

**STATE OF MICHIGAN
COUNTY OF WASHTENAW
ANN ARBOR CHARTER TOWNSHIP**

ORDINANCE NO. 3 - 2010

**ANN ARBOR TOWNSHIP
WIND ENERGY CONVERSION SYSTEMS
AMENDMENTS TO ZONING CODE SECTION 74-2 AND SECTION 74-604**

[Addition to Sec. 74-2. Definitions and interpretation as follows]

- (1) Wind Energy Conversion System (WECS) - shall mean any device such as a turbine, windmill or charger that converts wind energy to a usable form of energy.
- (2) On-site Wind Energy Conversion System - shall mean a WECS, the energy from which is used only by the primary residence or residences in a cooperative effort, business or agricultural operation and not sold or transferred to the electrical grid for commercial profit. This does not exclude the sale of excess energy sold to a utility through net metering for on-site WECS when the WECS produces more energy than can be stored or used on-site.
- (3) Commercial Wind Energy Conversion System - shall mean any WECS that is exclusively designed and built to provide electricity to the electric utility's power grid as an ongoing commercial enterprise or for commercial profit.
- (4) Temporary Meteorological Towers (TMT)- Shall mean a tower of monopole design which is designed and built to hold wind resource testing devices such as anemometers, wind vanes and accessory equipment and which is to remain in place for no more than 18 months.
- (5) dB(A) - shall mean A-weighted decibels. This is the standard used to measure environmental noise.
- (6) Ambient noise- shall mean regularly occurring background noise not produced by the object or device in question.
- (7) Horizontal-axis wind energy conversion systems – shall mean conventionally designed systems that have a main rotor shaft that is parallel to the ground and a series of “blades” that are perpendicular to the ground, as in a traditional agricultural windmill. Horizontal-axis wind energy conversion systems are traditionally mounted on a tower or pole and must be pointed into the wind.

- (8) Vertical-axis wind energy conversion systems – shall mean systems that have a main rotor shaft that is perpendicular to the ground and the system does not need to be pointed into the wind. These systems are more common in areas where wind direction is variable. These systems often resemble a drum, cylinder, or helix.

[Create new Section 74-604, within SUPPLEMENTARY DISTRICT REGULATIONS]

Section 74-604 Wind Energy Conversion Systems

- (a) Intent. It is the intent of the Township to permit the effective and efficient use of Wind Energy Conversion Systems (WECS) by regulating the siting, design, and installation of such systems to protect the public health, safety, and welfare, and to ensure compatibility of land uses in the vicinity of WECS. This Ordinance does not establish or guarantee air or light or wind rights or establish access to the air, light, or wind.
- (b) Approval Required. It shall be unlawful to construct, erect, install, alter, or locate any TMT or WECS within the Township except in compliance with the section. A building permit is required for any TMT or WECS pursuant to Chapter 14 and this Section.
- (c) Conditional Use, On-site. On-site WECS or TMT shall be considered a conditional use in all zoning districts and shall be subject to the provisions of this Section and Chapter 74, Article II, Division 3, Conditional Use Permits. Applications for an on-site WECS shall meet all of the requirements for a conditional use permit application in accordance with Section 74-133, except that a complete site plan shall only be required in the circumstances described in subsection (h) below. Submittal requirements for an on-site WECS are established in Section 74-604 (h).
- (d) Conditional Use, Commercial. Commercial WECS and TMT shall be considered a conditional use in the following districts and shall be subject to the provisions of this Section and Chapter 74, Article II, Division 3, Conditional Use Permits: R-C, A-1, O, OP, R-D, I-1, PL, RRA. Applications for a commercial WECS or TWM shall require a complete conditional use permit application in accordance with Section 74-133, including a complete site plan in accordance with Article II, Division 4 of this Chapter.
- (e) Planned Unit Development. If an applicant proposes a WECS or TMT in an initial application for a planned unit development under Section 74-542, this Section (together with Section 74-542) shall apply to the proposal, except that the applicant need not apply for a conditional use permit. If an applicant proposes a WECS or TMT in a PUD district after approval of the final site plan for the PUD (or, in the case of a PUD developed in phases, after approval of the final site plan for the phase in which the WECS or TMT will be located), this Section (including the requirement of a conditional use permit) will apply to the proposal; however, the applicant need not comply with section 74-542(i) (governing amendment to approved area plans and approved site plans in PUD districts).

