

CHAPTER 159

WIND ENERGY CONVERSION SYSTEMS

159.01 Purpose and Intent

159.05 Location

159.02 Definitions

159.06 Design and Technical Standards

159.03 General Regulations

159.07 Abandonment and Removal Procedure

159.04 Bulk Regulations

159.08 Application and Approval Requirements

159.01 PURPOSE AND INTENT. It is the purpose and intent of these regulations to ensure the proper design, siting, and installation of wind energy conversion systems in order to protect the public health, safety and welfare of surrounding property owners and the community.

The City recognizes the importance of reducing dependence on non-renewable sources of energy by promoting alternative energy sources. The City also recognizes wind energy is an abundant and non-polluting energy resource available to the City. As such, the City understands wind energy conversion systems have the potential to adversely affect surrounding properties in terms of noise, aesthetic issues, shadow flickers, fall zone damage, etc. if not sited and regulated properly.

159.02 DEFINITIONS. For use in this chapter the following terms are defined:

1. **Commercial Wind Energy Conversion System:** A wind energy conversion system (horizontal or vertical axis) intended to produce electricity for sale to a rate regulated or non-regulated utility or for use off site.
2. **FAA:** The Federal Aviation Administration of the United States Department of Transportation.
3. **Fall zone:** The area, defined as the furthest distance from the tower base, in which a wind energy conversion system will collapse in the event of a structural failure.
4. **Guy wire:** Any wire extending from a wind energy conversion system for the purpose of supporting the structure.
5. **Height, total system:** The height above grade of the system, or above the roofline if roof-mounted, including the wind generator and the highest vertical extension of any blade or rotor.
6. **MET (Meteorological) tower.** A tower with an aggregation of parts including any anchor, base, base plate, boom, cable, electrical or electronic

equipment, guy wire, hardware, indicator, instrument, telemetry device, vane, or wiring used to collect or transmit meteorological data, including wind speed and wind flow information, in order to monitor or characterize wind resources at or near a wind energy conversion system.

7. **Non-Commercial Wind Energy Conversion System:** A wind energy conversion system (horizontal or vertical axis) which has a rated capacity of up to one hundred (100) kilowatts and which is incidental and subordinate to a permitted use on the same parcel. A system is considered a non-commercial wind energy conversion system only if it supplies electrical power solely for onsite use, except that when a parcel on which the system is installed also receives electrical power supplied by a utility company, excess electrical power generated and not presently needed for onsite use may be used by the utility company in accordance with Section 199, Chapter 15.11(5) of the Iowa Administrative Code. Any wind energy conversion system not falling under this definition shall be treated as a commercial wind energy conversion system.
8. **Non-Participating Landowner.** Any landowner except those on whose property all or a portion of a wind energy conversion system is located pursuant to an agreement with a system owner or operator.
9. **Occupied Building.** A residence, school, hospital, church, public library or other building used for public gathering that is occupied or in use when the permit application is submitted.
10. **Operator.** The entity responsible for the day-to-day operation and maintenance of the wind energy conversion system.
11. **Participating Landowner.** Any landowner whose property has or is proposed to have all or a portion of a wind energy conversion system located on it pursuant to an agreement with a Facility Owner or Operator.
12. **Tower:** The vertical component of a wind energy conversion system that elevates the wind generator above the ground.
13. **Use termination:** The point in time at which a wind energy conversion system owner provides notice to the City that the wind energy conversion system is no longer used to produce electricity unless due to a temporary shutdown for repairs. Such notice of use termination shall occur no less than 30 days after actual use termination.
14. **Wind Energy Conversion System (WECS):** An aggregation of parts including the base, tower, generator, rotor, blades, supports, guy wires and accessory equipment such as utility interconnect and battery banks, etc., in

such configuration as necessary to convert the power of wind into mechanical or electrical energy, e.g., wind charger, windmill or wind turbine.

15. **Wind Energy Conversion System (WECS), abandoned:** Any wind energy conversion system which remains non-functional or inoperative for a period of 1 year.
16. **Wind generator:** The blades and associated mechanical and electrical conversion components mounted on the top of the tower.
17. **Wind Turbine.** A wind energy conversion system that converts wind energy into electricity through the use of a wind turbine generator, and includes but is not limited to the nacelle, rotor, tower, and pad transformer, if any.

