

CHAPTER 156

WIND ENERGY GENERATOR

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156.01 PURPOSE. The purpose of this section is to allow and encourage the safe, effective and efficient use of small wind energy systems; identify locations in area of the City which would be least adversely impacted by the visual, aesthetic, and safety implications of their siting; and enhance the ability of the providers of wind energy services to provide such services to the community quickly, efficiently and effectively.

156.02 DEFINITIONS.

1. “Blade” means an element of a wind turbine which acts as a part of an airfoil assembly, thereby extracting through rotation, kinetic energy directly from the wind.
2. “Height, total system” means the height above grade of the wind energy system, including the tower generating unit, and the highest vertical extension of any blades or rotors. Height shall be measured from the adjacent grade of the tower to the tip of the turbine (blade) at its highest point.
3. “Meteorological equipment” means equipment primarily used to measure wind speed and directions, including other data relevant to locating an operational wind energy conversion system.
4. “Qualified professional” means an individual certified by the manufacturer of a wind energy conversion system as qualified to install and/or maintain that manufacturer’s wind energy conversion system.
5. “Rotor diameter” means the diameter of the circle described by the moving rotor blades.
6. “Shadow flicker” means alternating changes in light intensity caused by the moving blade of a wind power generator casting shadows on the ground and stationary objects such as the window of a dwelling.
7. “Tower” means a vertical structure that supports the electrical generator, rotor blades, or meteorological equipment. Tower shall be limited to a single pole that is constructed without the support of guy-wires.
8. “Wind turbine” means any piece of electrical generating equipment that converts the kinetic energy of blowing wind into electrical energy.
9. “Wind energy conversion system” means a system consisting of at least one of the following: a wind turbine, a tower, and associated control or conversion electronics, which is intended to reduce on-site consumption of utility power, is incidental and subordinate to a permitted use on the same parcel and has a rated capacity of up to 100 kilowatts. Wind energy conversions systems shall not be permitted within any R-1, R-2, R-4 or R-6 zoning district. No roof-mounted wind energy conversion system shall be allowed.

156.03 ACCESSORY USE. A wind energy conversion system shall only be allowed as an accessory use to a permitted principal use and shall require approval of a site plan by the City Council upon recommendation by the Zoning Commission prior to construction, installation alteration, or location of such structure. The Zoning Commission and City Council may review a site plan at any time if an approved system does not comply with the rules set forth in this section and the conditions imposed by the City Council upon recommendation by the Zoning Commission. The City Council, upon recommendation of the Zoning Commission, may set additional terms or timeframe for compliance for the wind energy conversion system. The owner/operator of the wind energy system shall obtain all other permits required by federal, State, and local agencies prior to construction of the system.

156.04 PUBLIC NOTIFICATION. Following review of the site plan request for completion, the City Council shall set the Zoning Commission meeting date. Notice will be sent to the surrounding property owners within 200 feet of the property having the site plan considered. Notice shall be sent not less than seven days and not more than 20 days prior to the Zoning Commission meeting at which the site plan is first considered. The notice shall contain the date, time and location of the Zoning Commission meeting and the City Council meeting.

156.05 SITE PLAN DISAPPROVAL. In the case of a proposed site plan for a wind energy conversion system, if the Zoning Commission disapproves of the site plan, such site plan shall require the favorable vote of at least four-fifths of all of the members of the City Council.

156.06 BULK REGULATIONS.

1. Minimum Lot Size. Two-acre minimum lot size required for any tower mounted wind energy conversion system.
2. Minimum Setback Requirements. A wind energy conversion system shall require a setback of 110 percent of the total system height from any property line.
3. Maximum Height. Tower-mounted wind energy conversion systems: 60 feet.
4. Number of Systems Allowed: No more than one wind energy system may be placed on any parcel.
5. Location:
 - A. Tower mounted wind energy conversion systems shall only be located outside of any minimum building setback requirements.
 - B. No part of a wind energy conversion system shall be located within or over drainage, utility or other established easements, or on or over property lines.
 - C. A wind energy conversion system shall be in compliance with the guidelines of the Federal Aviation Administration (FAA) regulations.
 - D. No wind energy conversion system shall be constructed within 20 feet laterally of an overhead electrical power line (excluding secondary electrical service lines or service drops). The setback from underground electric distribution lines shall be at least five feet.

