CHAPTER 167

WIND ENERGY CONVERSION SYSTEMS

167.01 Purpose
167.02 Definitions
167.03 Commercial Wind Energy Conversion System
167.04 Special Accessory Use
167.05 Public Notification
167.06 Regulations
167.07 Minimum System Design Standards
167.08 Application Process
167.09 Collection of Costs

167.01 PURPOSE. The purpose of this chapter is to allow safe, effective, and efficient use of small wind energy conversion systems; identify locations in areas of the City which may be least adversely impacted by the visual, aesthetic, and safety implications of their location.

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

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. "Commercial wind energy conversion system" means a wind energy conversion system which is intended to produce electricity for sale to a rated regulated or nonregulated utility or for use off site.

3. "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.

4. "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.

5. "Small wind energy conversion system" means 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 subordinated to a permitted use on the same parcel and has a rated capacity of up to 100 kilowatts. No roof mounted wind energy conversion system shall be allowed.

167.03 COMMERCIAL WIND ENERGY CONVERSION SYSTEM. It is unlawful to erect or maintain a commercial wind energy conversion system within the City of Guthrie Center.

167.04 SPECIAL ACCESSORY USE.

1. Special Use. A small wind energy conversion system may be allowed only as an accessory use to a permitted principal use and shall require approval of a special use permit from the Board of Adjustment prior to construction, installation, alteration, or location of such structure.

2. Permit Required. It is unlawful to construct, erect, install, or alter or located any small wind energy conversion system within the City, unless a special use permit has been obtained from the Board of Adjustment. The permit may be revoked at any time the approved system does not comply with the regulations, and rules established

herein, and any additional conditions imposed by the Board. The owner of the system shall also obtain all other permits or licenses required by federal, State, and local agencies prior to construction of the system.

167.05 PUBLIC NOTIFICATION. Following receipt of the application for special use permit, the Board of Adjustment shall meet. 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 meeting at which the application is first considered. The notice shall contain the date, time and location of the meeting.

167.06 REGULATIONS.

1. Minimum Lot Size. No small wind energy conversion system shall be constructed on a lot smaller than three acres.

2. Minimum Setback Requirements. All small wind energy conversion systems shall have a setback of 110 percent of the total system height from any property line.

3. Maximum Height. The maximum tower height for a small wind energy conversion system shall be 60 feet.

4. Number of Systems Allowed. No more than one small wind energy conversion system may be allowed on any parcel.

5. Location. A wind energy conversion system shall not be located in any required setback.

A. A wind energy conversion system shall be located entirely in the rear of the property.

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.

E. All wind energy conversion systems shall be located a minimum of 1,000 feet from the nearest inhabited residential structure, school, hospital, or place of worship not on property owned or controlled by the owner/operator of the wind energy system. This setback can be reduced at the discretion of the Board of Adjustment based upon the shadow flicker model provided.

F. All wind energy conversion systems shall be located a minimum of 1,000 feet from the nearest wind energy conversion system located on another parcel.

G. No roof mounted small wind energy conversion system shall be allowed.

167.07 MINIMUM SYSTEM DESIGN STANDARDS. The following standards are required of all small 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 Board of Adjustment. 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 to call in case of emergency. Such sign shall be directly visible from any external fencing and/or landscaping.

4. Brand names or advertising associated with any installation shall not be visible from any public right-of-way.

5. Clearance of Blade Above Ground. No portion of the wind energy conversion system shall extend within 20 feet of the ground. No blades may extend over parking areas, driveways, or sidewalks.

6. Installation. Installation must be done by a qualified professional and according to manufacturer's recommendations.

7. Noise. A noise study must demonstrate that the wind energy conversion system shall not exceed 65 decibels (dBA) within 100 feet of the wind tower, except during short-term events such as severe wind storms or utility outages.

8. Use of Electricity Generated. A wind energy conversion system shall be used exclusively to supply electrical power for onsite consumption by the principal structure only. When a parcel on which a wind energy conversion system is installed also receives electrical power supplied by a utility company, excess electrical power generated by the wind energy conversion 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.

9. Automatic Overspeed Controls. All wind energy conversion systems shall be equipped with manual and automatic overspeed controls to limit the blade rotation speed to within the design limits of the wind energy conversion system.

10. 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.

11. 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.

12. Wind Access Easements. The enactment of this section does not constitute the granting of an easement by the City. The owner 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.