- (f) Schedule of Uses. The following chart displays the schedule of use regulations pertaining to WECS within the zoning districts of Ann Arbor Township. A blank box indicates that the use is not permitted in that district.

	On-site WECS or TMT,	Commercial WECS or TMT
R-C	C	C
A-1	C	C
A-R	C	
R-1	C	
R-1A	C	
R-2	C	
R-3A	C	
R-3	C	
R-4	C	
R-5	C	
R-6	C	
R-7	C	
R-8	C	
R-9	C	
O	C	C
R-D	C	C
I-1	C	C
PL	C	C
OP	C	C
OSPRD	C	
OSPC	C	
RRA	C	C
APRD	C	

- (g) Application –. The application for any WECS or Temporary Meteorological Tower shall include, at a minimum, the following:

- (1) Applicant Information; Fees. Name, address and contact information, together with the fee established by the Township Board.

- (2) Project Description. A general description of the proposed project as well as a legal description (property identification number) of the property on which the project would be located.
- (3) Plot Plan and Documentation. The Plot Plan shall include maps showing the physical features and land uses of the project area, both before and after construction of the proposed project. The plot plan shall include:
 - a. The project area boundaries.
 - b. The location, height and dimensions of all existing and proposed structures and fencing.
 - c. Distance of proposed structure from all property lines and permanent structures.
 - d. The location, grades and dimensions of all temporary and permanent On-site access roads.
 - e. Existing topography.
 - f. Water bodies, waterways, wetlands, and drainage ditches (county drains).
 - g. All new infrastructure above ground related to the project.
 - h. The location of all overhead utility wires.
- (4) Additional Documentation.
 - a. Insurance: Proof of the applicant's appropriate liability insurance.
 - b. Sound Pressure Level: Documentation of the manufacturers designed sound pressure levels (decibels) for unit to be installed.
 - c. Certifications: Certification that applicant has complied or will comply with all applicable state and federal laws and regulations.
 - d. Grant of Authority: The applicant shall provide evidence of ownership of the land which the WECS or Temporary Meteorological Tower is to be located and the written consent of the land owner if different from the applicant. If the applicant is leasing land the applicant shall provide a copy of the lease agreement and the land owner's written authorization for the applicant to construct the structure.

- (5) Compliance with Laws and Regulations. The Applicant, operator of the WECS or TMT, and owner of the land on which the WECS or TMT is located are each responsible for ensuring that the installation, operation, use and removal of the WECS or TMT complies with all applicable state, federal and local laws, ordinances and regulations, and shall submit proof of such compliance to the Township upon request. Further, such Applicant, operator and owner shall each defend, indemnify and hold harmless the Township from and against any and all loss, liability, cost or expense including injury to persons or property as a result of any failure of the WECS or TMT to comply with applicable laws, ordinances or regulations. Notwithstanding the foregoing, the Township shall have full authority, at its option, to defend, compromise, or settle any claim of violation of applicable laws, ordinances or regulations at the expense of the Applicant, owner or operator.
- (h) Application – On-site WECS Conditional Use. The application for an On-site WECS or Temporary Meteorological Tower when permitted as a conditional use shall, in addition to the information required above, meet all of the requirements for a conditional use permit application, except that a complete site plan shall not be required unless (i) the proposed WECS or TMT involves changes to the site outside the footprint of the WECS or TMT, or (ii) the Planning Commission finds that the scale or character of the project or other factors, including the nature of the surrounding area warrant a complete site plan. If a complete site plan is not required by the Planning Commission, the applicant shall submit the information described in (g)(3) above or such other information as the Planning Commission may determine.
- (i) Application – Commercial WECS Conditional Use. The application for a Commercial WECS shall meet all of the requirements for a conditional use permit application and shall include a complete site plan in accordance with Article II, Division 4 of this Chapter.
- (j) Standards and Requirements. All On-site WECS, Commercial WECS and Temporary Meteorological Towers shall meet the standards and findings of 74-136 and the following additional standards and requirements:
- (1) Property setbacks.
- a. The distance between a WECS or TMT and the nearest property line shall be at least the 1.5 times the height of the WECS or TMT.
- b. No part of the WECS or TMT structure, including guy wire anchors, may extend closer than ten (10) feet to the owner's property line.
- (2) Height. On-site and commercial WECS and TMT shall be less than 200 feet in height. Height shall be measured from the existing grade to the tip of the turbine

