

CHAPTER 22

ORDINANCE REGULATING WIND ENERGY CONVERSION SYSTEMS

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22.1 Purpose.

To promote the effective and efficient use of wind energy conversion systems (WECS) by regulating and requiring a permit for the siting, design and installation of conversion systems to protect the public health, safety and welfare of present and future residents of Polk County. In addition, this ordinance provides a permitting process for wind energy systems to ensure compliance with the provisions of the requirements and standards established or referenced herein. The provisions of this ordinance shall not guarantee wind rights or establish access to the wind.

22.2 Definitions.

- 1. Wind energy conversion system (WECS).** Any device, such as a wind charger or wind turbine, which converts wind to a form of usable electric energy. For the purposes of this ordinance, there are five types of WECS.
 - a. Single use residential production WECS.** A single WECS, on an individual lot or parcel, used to produce energy primarily for residential consumption on the property where the WECS is located.
 - b. Shared residential production WECS.** WECS used for residential consumption that is shared by more than one property owner and placed within an easement area on private property, a common area (jointly owned property) within a development.
 - c. Single use nonresidential production WECS.** One or more WECS, used to produce energy primarily for the nonresidential property where the WECS is located.
 - d. Shared nonresidential production WECS.** WECS used for nonresidential consumption that is shared by more than one property owner and placed within an easement area on private property, a common area - jointly owned property within a development.
 - e. Energy Production (Wind Farm) WECS.** One or more WECS located together and used for production of electric power to be interconnected into the local utility electrical grid and primarily for consumption by on-grid utility customers located off the property.
- 2. Manual and automatic controls.** Controls that give protection to power grids and limit rotation of the blades to below the designed limits of the WECS.
- 3. Authorized factory representative.** An individual with technical training on WECS who has received factory installation instructions and is certified in writing by the manufacturer of the WECS.
- 4. Professional engineer.** An engineer licensed to practice in the State of Iowa.
- 5. Prototype and/or experimental WECS.** An original or homemade, first full scale, new type of functional model.
- 6. Rotor.** The portion of the WECS, typically consisting of blades, shafts and hubs that rotate in response to wind and convert the motion into electrical energy. Rotors are often horizontal or vertical.

22.3 Wind energy conversion system (WECS) Types

- 1. Single use residential production WECS.** A single WECS, on an individual lot used to produce energy that is accessory, incidental and subordinate to an existing residence. The system shall produce energy primarily for the existing residential and accessory use(s) on the property where the system is located. Single use residential production WECS shall not exceed 15 kW. The property owner may provide reserve excess energy for the electrical grid when done in accordance to State of Iowa and local utility company requirements.
- 2. Shared residential production WECS.** WECS for residential use that are shared by a development or multiple property owners. They may be located in a combined yard area or common area or lot that provides appropriate easements for fall areas, access and electric transmission. More than one shared WECS may be permitted but each turbine shall not exceed 15kW. Shared residential WECS must provide detailed information about the agreement, contract or lease for the WECS including maintenance, ownership, removal, access and insurance.
- 3. Single use nonresidential production WECS.** Single use nonresidential production WECS, are used to produce energy primarily for the non residential use(s) where the system is located. Single use nonresidential production WECS shall be incidental and subordinate to the principal use on the property and may provide reserve excess energy for the electrical grid when done in accordance to State of Iowa and local utility company requirements.
- 4. Shared nonresidential production WECS.** Nonresidential production WECS, are used to produce energy primarily for the non residential uses proximate to where the system is located. Shared nonresidential production WECS shall be incidental and subordinate to the principal uses nearby though may provide reserve excess energy for the electrical grid when done in accordance to State of Iowa and local utility company requirements. Shared nonresidential WECS must provide detailed information about the agreement, contract or lease for the WECS including maintenance, ownership, removal, access and insurance.
- 5. Energy Production (Wind Farm) WECS.** Large scale WECS or a group of WECS in the same location used for production of electric power to be interconnected into the local utility electrical grid and built to produce energy primarily for on-grid utility customers located off the property. Individual turbines are usually interconnected to a power collection system and then connected to an existing or proposed high voltage transmission system. An energy production WECS may consist of a single WECS or multiple wind turbines, and cover small areas to extended areas of many square miles. Permitted only in the AG- Agricultural District, the land surrounding the turbines may continue to be used for agricultural purposes.

