Chapter 33
WIND ENERGY CONVERSION SYSTEMS

12-33-1: INTENT:

In order to balance the need for clean, renewable energy resources and the necessity to protect the public health, safety and welfare of the community, the city finds that these regulations are necessary in order to ensure that wind energy conversion systems are appropriately designed, sited and installed. (Ord. 06-003, 2-21-2006)

12-33-2: DEFINITIONS:

COMMERCIAL WIND ENERGY CONVERSION SYSTEM: A wind energy conversion system which is intended to produce electricity for sale to a rate regulated or nonregulated utility or for use off site.

DISPERSED WIND ENERGY SYSTEM: A wind energy conversion system which has a rated capacity of one hundred (100) kilowatts or more and which is incidental and subordinate to a permitted use on the same parcel and which is intended to produce electricity primarily for use on site. Such system may be connected to the electrical grid 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 on site use may be used by the utility company in accordance with section 199, chapter 15.11(5) of the Iowa administrative code.

HEIGHT, TOTAL SYSTEM: The height above grade of the system, including the generating unit and the highest vertical extension of any blades or rotors.

HEIGHT, TOWER: The height above grade of the fixed portion of the tower, excluding the generation unit and attached blades or rotors.

SMALL WIND ENERGY SYSTEM (SWES): A wind energy conversion system 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 small wind energy systemonly if it supplies electrical power solely for on site 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 on site use may be used by the utility company in accordance with section 199, chapter 15.11(5) of the Iowa administrative code.

TOWER: The vertical component of a wind energy conversion system that elevates the wind turbine generator and attached blades above the ground.

WIND ENERGY CONVERSION SYSTEM (WECS): An aggregation of parts including the base, tower, generator, rotor, blades, supports, guywires 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.

WIND TURBINE GENERATOR: The component of a wind energy conversion system that transforms mechanical energy from the wind into electrical energy. (Ord. 06-003, 2-21-2006)

12-33-3: COMMERCIAL WIND ENERGY CONVERSION SYSTEMS ILLEGAL:

It shall be unlawful to erect or maintain a commercial wind energy conversion system within the city of Mason City. (Ord. 06-003, 2-21-2006)

12-33-4: GENERAL REGULATIONS:

A. Conditional Use: A wind energy conversion system shall be allowed only as a conditional accessory use to a permitted principal or approved conditional principal use.

B. Permit Required: It shall be unlawful to construct, erect, install, alter or locate any wind energy conversion system within the city of Mason City, unless a conditional use permit has been obtained from the zoning board of adjustment. The conditional use permit may be revoked any time the approved system does not comply with the rules set forth in this chapter and the conditions imposed by the zoning board of adjustment. The owner/operator of the wind energy conversion system must also obtain any other permits required by other federal, state and local agencies/departments prior to erecting the system.

C. Number Of Systems Per Zoning Lot: No more than five (5) dispersed wind energy systems may be placed on any zoning lot, provided the minimum lot size stipulated in this title is met. No more than one small wind energy system may be placed on any zoning lot. (Ord. 06-003, 2-21-2006)

12-33-5: BULK REGULATIONS:

A. Minimum Lot Size: No dispersed wind energy system shall be erected on a zoning lot smaller than ten (10) acres. If four (4) dispersed wind energy systems are placed on the lot, the zoning lot shall measure at least thirteen (13) acres. If five (5) dispersed wind energy systems are placed on the lot, the zoning lot must measure at least sixteen (16) acres. No minimum lot size shall apply to small wind energy conversion systems.

B. Setbacks: The minimum distance between a wind energy conversion system and any property line shall be a distance that is equivalent to one hundred ten percent (110%) of the total

system height. The zoning board of adjustment may authorize a lesser setback distance 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.

C. Maximum Tower Height: Tower height shall be measured from the ground to the top of the tower, excluding the wind turbine generator and blades. The maximum tower height for dispersed wind energy conversion systems shall be three hundred fifty feet (350'). The maximum tower height for small wind energy conversion systems shall be one hundred feet (100'). (Ord. 06-003, 2-21-2006)

12-33-6: LOCATION:

A. 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.

B. A wind energy conversion system shall be located entirely in the rear yard.

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

D. A wind energy conversion system shall be located in compliance with the guidelines of the federal aviation regulations with regard to airport approach and clearance around VOR (VHF omnirange beacon) and DVOR (Doppler VHF omnirange beacon) stations.