156.07 MINIMUM SYSTEM DESIGN STANDARDS. The following standards are required of all wind energy conversion systems and shall be deemed to be conditions of approval for every wind energy system.

1. Color. The wind energy conversion system shall be white or light gray in color. Other neutral colors may be allowed at the discretion of the City Council upon recommendation of the Zoning Commission. The surface of the structure shall be non-reflective.
2. Lighting. No lights shall be installed on the tower, unless required by the Federal Aviation Administration (FAA).
3. Signs. One sign, limited to four square feet, shall be posted at or near the base of the tower. The sign shall include a notice of no trespassing, a warning of high voltage, and the phone number of the property owner/operator to call in case of emergency. Such sign shall be directly visible from any external fencing and/or landscaping. Brand names or advertising associated with any installation shall not be visible from any public right-of-way.
4. Clearance of Blade Above Ground. No portion of the tower mounted wind energy conversion system shall extend within 30 feet of the ground. No blades may extend over parking areas, driveways or sidewalks.
5. Installation. Installation must be done by a qualified professional and according to manufacturer's recommendations.
6. Noise. The wind energy conversion system shall not exceed the requirements as established by City ordinance.
7. Use of Electricity Generated. A wind energy conversion system shall be used exclusively to supply electrical power for onsite consumption, except that when a parcel on which a wind energy conversion system is installed also received electrical power supplies by a utility company, excess electrical power generated by the wind energy system 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.
8. Automatic 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.
9. Electromagnetic Interference. All blades shall be constructed of a nonmetallic substance. No wind energy conversion system shall be installed in any location where its proximity with existing fixed broadcast, retransmission, or reception antenna for radio, television, or wireless phone or other personal communication systems would produce electromagnetic interference with signal transmission or reception. No wind energy conversion system shall be installed in any location along the major axis of an existing microwave communications link where its operation is likely to produce electromagnetic interference in the link's operation.
10. Interconnection. The wind energy conversion system, if interconnected to a utility system, shall meet the requirements for interconnection and operation as set forth by the utility and the Iowa Utilities Board.
11. Wind Access Easements. The enactment of this section does not constitute the granting of an easement by the City. The owner/operator shall provide covenants, easements, or similar documentation to assure sufficient wind to operate the wind energy conversion system unless adequate accessibility to the wind is provided by the site.
12. Shadow Flicker. A shadow flicker model demonstrates that shadow flicker shall not fall on, or in, any existing residential structure. Shadow flicker expected to fall on a roadway or a portion of a residential zoned parcel may be acceptable if the flicker does not exceed 30 hours per year; and the flicker will fall more than 100 feet from an existing residence; or the traffic volumes are less than 500 vehicles on the roadway. The shadow flicker model shall:

A. Map and describe within a 1,000 foot radius of the proposed dispersed wind energy system the topography, existing residences and location of their windows, locations of other structures, wind speeds and directions, existing vegetation and roadways. The model shall represent the most probable scenarios of wind constancy, sunshine constancy, and wind directions and speed.

B. Calculate the locations of shadow flicker caused by the proposed project and the expected durations of the flicker at these locations, calculate the total number of hours per year of flicker at all locations.

C. Identify problem areas where shadow flicker will interfere with existing or future residences and roadways and describe proposed mitigation measures, including (but not limited to) a change in siting of the wind energy conversion system, or grading or landscaping mitigation measures.

13. Appearance. The property owner of any wind energy system shall maintain such system in a safe and attractive manner, including replacement of defective parts, painting, cleaning, and other acts that may be required for the maintenance and upkeep of the function and appearance of such a system. The owner shall maintain the grounds upon which the system is located in an orderly manner, such that such site is free of debris, tall grass and weeds, and any structures retain quality in appearance.