22.4 Applicability.

It shall be unlawful to construct, erect, install, alter or locate any WECS within unincorporated Polk County, without first obtaining a Wind Energy Conversion Systems (WECS) Permit from Polk County as outlined in this ordinance from the Polk County Board of Adjustment.

- 1.** No application for a WECS permit shall be granted without first submitting all required information and obtaining necessary permits, certifications, and documentation.

22.5 WECS Permit Procedure.

- 1. Application requirements** for a WECS Permit shall be made on a permit application form to Polk County for any WECS proposed in unincorporated Polk County. An applicant that proposes to obtain a permit and construct a WECS shall submit the following information as required:
 - a. Required Information for all WECS.** The following information shall be submitted with a WECS permit application. The applicant(s) and property owner(s) name, address and phone number and legal description of property where the WECS

project will be located including property owners names and geo parcel information for each property included in the application. Properties not contiguous to a project area cannot be represented on the same application.

- i. Sketch plan showing property lines, natural features, utility lines, easements, setback lines and layout and size of all structures on the lot, location of the WECS pole or tower, guy lines and anchor base where required and their distance from all property lines, and structures. Also, a copy of the specifications of proposed tower and rotor.
- ii. A map or drawing showing collapse zone of the tower.
- iii. Written explanation from property owner identifying reason(s) for building the WECS and information from engineer and or authorized factory representative addressing the size including tower height, rotor diameter, overall height and kW, tower/pole type and color of the WECS, the amount and/or percentage of the property owner's energy projected to be produced, estimated cost savings from the WECS, and any plans for connecting the WECS to the electrical grid.
- iv. A WECS proposed to be connected to the public electric utility must provide evidence that the utility was contacted regarding the applicant's intent to make the connection from the proposed WECS. Additional information may be required.
- v. Certification from a professional engineer regarding the safety of the design, specifications, and compatibility of the tower structure with the rotors and other components of the conversion systems. The standard for certification shall be good engineering practices and compliance with this ordinance and Polk County's adopted building and electrical codes.
- vi. Certification from a professional engineer for the footing design for the tower.
- vii. A signed "Consent to Removal" form provided by Polk County Public Works.
- viii. Written evidence from FCC and FAA.
 1. Statements that no permit(s) are required.
 2. Correspondences about the additional permits required.

b. Additional information for Shared residential production WECS, Single use nonresidential production WECS, Shared nonresidential production WECS and Energy Production WECS

In addition to the information required in 22.5 section 1.a, the following additional information shall be submitted with WECS Permit Application for shared residential production WECS, single use non-residential production WECS and shared nonresidential production WECS and Energy Production WECS.

- i. A site plan prepared by an Iowa licensed architect and/or professional engineer providing the Major Site Plan requirements as required in the Polk County Zoning Ordinance which includes but is not limited to identifying: the topography of property, property lines and measurements, natural features, easements, existing utilities, setback lines and layout of all structures on the parcel, location of the lease area, proposed access and drive locations, proposed WECS pole or tower and proposed landscaping and screening, guy lines and anchor bases where required and their distance from all property lines, structures and easements.
- ii. A development phasing schedule for any application that includes multiple WECS.

c. Additional information for Energy Production WECS

In addition to the information required in sections 22.5 Section 1.a and 1.b, the following additional information shall be submitted with WECS Permit Application for Energy Production (Wind Farm) WECS:

- i. Submit natural features drawing prepared by an Iowa licensed architect and/or professional engineer identifying all adjacent subdivisions, public recreational areas (federal, state & local), wetlands, woodlands, rivers, creeks, ponds, lakes, , railroads, historic villages (as defined in the Polk County 2030 Comprehensive Plan) located within 1320' (1/4 mile) of the property containing the proposed WECS.
- ii. Drawing from the hauling company identifying roads and bridges to be used to haul the proposed WECS to the property.
- iii. A minimum of two (2), three-dimensional perspective drawings showing the property before and after WECS construction. One drawing shall show the proposed WECS as viewed from the closest residential and/or recreational areas and the other drawing shall show how the proposed WECS will appear in relation to the closest residential and public recreational areas at a distance of 1320 feet from the nearest WECS tower/pole. The drawings may consist of altered photographs and/or be computer generated. Additional drawings may be required based on the size of the project area and the number of towers.
- iv. List of other Energy Production WECS owned by the property owner and/or applicant or their subsidiaries owning WECS within the County, State and U.S.
- v. Detailed information about the agreement, contract or lease for the WECS including maintenance, ownership, removal, access and proof of insurance.