13. Shadow Flicker. A shadow flicker model must demonstrate 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 residentially 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.

A. Map and describe within a 1,000-foot radius of the proposed 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, a change in the operation of the wind energy conversion system, or grading or landscaping mitigation measures.

14. Appearance. The owner of any wind energy conversion 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 ground upon which the system is located in an orderly manner, such that it is free of debris, tall grass and weeds, and any structures remain quality in appearance.

15. Insurance. The owner of a wind energy conversion system shall maintain $1,000,000.00 liability insurance as a condition of obtaining a permit and shall file a copy of said insurance policy with the City. Upon granting of a permit, the owner 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, and shall agree to hold the City harmless and 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.

16. Removal. Any wind energy conversion system that remains non-functional or inoperative for a continuous period of 180 consecutive days, shall be considered abandoned and shall constitute a public 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 foundations, transmission equipment and fencing from the property.

A. Non-function or lack of operation may be proven by reports from the interconnected utility. The owner and successors shall make available to the City all reports to and from the users of energy from the wind energy system if requested.

B. If removal of tower and appurtenant facilities is required, the City Council shall notify the owner. If the City removes a tower and appurtenant facilities, it may sell the salvage to defray the cost of removal. Further, the City may collect any remaining costs of removal from the owner of the wind energy conversion system or owner of the ground upon which it is located. The City Clerk shall send a statement of the total expense incurred to the property owner who has failed to abide by the notice. If the amount shown by the statement has not been paid within one month, the Clerk shall certify the costs to the County Treasurer and such costs shall then be collected with, and in the same manner as general property taxes.

C. The Board of Adjustment can revoke a wind energy conversion system permit at any time if the requirements set forth in this chapter and/or any conditions imposed by the Board are not met.

17. Right of Entrance. By the acceptance of a permit, the owner grants permission to the City, to enter on the property to remove the tower and all fixtures pursuant to the terms of the permit and to assure compliance with the conditions set forth in the permit.

18. 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.

19. Engineer Certification. Application 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 application regulations and certified by a license professional engineer shall also be submitted.

20. 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-owned generator.

21. 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 wind energy conversion systems. At a minimum, this inspection shall be conducted in accordance with the 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.

22. Ice Shedding. Wind energy conversion system owners shall ensure that ice from the rotor blades does not impact any off-site properties.

23. Climbing Apparatus. All climbing apparatuses must be located 12 feet from the ground and the tower must be designed to prevent climbing within the first 12 feet.

24. Fencing. All wind energy conversion systems and associate guy wire anchor points shall be enclosed by a six-foot high opaque fence with smooth side to the outside, no more than one-inch gaps and a securely locked gate to limit uncontrolled access and reduce safety hazards.

167.08 APPLICATION PROCESS. All applicants who wish to locate a wind energy conversion system must submit to the City's Board of Adjustment, on the forms provided by the City, a plan including the following information:

1. Complete property dimensions.

2. Location and full dimensions of all buildings existing on the property where the system is to be located, including exterior dimensions, height of buildings, and all uses on the property.

3. Location and dimensions of any natural or manmade features within 200 feet of the property such as trees, ridges, highways, streets, bridges and underpasses.

4. Location of all easements upon the property where the system is to be located.

5. Proposed location of tower, including height and setbacks from property lines.

6. Drawings, to scale, of the structure, including the tower, base, booting, and guy-wires, if any, and electrical components. The drawings and any necessary calculations shall be certified by a license engineer.

7. 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.

8. Evidence that the proposed wind energy conversion system model has an operational history of at least one year.

9. 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.

10. Evidence that the wind energy conversion system does not violate any covenants of record.

11. Evidence from a qualified professional that the site is feasible for a wind energy conversion system, or that covenants, easements and other assurance to document sufficient wind to operate the wind energy conversion system have been obtained.

12. Evidence that the proposed wind energy conversion system will comply with applicable federal aviation regulations, including any necessary approvals from the Federal Aviation Administration (FAA).

13. Evidence that the applicant can obtain and maintain adequate liability insurance for the facility.

14. A noise study.

15. A shadow flicker model.

16. Any other evidence or information as required by the Board of Adjustment.

167.09 COLLECTION OF COSTS.

1. A fee of $100.00 shall be submitted with the application.

2. Any additional costs incurred by the City regarding review of plan submitted with a permit application will be paid in full by the applicant.