any surrounding properties or area wildlife.
- G. Conditions and Modifications: Any conditions or modifications approved by the Township Board shall be recorded in the minutes of the appropriate Township Board Meeting. The Township Board may, in addition to other reasonable conditions, require landscaping, walls, fences, and other improvements that are reasonable in relation to and consistent with the nature

of the district in which the WECS is located. After approval, at least two (2) copies of the final approved Site Plan shall be signed and dated by the Township Supervisor and authorized representative of the Applicant, owner, or operator. One copy shall be kept on file by the Township Clerk, and one copy shall be returned to the applicant, owner, or operator's authorized representative.

- H. Completion; Testing: The applicant, owner, or operator shall complete the Wind Park construction within 12 months after commencement of construction. Within 12 months of completion and commencement of operation, the applicant, owner, or operator shall be required to present a report prepared by an independent third-party, qualified professional approved by the Township demonstrating that the Wind Park while in operation meets the requirements of this Ordinance and the permit for special use with respect to noise emissions and electromagnetic interference, and shadow flicker.
- I. Inspection: The Township shall have the right upon issuing any Wind Park special use permit to inspect the property and premises on which each WECS is located at any reasonable time. The Township may hire a consultant to assist with any such inspections at the applicant, owner, or operator's reasonable cost.
- J. Maintenance and Repair: Each WECS must always be kept and maintained in good repair and condition. If the Zoning Administrator or their designee determines that a WECS fails at any time to meet the requirements and conditions of this Ordinance, the special use permit or the site plan approval with respect to noise emissions, electromagnetic interference, or shadow flicker, or that it poses a potential safety hazard, the applicant, owner, or operator shall shut down the WECS within 48 hours after notice by the Zoning Administrator or their designee and not start the WECS until the condition has been corrected. The applicant, owner, or operator shall keep a maintenance log on each WECS, which shall be available for the Township's review on a monthly basis. If the maintenance log demonstrates that a WECS is operating inconsistent with an Ordinance standard or approval of conditions an applicant, owner, or operator or owner/operator must notify the Township of such non-compliance within three (3) business days in writing. The applicant, owner, or operator shall keep all sites within the Wind Park neat, clean, and free of refuse, waste, or unsightly, hazardous, or unsanitary conditions.
- K. Roads: Any material damages to a public road located within the Township resulting from the construction, maintenance, or operation of a WECS shall be repaired at the applicant, owner, or operator's expense. Routes and road improvements utilized by the applicant, owner, or operator shall not change the natural state of water flow outside the County right-of-way. In addition, the applicant, owner, or operator shall submit to the appropriate County agency—with a contemporaneous copy to the Township—a description of the routes to be used by construction and delivery vehicles; any road improvements that will be necessary to accommodate construction vehicles, equipment or other deliveries; an analysis of stormwater runoff along the proposed route and any impacts to stormwater runoff arising out of or in connection with the routes or road improvements; and a performance guarantee acceptable to the County in an amount necessary to ensure repair of any damage to the public roads caused by stormwater, road improvements, construction of the Wind Park, or any of its elements. The

Township may require an additional performance guarantee in an amount necessary to ensure repair of any damage to any structure, building, or property outside the County right-of-way.

- L. Complaint Resolution: The applicant, owner, or operator shall develop and administer a process, acceptable to the Township, to resolve complaints from nearby residents and property owners concerning the construction and operation of the Wind Park. The process shall use an independent mediator or arbitrator at the applicant, owner, or operator's expense and shall include a time limit for acting on a complaint. The process shall not preclude the Township from acting on a complaint. During construction and operation of any WECs in the Wind Park, the applicant, owner, or operator shall maintain a telephone number during business hours where nearby residents and landowners can reach a project representative.
  
- M. Responsibility for Complaints and Damages: The applicant, owner, or operator is responsible for resolving all complaints stemming from the Wind Park and paying all damages resulting from injury to persons or property stemming from the Wind Park. The Applicant, owner, and/or operator shall submit documentation to the Township before the Wind Park is operational, disclaiming Township liability for injury stemming from the Wind Park and its operation.
  
- N. Abandonment and Decommissioning:
  1. Any WECS that is not used for the production of energy equal to at least 5% of the energy capacity described in the site plan for a period of 12 successive months or longer shall be deemed to be abandoned and shall be promptly decommissioned, unless the applicant, owner, or operator receives a written extension of that period from the Zoning Administrator in a case involving an extended repair schedule for good cause.
  
  2. Any Wind Park that is not used for the production of energy equal to at least 10% of the total energy capacity described in the site plan (adjusted for any previously individual decommissioned WECS) at the electrical substation for a period of 12 successive months or longer shall be deemed to be abandoned and shall be promptly decommissioned, unless the applicant, owner, or operator receives a written extension of that period from the Zoning Administrator for good cause.
  