2. WECS Permit Process

- a. All WECS Permit applications shall be approved by the Polk County Board of Adjustment following the standards and procedures for Conditional Uses as outlined in Article 4. Division 8 of the Polk County Zoning Ordinance and shall follow the same schedule for submitting applications.
- b. Fees for WECS permit application shall be established by resolution for each type of WECS.

3. Construction Permits. Upon approval of the WECS Permit the following additional permits must be obtained from Polk County Public Works:

- a. Building permit(s)
- b. Electrical permit(s)
- c. Entrance permit(s)

The following permits are required, if applicable.

- a. Grant permit for work within Polk County right of way
- b. Oversize/ Overweight permit
- c. Floodplain Development permit

22.6 Siting.

1. **Rotor size.** A WECS used for residential use shall not have a blade diameter in excess of twenty five (25) feet. WECS used for nonresidential uses shall not exceed a fifty (50) foot blade diameter. Energy Production WECS located in the Agricultural Zoning District and WECS used for federal, state, and local government entities and public schools may exceed the fifty (50) foot maximum blade diameter subject to the setback requirements identified in this ordinance and Board of Adjustment approval of the WECS Permit.

2. **Tower Height.** All WECS towers, poles and rotors may exceed the height limitations of a zoning district in which located except for single use residential production WECS, which must meet the following requirements :
 - a. WECS built for residential use on an individual parcel up to three (3) acres shall not exceed a combined tower/pole and rotor height of sixty five (65) feet.
 - b. WECS built for residential use on a parcel greater than three (3) acres and up to seven (7) acres shall not exceed a combined tower/pole and rotor height of eighty (80) feet.
 - c. WECS built for residential use on a parcel greater than seven (7) acres shall not exceed a combined tower/pole and rotor height of one hundred (100) feet.
3. **Blade Height.** Lowest point of the blade (horizontal or vertical WECS) shall be a minimum of thirty (30) feet above the ground.
4. **Setbacks.** WECS shall be setback a minimum distance from the base of the structure to all property lines equal to 1.1 times the height of the tower and rotor as measured from the base to the highest reach of its blade, thus should the structure collapse or topple, it shall come to rest wholly within the property lines on which it is located.
 - a. WECS including guyed wires and anchors shall not be located within a required principal structure setback in any zoning district.
 - b. Single use residential production WECS shall not be located in front of the residence.
 - c. A tower that is part of a shared (multiple towers and/or multiple properties) project may be located closer to interior property lines than 1.1 times the height of the tower when located within the project area as defined on the WECS Permit application. Written consent and fall easements must be provided by the appropriate submittal deadline. In no case shall a WECS be located closer than 1.1 times the overall height to any public road right-of-way. All easement shall be shown on an appropriate drawing and recorded at the Polk County Recorders Office by the project applicant(s) and/or tower owner.
 - d. An Energy Production WECS shall be located only in the AG zoning district and shall be a minimum 1320 feet from any other Zoning District line, residence, not included in the application, or any public park and/or recreation property line with the following exceptions:
 - i. Owner(s) or homeowners association for the placement of shared residential production WECS.
 - ii. Any public park or recreational land when approved by the appropriate County, State, or Federal administrative staff, boards, and/or commissions for a demonstrated public purpose.
5. **Roof mount.** A WECS is prohibited upon the roof of any structure unless the structure has been approved for the installation of a WECS by an Iowa licensed structural engineer.

22.7 Design Standard requirements.

1. **Rotor design and Overspeed controls.** All WECS shall be equipped with manual and automatic overspeed controls to limit the rotation of blades to a speed below the designed limits. A professional engineer shall certify that the rotor and overspeed control design and fabrication conform to good engineering practices. No changes or alterations from the certified design shall be permitted unless accompanied by a professional engineer's statement of certification.
2. **Electrical compliance.** All electrical compartments, storage facilities, wire conduit and interconnections with utility companies shall conform to national and Polk County electrical codes.
3. **Experimental or prototype WECS.** Written evidence identifying the proposed use of an experimental or prototype WECS shall be submitted to the County by a professional

engineer and/or factory representative. Experimental or prototype WECS are not permitted closer than 300 feet from all property lines.