blade at its highest point for a horizontal axis turbine, and to the highest point of a vertical axis turbine. Height for on-site WECS mounted to a structure shall also be measured from grade to the tip of the turbine blade at its highest point for a horizontal axis turbine, and to the highest point of a vertical axis turbine. The applicant shall demonstrate compliance with all FAA regulations and the Michigan Tall Structures Act as part of the approval process, if applicable.

(3) Other Required Setbacks.

- a. The distance between a WECS or Temporary Meteorological Tower and a road or a public right-of-way shall be at least 1.5 times the height of the WECS or TMT.
- b. Distance Between - The distance between a WECS and any other On-site or Commercial WECS shall be at least 3 times the height of the taller of the two WECS.

(4) Noise; Sound Pressure Level.

- a. Audible noise or the sound pressure level of an On-site WECS or Commercial WECS shall not exceed 50 dB(A) (A-weighted Decibels) at the property line closest to the WECS. For Commercial WECS, modeling and analysis of sound pressure shall be required in accordance with Section 74-604(p)(8) below.
- b. This sound pressure level shall not be exceeded by more than 5 dB(A) for more than three minutes in any hour of the day.

(5) Lighting. No WECS or TMT shall be artificially lighted.

(m) Construction Codes, Towers & Interconnections Standards:

- (1) Every WECS and TMT shall comply with all applicable State construction codes and local building permit requirements.
- (2) Every WECS and TMT shall comply with Federal Aviation Administration requirements, the Michigan Airport Zoning Act (PA 23 of 1950), The Michigan Tall Structures Act (PA 259 of 1959), and any other applicable State or Federal laws or regulations.
- (3) An On-site WECS or Commercial WECS that is tied to the electrical grid shall comply with Michigan Public Service Commission and utility interconnection requirements. Off-grid WECS are exempt from this requirement.

(n) Safety:

- (1) Design Safety Certification. The safety of the design of every WECS or TMT shall be certified by the applicant's professional engineer registered in the State of Michigan and reviewed by the Township. The standard for certification shall be included with the permit application. If WECS or TMT construction is approved, the professional engineer shall certify that the construction and installation of the WECS or TMT meets or exceeds the manufacturer's construction and installation standards, and any applicable State and Federal laws and regulations prior to operation.
- (2) Controls and Brakes. Every WECS or TMT shall be equipped with manual and automatic controls to limit rotation of blades to a speed not to exceed the designed limits of the WECS or TMT. The applicant's professional engineer must certify that the rotor and overspeed control design and fabrication conform to applicable design standards. No changes or alterations from certified design shall be permitted unless accompanied by a professional engineer's statement of certification approved by the Township.
- (3) Lightning. Every WECS or TMT shall have lightning protection.
- (4) Guy Wires. If an On-site WECS or TMT is supported by guy wires, the wires shall be clearly visible to a height of a least six (6) feet above the guy wire anchors. Every Commercial WECS must be of a freestanding monopole design and guy wires shall not be used.
- (5) Grade Clearance. The minimum vertical blade tip clearance from grade shall be 25 feet for any horizontal-axis WECS or from any moving component of a vertical-axis wind energy conversion system.
- (6) Electromagnetic Interference. No WECS or TMT shall be installed in any location where its proximity to existing fixed broadcast, retransmission, or reception antennae for radio, television, or wireless phone or other personal communication systems or emergency broadcast system would produce electromagnetic interference with signal transmission or reception unless the applicant provides a replacement signal to the affected party that will restore reception to at least the level present before operation of the wind energy system. Such replacement signal shall be subject to Township approval. No WECS or TMT shall be installed in any location within the line of sight of an existing microwave communications link where operation of the wind energy system is likely to produce electromagnetic interference in the link's operation unless the interference is insignificant.
- (7) Color. Towers and blades shall be painted a non-reflective neutral color designated on the application and approved by the Township or as otherwise required by law.
- (8) Climb Prevention. Every WECS or TMT must be protected by anti-climbing devices twelve (12) feet from base of pole.