E. A dispersed wind energy system shall be located a minimum of one thousand feet (1,000') from the nearest inhabited residential structure, school, hospital or place of worship not on property owned or controlled by the owner/operator of the dispersed wind energy system. This setback can be reduced by up to fifty percent (50%), at the discretion of the zoning board of adjustment upon a positive determination that:

1. A noise study, prepared by a qualified professional, demonstrates that except for intermittent episodes, the dispersed wind energy system shall not emit noise in excess of the limits established in title 8, chapter 6 of this code. The noise studyshall include:

a. A description and map of the project's noise producing features, including the range of noise levels expected, and the basis of the expectation.

b. A description and map of the noise sensitive environment, including any sensitive noise receptors, e.g., residences, hospitals, libraries, schools, places of worship, parks, areas with outdoor workers and other facilities where quiet is important or where noise could be a nuisance within one thousand feet (1,000').

c. A survey and report prepared by a qualified engineer that analyzes the preexisting ambient noise (including seasonal variation) and the affected sensitive receptors located within one thousand feet (1,000').

d. A description and map of the cumulative noise impacts of any problem areas identified.

e. A description of the project's proposed noise control features and specific measures proposed to mitigate noise impacts for sensitive receptors as identified above to a level of insignificance.

2. 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 residentially zoned parcel may be acceptable if the flicker does not exceed thirty (30) hours per year; and the flicker will fall more than one hundred feet (100') from an existing residence; or the traffic volumes are less than five hundred (500) vehicles on the roadway. The shadow flicker model shall:

a. Map and describe within a one thousand foot (1,000') 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, a change in the operation of the wind energy conversion system, or grading or landscaping mitigation measures.

d. A dispersed wind energy system shall be located at least sevenhundred fifty feet (750') from any public right of way. (Ord. 06-003, 2-21-2006)

12-33-7: DESIGN AND TECHNICAL STANDARDS:

The following standards are required of all small wind energy systems and dispersed wind energy systems and shall be deemed to be conditions of approval of every small wind energy system:

A. Color: The wind energy conversion system shall be white or light grey in color. Other neutral colors may be allowed at the discretion of the zoning board of adjustment. The surface shall be nonreflective.

B. Lighting: No lights shall be installed on the tower, unless required to meet FAA regulations.

C. Signs: One sign, limited to four (4) square feet, shall be posted at 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.

D. Climbing Apparatus: All climbing apparatus shall be located at least twelve feet (12') above the ground, and the tower must be designed to prevent climbing within the first twelve feet (12').

E. Fence: To limit access to the tower, an opaque fence six feet (6') high with smooth side to the outside, no more than one inch (1") gaps and a locking portal shall be placed around the small wind energy system, unless the system is mounted on a rooftop.

F. Maintenance: Facilities shall be well maintained in an operational condition that poses no potential safety hazard.

G. Displacement Of Parking Prohibited: The location of the wind energy conversion system shall not result in the net displacement of required parking as specified in chapter 26 of this title.

H. Restriction On Use Of Electricity Generated: A wind energy conversion system shall be used exclusively to supply electrical power for on site consumption, except that 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 on site use may be used by the utility company in accordance with section 199, chapter 15.11(5) of the Iowa administrative code.

I. Clearance Of Blade Aboveground: No portion of the small wind energy system blade shall extend within twenty feet (20') of the ground. No portion of a dispersed wind energy system blade shall extend within fifty feet (50') of the ground. No blades may extend over parking areas, driveways or sidewalks.

J. 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.

K. Noise: Except during short term events including utility outages and severe wind events, a wind energy conversion system shall be designed, installed and operated so that the noise generated does not exceed the maximum noise levels established in title 8, chapter 6 of this code.

L. 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. If it is determined that the wind energy conversion system is causing electromagnetic interference, the operator shall take the necessary corrective action to eliminate this interference including relocation or removal of the facilities, subject to the approval of the zoning board of adjustment. The zoning board of adjustment may revoke a conditional use permit granting a wind energy conversion system if electromagnetic interference from the wind energy conversion system becomes evident.

M. 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.

N. Wind Access Easements: The enactment of this chapter 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.

O. Insurance: The owner/operator of a wind energy conversion system must demonstrate adequate liability insurance.

P. Complaint Resolution: The owner/operator of the wind energy conversion system shall develop a process to resolve complaints from nearby residents. The process shall use an independent mediator or arbitrator and include a time limit for acting on a complaint. The applicant shall make every reasonable effort to resolve any complaint.