159.03 GENERAL REGULATIONS:

- (1) General:
 - (A) Wind energy conversion systems shall be allowed as a special use accessory to a permitted use in all zoning districts.
 - (B) MET towers are subject to all regulations and restrictions set for wind energy conversion systems set forth in this ordinance.
- (2) Commercial Wind Energy Conversion Systems:
 - (A) Shall be considered a conditional use in the AG - Agricultural zoning district.
 - (B) No Commercial Wind Energy Conversion system, or addition of a wind turbine to an existing commercial wind energy system, shall be constructed or located within City limits unless a conditional use permit has been issued to the Facility Owner or Operator approving construction of the facility according to this Ordinance.
 - (C) This ordinance applies to all commercial wind energy conversion systems constructed after the effective date of this Ordinance as well as any commercial wind energy conversion system where proposed modification will materially alter the size, type, or number of existing wind turbines or accessory equipment or structures. Like-kind replacements shall not require a permit modification.
- (3) Number of systems per property: No residential or commercial zoned properties shall contain more than one wind energy conversion system. The Zoning Board of Adjustment may permit additional wind energy conversion systems if the property owner can demonstrate a need for the extra system(s) in order to further reduce on-site energy consumption and help satisfy the intent of the ordinance. However, the Zoning Board of Adjustment shall consider the potential adverse impacts resulting from

visual clutter and noise. Under no circumstances shall the combination of all wind energy conversion systems on a residential or commercially zoned lot exceed a total output capacity of 100 kW.

- (4) Permit required: All wind energy conversion systems require a special use permit to be obtained from the Zoning Board of Adjustment prior to site grading and installation in any zoning district. The Zoning Board of Adjustment can revoke a special use permit at any time if the requirements set forth in this ordinance and/or any conditions imposed by the Zoning Board of Adjustment are not met. The Zoning Board of Adjustment will revoke the special use permit of an abandoned wind energy conversion system.
- (5) Insurance: The owner/operator of a wind energy conversion system must demonstrate adequate liability insurance.
- (6) FAA regulations: Wind energy conversion systems must comply with applicable FAA regulations, including any necessary approvals for installations close to airports. The applicant has the responsibility of determining applicable FAA regulations and must provide evidence of securing the necessary approvals.
- (7) Maintenance: All wind energy conversion systems shall be properly maintained in operational condition at all times, subject to reasonable maintenance and repair outages. Owner must maintain maintenance documents for proof that proper maintenance is being performed. The owner of any wind energy conversion system deemed unsafe by the building official or his/her designee shall repair the structure to meet all federal, state and local safety standards or remove it within six months.
- (8) Nonconforming: Properly maintained wind energy conversion systems constructed prior to the effective date of this Section shall not be required to meet the requirements of this Section; provided, however, that any such pre-existing wind energy conversion system which does not provide energy for a continuous period of 12 months shall meet the requirements of this Section prior to recommencing production of energy. However, no modification or alteration to an existing wind energy conversion system, other than routine maintenance, shall be allowed unless in compliance with this Section.

159.04 BULK REGULATIONS

- (1) Setbacks: The minimum distance between a wind energy conversion system and any property line shall be no less than a distance equivalent to 110 percent of the total system height. The setback shall be measured from the center of the tower's base. Associated guy wires, if applicable,

must be set back a distance of 10 feet from all property lines. The Zoning Board of Adjustment may authorize lesser setback distances if a registered engineer licensed by the State of Iowa specifies in writing that the collapse of the system will occur within a lesser distance under all foreseeable circumstances. Commercial wind energy conversion systems shall be set back from the nearest occupied building located on a non-participating landowner's property a distance of not less than 1000 feet, as measured from the center of the wind turbine base to the nearest point on the foundation of the occupied building.

(2) Waiver of Commercial Wind Energy conversion System Setback Regulations.

(A) Waiver. Non-participating landowners may waive the setback requirements, as required above, by signing a waiver that sets forth the applicable setback provision(s) and the proposed changes.

(1). The written waiver shall notify the non-participating landowners of the setback(s) required by this Ordinance, describe how the proposed commercial wind energy conversion system is not in compliance, and state that consent is granted for the commercial wind energy conversion system to not be setback as required by this Ordinance as shown on the site plan submitted with the permit application.

(2). Any such waiver shall be recorded in the City and Dallas County Recorder's Office. The waiver shall describe the properties benefited and burdened, and advise all subsequent purchasers of the burdened property that the waiver of setback shall run with the land and may forever burden the subject property.

(3) Maximum Total System Height:

(A) The maximum height for a freestanding or guy wired monopole tower wind energy conversion system is 200 feet in a residential or commercial zoning district.

(B) The maximum height for a roof-mounted wind energy conversion system is 15 feet above the maximum building height allowed in the zoning district in which it is located.

159.05 LOCATION

(1) No wind energy conversion system shall be located over any public road right-of-way unless the governmental entity with jurisdiction over the road provides written permission.

- (2) No wind energy conversion system shall be located over any adjacent properties unless the affected land owner(s) provides written permission. This permission shall come in the form of a recorded easement or other recorded instrument.
- (3) No wind energy conversion system shall be located within or over any drainage, utility or other established easements.
- (4) Wind energy conversion systems shall be located entirely within the rear yard of residential zoned property unless mounted on a roof.