- (o) Removal of Abandoned On-Site WECS or Temporary Meteorological Towers. In the event an On-Site WECS or Temporary Meteorological Tower is abandoned or unused for a period of one hundred and eighty (180) days, or if a WECS or Temporary Meteorological Tower is damaged, the owner of the tower or the land shall promptly remove the tower and all related equipment. Failure to remove the tower and related equipment in accordance with the foregoing shall subject the tower owner and land owner to fines established by the Township Board. In addition, by accepting a permit for the On-Site WECS or TMT, the applicant and land owner agree that in the event the tower and equipment is not removed as required, after thirty (30) days notice from the Township, the Township may undertake such removal and bill the costs to the applicant and land owner plus an administrative fee of 15% which if not paid within thirty (30) days shall be assessed against the land on which the tower and equipment is located and collected in the same manner as delinquent taxes.
- (p) Additional Requirements for Commercial WECS. The following standards and requirement shall apply to every Commercial WECS:
- (1) Warnings. A visible warning sign of High Voltage shall be placed at the base of every Commercial WECS. The sign must have at least six (6") inch letters with 3/4-inch stroke. Such signs shall be located a maximum of three hundred (300) feet apart and at all points of site ingress and egress.
 - (2) Signage. In addition to warning signs and signs required by law, every Commercial WECS shall be equipped with a sign containing owner identification and contact information. No advertising is permitted.
 - (3) Liability Insurance. The owner or operator of a Commercial WECS shall maintain a current commercial liability and property damage insurance policy with coverage limits acceptable to the Township pertaining to installation and operation of the Commercial WECS. The amount and terms of the policy shall be established as a condition of conditional use permit approval. The Township and land owner shall be named as additional insured. Certificates of insurance shall be provided to the Township annually.
 - (4) Security. The application shall include a description of security to be posted at the time of receiving a building permit for the WECS to ensure removal of the WECS when it has been abandoned or is no longer needed, as provided in subsection 10 below. The security shall be the form of: (i) cash; (ii) letter of credit; or, (iii) an escrow agreement, in an amount approved by the Township engineer and in a form approved by the Township Attorney providing for timely removal of the Commercial WECS as required under this Section, and payment of any costs and attorney fees incurred by the Township in connection with such removal.
 - (5) Visual Appearance; Powerlines. The design of the WECS buildings and related structures shall, to the extent reasonably possible, use materials, colors, textures, screening and landscaping that will blend WECS components with the natural setting and existing environment. The electrical collection system shall be placed

underground within the interior of each parcel at a depth designed to accommodate any existing land use to the maximum extent practicable. The collection system may be placed overhead adjacent to public roadways, at points of interconnection to the electric grid or in other areas as necessary.