  3. The applicant, owner, or operator of a WECS in a Wind Park shall provide the actual total energy output of the Wind Park and a report to the Township annually. If actual or estimated energy output for each individual WECS within the Wind Park is available, then it shall be provided annually in the same report.
  
  4. The applicant, owner, or operator shall prepare a decommissioning plan, decommissioning agreement, and decommissioning bond for submittal to the Township Board for review prior to issuance of the special use permit. Under the plan, agreement and bond, all structures and facilities shall be removed, including all above and below ground materials and removed offsite for disposal. No concrete, piping and other materials may be left in place. The ground must be restored to its original condition within 180 days of abandonment. The cost of such removal, decommissioning and restoration shall be borne solely by the applicant, owner, or operator or its successor(s) or assign(s).

- O. Continuing Security and Escrow: If any WECS is approved for construction under this Ordinance, the applicant, owner, or operator shall be required to post continuing security and a continuing escrow deposit prior to commencement of construction, which shall remain in effect until the WECS has been finally removed, as provided below:
1. Continuing Security: If a special use permit is approved pursuant to this section, the Township Board shall require security in the form of a cash deposit or irrevocable letter of credit in a form, amount, time and duration deemed acceptable to the Township, which will be furnished by the applicant, owner, or operator to the Township in order to ensure full compliance with this Ordinance and all conditions of approval. When determining the amount of each required security, the Township may also require an annual cost escalator or increase based on the Consumer Price Index (or other appropriate cost index). Such financial guarantee shall be deposited or filed with the Township Clerk after a special use permit has been approved but before construction commences within the Wind Park. At a minimum, the financial guarantee shall be in an amount determined by the Township to be reasonably sufficient to have each WECS fully removed (and all components properly disposed of and the land returned to its original state) should such structure or structures become abandoned, dangerous or obsolete, or not in compliance with this ordinance or the special use permit. Such financial security shall be kept in full force and effect during the entire time a WECS exists or is in place, and such financial security shall be irrevocable and non-cancelable (except by the written consent of both the Township and the then-owner of the WECS).
  2. Continuing Escrow Deposit: A continuing escrow deposit to be held by the Township shall be funded in cash by the applicant, owner, or operator prior to the commencement of construction of any WECS and shall be maintained by the WECS owner until the WECS has been permanently removed. The monetary amount placed by the applicant, owner, or operator in escrow with the Township shall be estimated by the Township to cover all reasonable costs and expenses associated with continuing enforcement of this Ordinance, compliance with any provision or requirement of this Section, and the terms of the special use permit, which costs can include, but are not limited to, reasonable fees for the Township Attorney, Township Planner, and Township Engineer, as well as costs for any assessments, reports, or studies which the Township anticipates it may have done that are reasonably related to enforcement of the Ordinance and the special use Permit. If the Township is required to expend any portion of the escrow deposit or if the existing escrow amount paid by the applicant, owner, or operator proves to be insufficient to cover the Township's enforcement costs, the Township may require the WECS owner to place additional monies into escrow with the Township.
  3. Continuing Obligations: Failure to keep such financial security and escrow deposit in full force and effect at all times while a WECS exists or is in place shall constitute a material and significant violation of a special use and this Ordinance and will subject the WECS owner to all remedies available to the Township, including possible enforcement action, remedies at law and equity, injunction, and revocation of the special use.
- P. Liability: The applicant, owner, or operator shall insure each WECS at all times and shall maintain such insurance on its own behalf and on behalf of the Township as a co-insured, with

limits of liability not less than \$2,000,000.00 per occurrence for damages to persons and property (to be adjusted annually to an amount equivalent to 2021 dollars based on CPI).

Q. Reasonable conditions: In addition to the requirements of this section, the Township Board may impose additional reasonable conditions on the approval of a Wind Park as a special use.

R. Other Requirements: Each Wind Park and WECS shall also comply with all applicable federal, state, and county requirements, in addition to other Township Ordinances.

**SECTION 7. SEVERABILITY**: The provisions of this ordinance are hereby declared to be severable. If any clause, sentence, word, section or provision is hereafter declared void or unenforceable for any reason by a court of competent jurisdiction, it shall not affect the remainder of such ordinance which shall continue in full force and effect.

**SECTION 8. REPEAL**: All ordinances or parts of ordinances in conflict herewith are hereby repealed.

**SECTION 9. EFFECTIVE DATE**: This Ordinance shall take effect seven days after notice of its adoption is published in a local newspaper, unless referendum procedures are initiated pursuant to the Michigan Zoning Enabling Act.

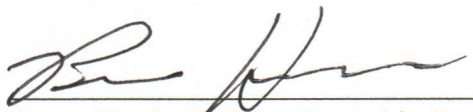
ROLL CALL VOTE:

YEAS: David Harns, Barb Braman, Holly Speck, Kathy LaGrow, Bruce Harris

NAYS: None

ABSENT: None

ORDINANCE DECLARED ADOPTED.

  
\_\_\_\_\_  
Bruce Harris, Ingham Township Supervisor