159.06 DESIGN AND TECHNICAL STANDARDS:

- (1) Tower: Wind generators must be attached to a freestanding monopole tower, guy wired lattice tower or mounted on a roof.
- (2) Color: Wind energy conversion systems shall be white, grey or another non-obtrusive color unless other patterns or colors are required by State or Federal regulations. Blades may be black to facilitate de-icing. Finishes shall be non-reflective or matte.
- (3) Lighting: Minimum lighting necessary for safety and security purposes shall be permitted. Security lighting shall be directed downward and shaded or concealed so as to not shine directly on adjacent properties. No other lighting is allowed unless required to meet State or Federal regulations.
- (4) Signage Permitted: Wind energy conversion systems shall include warning signage, not to exceed 4 square feet, highlighting the risk of electrical shock, high voltage, harm from revolving machinery, hazard from falling ice and the name and emergency contact telephone number of the system's owner. Required signage must be placed on the tower at a height of 5 feet and able to be viewed if a fence is installed. In addition, a system or tower's manufacturer's logo may be displayed on a wind energy conversion system in an un-obstructive manner. Permitted signage shall not be considered as part of a property's total allowable sign area permitted. All other signs are prohibited.
- (5) Climbing Apparatus: Climbing apparatuses must be located 12-15 feet from the ground and the tower must be designed to prevent climbing within the first 12-15 feet. All efforts must be made to prevent persons that are not authorized to climb the tower, are discouraged from climbing the tower. Roof-mounted wind energy conversion systems are exempt from this requirement.

- (6) Fencing: It is a recommendation, not required, that all wind energy conversion systems and associated guy wire anchor points be enclosed by a 6 foot high fence with a securely locked gate to limit uncontrolled access and reduce safety hazards.
- (7) Electrical Wires: All electrical wires associated with a wind energy conversion system, other than wires necessary to connect the wind generator to the tower wiring, the tower wiring to the disconnect junction box, and the grounding wires shall be located underground.
- (8) Noise: Wind energy conversion systems shall not exceed 65 decibels (dBA), except during short-term events such as severe wind storms and utility outages, as measured under test procedures established by Section 157.09(1) of the City of Perry Code of Ordinances. Maximum sound pressures will be measured from the closest point on the closest property line.

Commercial wind energy conversion systems shall not exceed fifty-five (55) dBA, as measured at the exterior of any occupied building on a non-participating landowner's property. Methods for measuring and reporting acoustic emissions from wind turbines and the commercial wind energy conversion system shall be equal to or exceed the minimum standards for precision described in AWEA Standard 2.1 - 1989 titled Procedures for the Measurement and Reporting of Acoustic Emissions from Wind Turbine Generation Systems Volume I: First Tier.

- (9) Blade Clearance: No wind energy conversion system shall have any portion of a blade extend within 20 feet of the ground.
- (10) Automatic Over speed Controls: All wind energy conversion systems shall be equipped with manual and automatic over speed controls to limit the blade rotation speed to within the design limits of the wind energy conversion system.
- (11) Electromagnetic Interference: No wind energy conversion system shall produce electromagnetic interference so as to disrupt transmissions such as those from radio, television or microwave towers.
- (12) Waste Disposal: Solid and hazardous wastes, including but not limited to crates, packaging materials, damaged or worn parts, as well as used oils and lubricants, shall be removed from the site promptly and disposed of in accordance with all applicable local, state and federal regulations.
- (13) Ice Shedding: Wind energy conversion system owners shall ensure that ice from the rotor blades does not impact any off-site properties.

- (14) Shadow Flicker: Wind energy systems shall be sited in a manner that does not result in significant shadow flicker impacts. Significant shadow flicker is defined as more than 30 hours per year on affected occupied buildings. The applicant has the burden of proving that the shadow flicker will not have significant adverse impact on neighboring or adjacent uses. Potential shadow flicker will be addressed either through siting or mitigation measures.

The owner and operator of a commercial wind energy conversion system shall make reasonable efforts to minimize shadow flicker to any occupied building on a non-participating landowner's property, both through the initial design of the system and as the result of any shadow flicker complaints occurring after the facility is operational. A shadow flicker mitigation plan shall be submitted with the commercial wind energy conversion system application, outlining steps that will be taken to so minimize shadow flicker. Reasonable efforts shall include but not be limited to the use of computer modeling to identify optimum location and orientation of each commercial wind energy conversion system and programs to ensure wind turbine blades do not rotate during times when shadow flicker may adversely affect a non-participating landowner's property.