4. **Signage.** All signs, both temporary and permanent, are prohibited on WECS, except as follows:
 - a. Manufacturer's identification on the wind turbine cowling.
 - b. Appropriate warning signs and placards including visible warning sign of "High Voltage" placed at the base of all conversion systems. The sign shall have at a minimum six-inch letters with 3/4-inch stroke.
5. **Color.** The color of WECS shall be non-reflective and non-obtrusive.
6. **Tower, Poles, and Anchor points.** All towers, poles, and anchor points must be unclimbable by design or protected by anti-climbing devices such as:
 - a. Fences with locking portals at least six feet high;
 - b. Anti-climbing devices 12 feet from base of pole;
 - c. Anchor points for guy wires supporting tower shall be enclosed by a six-foot high fence or shall be located within the confines of a yard which is completely fenced.
7. **Noise Levels.** The noise level measured at the property line of the property on which the WECS has been installed shall not exceed 55 decibels, or cause a noise disturbance as defined in the Polk County Noise Pollution Ordinance. In no event shall the WECS create a nuisance.
8. **Lighting.** Lighting of towers is only allowed when required by the FAA. The lighting method allowed shall be an FAA approved dual lighting system.

22.8 Installation and Construction Certification.

1. All approved WECS projects shall commence installation as specified in the WECS Permit and in accordance to this ordinance within one year of approval by Polk County Board of Adjustment or the permit expires. Expired permits require a new WECS Permit. A new application and fee must be resubmitted.
2. A professional engineer shall certify that the construction and installation of Energy Production WECS meets or exceeds the manufacturer's construction and installation standards, prior to the property owner and/or applicant receiving a Certificate of Use for the WECS.

22.9 Maintenance and Operation.

1. The property owner and/or tower owner is responsible for maintaining, repairing and keeping WECS in good working order.
 - a. Waste disposal of solid and/or hazardous materials shall occur in accordance to County, State and Federal requirements. No worn parts, used oils or lubricants, crates or other items shall be located on the WECS property or project area.
 - b. The WECS shall not cause interference with microwave transmissions, residential television interference, radio reception or other communication equipment.

22.10 Removal, Revocation, and Abandonment.

1. WECS shall be removed if not operated for a period of time greater than twelve (12) months or fails to be operable for twelve (12) consecutive months or if it is determined by Polk County that a WECS is not in compliance with provisions of this ordinance and the WECS Permit.
 - a. As a condition of approval for all WECS the owner and/or operator shall sign a "Consent to Removal" form. The "Consent to Removal" will state that the owner shall remove the WECS or allow Polk County to remove and assess the property for the cost to remove the WECS. Upon noncompliance the County shall send a notice to the property owner and/or WECS owner by certified mail identifying the options to correct the violations. If the corrective actions are not taken within 30 days of

certified mailing date a final notice will be sent to the owner in the same manner and be given fifteen (15) additional days to properly correct the violations. If the violations are not corrected, the WECS will be removed by Polk County and the property will be assessed for the cost of removal and disposal.

2. A WECS Permit may be revoked any time the WECS does not comply with the rules and regulations set forth in this ordinance or WECS Permit. The revocation of the WECS Permit requires the WECS to be physically removed within ninety (90) days.
3. At such time that a WECS is abandoned or discontinued, the property owner and or WECS owner will notify Polk County Public Works by certified U.S. mail of the proposed date of abandonment or discontinuation of operations and remove the tower within ninety (90) days.
4. Upon revocation, abandonment or discontinuation of WECS or failure to operate, maintain and keep in good working order, the tower owner and/or property owner shall physically remove the WECS according to the provisions of this ordinance, conditions added to the WECS Permit and/or the "Consent to Removal". "Physically remove" shall include, but not be limited to:
 - a. Removal of the WECS including the turbine, tower/pole and related above grade structures.
 - b. Restoration of the location of the WECS to its natural condition, except that any landscaping, grading or below-grade foundation may remain.

22.11 Release of Liability.

Polk County shall be fully released of any liability associated with any WECS built in unincorporated Polk County.