- (6) **Threatened and Endangered Species.** The applicant shall submit an endangered and threatened species survey conducted by a qualified professional, such as an ecologist or zoologist, describing the potential impact of the WECS on any species listed as threatened or endangered by the federal government or the state of Michigan, including but not limited to migratory birds or bats. Permits shall not be issued unless the study determines that there shall be no negative effect on such species. Alternatively, the applicant may submit an endangered species permit from the State of Michigan to fulfill this requirement.
- (7) **Annual Inspection; Maintenance.** The WECS and surrounding area shall be maintained in accordance with industry standards including painting and landscaping. Every Commercial WECS must be inspected annually by an authorized factory representative or professional engineer to certify that the WECS is in good working condition and is not a hazard to persons or property. Certification records shall be submitted annually to the Township.
- (8) **Sound Pressure Level.** As part of the application and prior to installation of any Commercial WECS, the applicant shall provide modeling and analysis to Ann Arbor Township that will confirm that the Commercial WECS will not exceed the maximum permitted sound pressure levels. Modeling and analysis shall conform to IEC (International Electrotechnical Commission) 61400, which establishes structural and performance safety provisions for wind energy conversion systems, and ISO (International Organization for Standardization) 9613, which describes a method for calculating the attenuation of sound during propagation outdoors in order to predict the levels of environmental noise at a distance from a variety of sources. After installation of the Commercial WECS, sound pressure level measurements shall be done by a third party, qualified professional according to the procedures in the most current version of ANSI S12.18, which provides an alternative method of measurement of sound pressure levels in the outdoor environment, considering the effects of the ground, the effects of refraction due to wind and temperature gradients, and the effects due to turbulence. All sound pressure levels shall be measured with a sound meter that meets or exceeds the most current version of ANSI S1.4 specifications for a Type II sound meter. Documentation of the sound pressure level measurements shall be provided to the local government within 60 days of the operation of the project.
- (9) **Shadow Flicker.** The applicant shall conduct a four-season analysis of potential shadow flicker. The analysis shall identify the locations of shadow flicker that may be caused by the project and the expected durations of the flicker at these locations from sun-rise to sun-set over the course of a year. The analysis shall identify all areas where shadow flicker may affect occupants or users of the structures or properties. The analysis shall describe measures that will be taken to eliminate or mitigate adverse effects.

- (10) Removal. A Commercial WECS shall be removed by the owner of the WECS or land when the Commercial WECS has been abandoned or unused for one hundred and eighty (180) days (“Non-Use Period”). For purposes of this section, the damage, destruction or removal of any part of WECS equipment, or the cessation of operations shall be considered as the beginning of a Non-Use Period. The WECS owner or applicant shall notify the Township of the beginning of any Non-Use Period or any removal of equipment. The end of the Non-Use Period may be sooner than one hundred eighty (180) days after commencement if the WECS or any portion of the facility becomes a nuisance or is dangerous to the public health, safety and welfare.
- a. At the end of the Non-Use Period, the owner of the WECS or the land shall immediately apply for and obtain any applicable demolition or removal permit, and shall immediately proceed with and complete the demolition and removal of the WECS and restoration of the land to the condition existing prior to installation, to the extent reasonably feasible.
- b. If the required demolition, removal and restoration of the WECS has not been lawfully completed within sixty (60) days after the end of the Non-Use Period, then after fifteen (15) days prior written notice to the land owner and the WECS owner, the Township may remove or secure the removal of the WECS and related equipment and the Township’s costs, expenses, attorneys fees and consultants fees, plus a 15% administrative charge may be drawn and collected from the security described in (4) above, and any costs and fees in excess of the amount of the security shall constitute a lien on the land on which the WECS is located and may be collected in the same manner as delinquent taxes.

CERTIFICATION

It is hereby certified that that foregoing Ordinance was adopted by the Township Board of Ann Arbor charter Township, Washtenaw County, Michigan, at a meeting of the Board duly called and held on February 15, 2010.

ANN ARBOR CHARTER TOWNSHIP

By: _____
Michael C. Moran, Supervisor

By: _____
Rena Basch, Clerk

Planning Commission Public Hearing: August 3, 2009
Board Public Hearing: January 18, 2010

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