156.08 APPLICATION PROCESS. All applicants who wish to locate a wind energy system must submit to the Zoning Commission and the City Council a plan including the following information:

1. Complete property dimensions.
2. Location and full dimension of all buildings existing on the property where the system is located, including exterior dimensions, height of buildings, and all uses on the property.
3. Location and distances of all buildings within 200 feet of the property and uses on property.
4. Location and dimensions of any other natural or manmade features within 200 feet of the property such as trees, ridges, highways, streets, bridges and underpasses.
5. Location of all easements upon the property where the system is to be located.
6. Proposed location of tower, including height, and setbacks from property lines.
7. Drawings, to scale, of the structure, including the tower, base, footings and guy-wires, if any, and electrical components. The drawings and any necessary calculations shall be certified by a licensed engineer as meeting the requirements of the City of Norway building codes.
8. Certification from a licensed engineer or qualified professional that the rotor and over speed controls have been designed for the proposed use on the proposed site.
9. Evidence that the proposed wind energy conversion system model has an operational history of at least one year.
10. Evidence that the applicant has notified the utility that the customer intends to install an interconnected customer owned generator, and that the generator meets the minimum requirements established by the utility and the Iowa Utilities Board. Off grid systems shall be exempt from this requirement.
11. Evidence that the wind energy conversion system does not violate any covenants of record.

12. Evidence from a qualified professional that the site is feasible for a wind energy conversion system, or that covenants, easements and other assurances to document sufficient wind to operate the wind energy conversion system have been obtained.
13. Evidence that the proposed wind energy conversion system will comply with applicable federal aviation regulations, including any necessary approvals from the Federal Aviation Administration.
14. Evidence that the applicant can obtain and maintain adequate liability insurance for the facility.
15. A noise study, if applicable.
16. A shadow flicker model, if applicable.
17. Any other evidence or information as required by the Zoning Commission and City Council.

156.09 ABANDONMENT. Any wind energy system that is not operated for a period of 180 consecutive days shall be considered abandoned and shall constitute a nuisance. Within the next 180 days, after notice from the City, the owner shall reactivate the tower or it shall be dismantled and removed at the owner's expense. Removal of the system includes the entire structure including the foundations, transmission equipment and fencing from the property. If the abandoned wind energy system is not removed in the specified amount of time, the City may remove it and recover its costs from the wind energy conversion system owner or owner of the ground upon which it is located.

156.10 NEW TECHNOLOGIES. Should new technology present itself within the term of any permit or lease that is more effective, efficient, and economical, the permit holder may petition the City to allow the upgrade, provided the upgrade does not alter the conditions set forth in this chapter.

156.11 LIABILITY AND DAMAGES. The owner/operator of a wind energy conversion system must demonstrate adequate liability insurance. Upon the granting of a permit, applicant shall assume full responsibility for any and all damages, claims, expenses, liabilities, judgments and costs of any kind, including reasonable attorney's fees related to or caused by the erection, location, use, or removal of a facility, whether on public or private property, and shall agree to hold the City harmless, indemnify and defend it from all such liabilities incurred or judgments entered against it as a result of the erection, location, use or removal of the facility.

156.12 ENGINEER CERTIFICATION. Applications for wind energy conversion systems shall be accompanied by standard drawings of the wind turbine structure, including the tower, base, and footings. An engineering analysis of the tower showing compliance with the applicable regulations and certified by a licensed professional engineer shall also be submitted. For roof-mounted structures, an engineering analysis of the mounting method showing compliance with all applicable regulations and certified by a licensed professional engineer shall also be submitted.

156.13 UTILITY NOTIFICATION. A wind energy conversion system shall not be installed until evidence has been given that the utility company has been informed of the customer's intent to install an interconnected customer generator.

156.14 INSPECTIONS. At least every 24 months, every tower shall be inspected by a qualified professional who is regularly involved in the maintenance, inspection and/or erection of towers. At a minimum, this inspection shall be conducted in accordance with the tower inspection checklist provided in the Electronics Industries Association (EIA) Standard 222, *Structural Standards for Steel Antenna*

Towers and Antenna Support Structures. A copy of the inspection record shall be provided to the City of Norway.