Q. Removal: If the wind energy conversion system remains nonfunctional or inoperative for a continuous period of one year, the system shall be deemed to be abandoned and shall constitute apublic nuisance. The owner/operator shall remove the abandoned system at their expense. Removal of the system includes the entire structure including foundations, transmission equipment and fencing from the property. Nonfunction or lack of operation may be proven by reports from the interconnected utility. The owner/operator and successors shall make available to the zoning administrator all reports to and from the purchaser of energy from the wind energy conversion system if requested. If removal of towers and appurtenant facilities is required, the zoning administrator shall notify the owner/operator. If the city removes a tower and appurtenant facilities, it may sell the salvage to defray the cost of removal.

R. Right Of Entrance: By the acceptance of a conditional use permit, the owner/operator grants permission to the city of Mason City to enter the property to remove the wind energy conversion system pursuant to the terms of the conditional use permit and to assure compliance with the other conditions set forth in the permit. (Ord. 06-003, 2-21-2006)

12-33-8: APPLICATION AND APPROVAL REQUIREMENTS:

Approval or denial of an application for a conditional use permit to allow construction of a wind energy conversion system shall be made by the zoning board of adjustment as outlined in chapter 31 of this title.

A. Application: An application for a wind energy conversion system shall be made on the forms provided by the zoning administrator and shall be accompanied by the following information:

1. A site plan, preferably based on a USGS one to twenty four thousand (1:24,000) scale topographic map, showing the following:

a. Complete property dimensions.

b. Location and full dimensions of all buildings existing on property including exterior dimensions, height of buildings and all uses on property. Location and full dimensions of all buildings within two hundred feet (200') of the property including exterior dimensions, height and uses on property.

c. Location and dimensions of any other natural or manmade features within two hundred feet (200') of the property such as trees, ridges, highways, streets, bridges and underpasses.

d. Proposed location of tower including height and setbacks.

2. Drawings, to scale, of the structure, including the tower, base, footings and guywires, if any. The drawings and any necessary calculations shall be certified by a licensed engineer as meeting the requirements of the Mason City building code.

3. Line drawing of the electrical components in sufficient detailto allow for a determination that the manner of installation will meet the Mason City electrical code.

4. Certification from a licensed engineer or qualified person that the rotor and overspeed control have been designed for the proposed use on the proposed site.

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

6. 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.

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

8. Evidence from a qualified individual 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.

9. Evidence that the proposed wind energy conversion system will comply with applicable federal aviation regulations, including any necessary approvals from the federal aviation administration.

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

11. A noise study, if applicable.

12. A shadow flicker model, if applicable.

13. For dispersed wind energy systems, a site specific electromagnetic compatibility analysis assessing the impact to existing microwave bands with frequencies between nine hundred megahertz (900 MHz) and forty gigahertz (40 GHz). The report shall include the following elements:

a. An inventory of existing microwave links operating in the nine hundred megahertz (900 MHz) to forty gigahertz (40 GHz) range within ten (10) miles of the dispersed wind energy system.

b. An obstruction analysis of these links including the Fresnal zone of the microwave path.

c. Any recommended mitigation actions necessary to ensure that the dispersed wind energy system will not obstruct the first Fresnal zone.

d. An inventory of licensed television stations in a one hundred fifty (150) mile radius of the proposed dispersed wind energy system that are providing programming services to Mason City.

e. A baseline measurement of signal strength and picture quality.

f. Recommended means of mitigation, avoidance or remedy to minimize or eliminate signal degradation or interference.

14. A visual simulation that includes views of the wind energy conversion system from a maximum distance of one thousand feet (1,000') from at least five (5) directions and a simulation of the views of the wind energy conversion system from all public rights of way within seven hundred fifty feet (750').

15. Any other evidence or information as required by the zoning administrator or zoning board of adjustment.

16. An application fee of sixty five dollars ($65.00) for a small wind energy system, or one hundred fifty dollars ($150.00) for a dispersed wind energy system, plus fifteen dollars ($15.00) for each additional public notice sign.

B. Public Notice: The zoning administrator shall cause notice to be published in the time and manner set forth in subsection 12-31-1B of this title. When application is made for approval of a small wind energy system, notices shall be mailed to the owners of all properties within two hundred feet (200') of the zoning lot on which the system would be constructed. When application is made for approval of a dispersed wind energy system, notices shall be mailed to the owners of all properties within one thousand five hundred feet (1,500') of the zoning lot on which the system would be constructed.

C. Public Notice Signs: One public notice sign, provided by the zoning administrator, shall be placed within fifteen feet (15') of the right of way along each street abutting the zoning lot on which the wind energy conversion system would be placed. On zoning lots with more than three hundred feet (300') of frontage on one or more streets, multiple public notice signs shall be placed at three hundred foot (300') intervals along the right of way. (Ord. 06-003, 2-21-2006)