- (15) Waiver of Noise and Shadow Flicker Provisions for Commercial Wind Energy Conversion Systems:

(A) Waiver of Noise Regulations. Non-participating landowners may waive, in whole or part, the noise regulation requirements in subsection 159.06 (8) of this ordinance by signing a waiver that sets forth the applicable noise provision(s) and the proposed changes.

(1) Any such waiver shall be recorded in the City and Dallas County Recorder's Office.

(2). The waiver shall describe the properties benefited and burdened, and advise all subsequent purchasers of the burdened property that the waiver of noise regulation requirements shall run with the land and may forever burden the subject property.

(B) Waiver of Shadow Flicker Impact Regulations. Non-participating landowners may waive, in whole or part, the Shadow Flicker Impact regulation requirements in subsection 159.06 (14) of this ordinance by signing a waiver that sets forth the applicable shadow flicker Impact provision(s) and the proposed changes.

(1) Any such waiver shall be recorded in the City and Dallas County Recorder's Office.

- (2) The waiver shall describe the properties benefited and burdened, and advise all subsequent purchasers of the burdened property that the waiver of Shadow Flicker regulation requirements shall run with the land and may forever burden the subject property.

159.07 ABANDONMENT AND REMOVAL PROCEDURE:

- (1) All wind energy conversion systems shall be removed from the site within 3 months of use termination notice to the City by the owner of the facility or within 3 months of a special use permit revocation by the Zoning Board of Adjustment.
- (2) The site shall be stabilized, graded and cleared of any debris by the property owner.
- (3) Any foundation shall be removed to a minimum depth of 4 feet below grade, or to the level of the bedrock if less than 4 feet below grade.
- (4) If the removal of the wind energy conversion system is required to be done by the City, the City will assess the costs of removal against the property upon which the wind energy conversion system is located for collection in the same manner as a property tax.

159.08 APPLICATION AND APPROVAL REQUIREMENTS:

Applications for a special use permit shall be submitted with the following information:

- (1) A properly completed and signed application.
- (2) A statement from the applicant that the wind energy conversion system will be installed in compliance with manufacturer's specifications, and a copy of the manufacturer's specifications.
- (3) A statement indicating what hazardous materials will be used or stored on the site and how those materials will be stored.
- (4) Documentation demonstrating adequate liability insurance for the wind energy conversion system.
- (5) A description of the wind energy conversion system's height and design, including a cross section, elevation, and diagram of how the wind energy conversion system will be anchored to the ground or attached to the roof, prepared by a professional engineer licensed in the State of Iowa.
- (6) A site plan including the following information:

- A) Legal description of the property
- B) Parcel boundaries
- C) Existing buildings
- D) Easements
- E) Fencing
- F) Proposed location of wind energy conversion system
- G) Setbacks
- H) Travel ways
- I) Overhead utility lines
- J) USGS detailed topographic map showing the proposed tower and turbine location.
- K) If connection to the publicly regulated utility grid is proposed, a copy of the contract between applicant and utility verifying that the proposed connection is acceptable, and/or other evidence making clear that the utility is aware of the proposed connection and finds it acceptable.

(7) For Commercial wind energy conversion systems, in addition to the application requirements for the non-commercial wind energy conversion systems the application shall also include the following:

- (A) The permit application or amended permit application shall be accompanied with a fee in the amount of \$1.00 per kW of proposed installed generating capacity.
- (B) The permit application shall demonstrate that the proposed commercial wind energy conversion facility will comply with this Ordinance and shall include the following:
 - (1) An affidavit or similar evidence of agreement between the participating landowner and the facility owner or operator demonstrating that the facility owner or operator has the permission of the Participating Landowner to apply for necessary permits for construction and operation of the commercial wind energy facility;

- (2) Identification of the property on which the proposed commercial wind energy conversion system will be located, and the properties within 1,320 feet of where the commercial wind energy conversion system will be located;
- (3) All associated equipment and infrastructure to include access roads, turnout locations, substation(s), electrical cabling from the commercial wind energy conversion system to the substation(s), ancillary equipment, buildings, and structures, including permanent meteorological towers, associated transmission lines;
- (4) Documents showing the decommissioning plan for the commercial wind energy conversion system.
- (5) Any relevant studies, reports, certifications and approvals as may be reasonably requested by the Zoning Administrator or the Board of Adjustment to include any reports necessary for storm water management, soil erosion control, or preservation of sensitive areas.
- (6) Throughout the permit process, the Applicant shall promptly notify the Zoning Administrator, in writing, of any changes to the information contained in the permit application.
- (7) Changes to the pending application that do not materially alter the initial site plan may be adopted without a renewed public hearing.
- (8) Within 45 days after the close of the initial public hearing, the City Board of Adjustment will make a decision whether to issue or deny the permit application, unless a longer deferment is agreed upon by both the Board of Adjustment and the applicant.