

SMALL WIND ENERGY CONVERSION SYSTEMS MODEL ORDINANCE

SECTION I - INTENT

The intent of this ordinance is 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/County] finds these regulations are necessary to ensure that Small Wind Energy Conversion Systems are appropriately designed, sited and installed.

SECTION II - DEFINITIONS

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

LOT (or Parcel): Any legally established lot or parcel which contains or could contain a permitted or permitted conditional principal use as provided by [Chapter/Subchapter/Article] ___ of this Code.

OFF GRID: An electrical system that is not connected to utility distribution and transmission facilities or to any building or structure that is connected.

SHADOW FLICKER: Changing light intensity caused by sunlight through the moving blades of a wind energy conversion system.

SMALL WIND ENERGY CONVERSION SYSTEM (SWECS): A wind energy conversion system which has a nameplate rated capacity of up to fifteen (15) kilowatts for residential uses and districts and up to one hundred (100) kilowatts for commercial, and industrial districts and which is incidental and subordinate to a principal use on the same parcel. A system is considered a SWECS only if it supplies electrical power solely for use by the owner on the site, 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 by the owner 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, as amended from time to time.

SMALL WIND ENERGY CONVERSION SYSTEM, FREE STANDING: A SWECS which is elevated by means of a monopole tower only and is not located on another supporting structure except that the tower shall have an appropriately constructed concrete base. Guyed, lattice, or other non-monopole style towers shall not meet this definition.

SMALL WIND ENERGY CONVERSION SYSTEM, HORIZONTAL AXIS: A small wind energy conversion system that has blades which rotate through a horizontal plane.

SMALL WIND ENERGY CONVERSION SYSTEM, BUILDING MOUNTED: A SWECS which is securely fastened to any portion of a principal building in order to achieve desired elevation, whether attached directly to the principal building or attached to a tower structure which is in turn fastened to the principal building.

SMALL WIND ENERGY CONVERSION SYSTEM, VERTICAL AXIS: A small wind energy conversion system that has blades which rotate through a vertical plane.

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 foundation, 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.

WIND TURBINE GENERATOR: The component of a wind energy conversion system that transforms mechanical energy from the wind into electrical energy.

SECTION III - GENERAL REGULATIONS

1. [*Conditional/Special Use*]: A Small Wind Energy Conversion System (SWECS) shall be allowed only as a [*Conditional/Special Use*] accessory use to a permitted principal use or approved permitted [*Conditional/Special Use*] principal use.
2. Zoning: SWECS may be allowed in all zoning districts subject to the provisions contained herein and elsewhere within [*City/County*] code.
3. Permit Required:
 - a. It shall be unlawful to construct, erect, install, alter or locate any SWECS within the [*City/County*] of _____, unless a permitted [*Conditional/Special Use*] use permit has been obtained from the [*Board of Adjustment*]. The permitted [*Conditional/Special Use*] use permit may be revoked by resolution of the [*Board of Adjustment*] any time the approved system does not comply with the rules set forth in this chapter and the conditions imposed by the [*Board of Adjustment*]. The owner/operator of the SWECS must also obtain any other permits required by other federal, state and local agencies/departments prior to constructing the system.
4. Number Of Systems Per Zoning Lot:

- a. Residential Use: No more than one (1) freestanding SWECS may be placed on any parcel or lot zoned for residential use. Building mounted SWECS shall be prohibited on any parcel or lot containing a one (1) or two (2) family use.
 - b. Commercial, Industrial, and Institutional Use: No more than one (1) freestanding SWECS may be placed any parcel or lot with a commercial, industrial, or institutional use that is taller than the tallest existing principal building located on said parcel or lot. Additional freestanding SWECS which conform to setback requirements contained herein and which are no taller than the tallest existing principal building located on said parcel or lot may be allowed. Additional building mounted SWECS may be allowed within the parameters herein below. However, in no case shall the generating capacity of aggregated SWECS exceed anticipated energy needs for on site consumption.
 - c. Mixed Use: Any building containing both residential and commercial uses or described as a “Mixed Use” building, shall be considered to be a commercial use for the purposes of this [*Chapter/Subchapter/Article*].
5. Tower: Only monopole towers shall be permitted for freestanding SWECS. Lattice, guyed or towers of any other type shall not be considered to be in compliance with this [*Chapter/Subchapter/Article*].
 6. Color: Freestanding SWECS shall be a neutral color such as white, sky blue or light gray. Building mounted SWECS shall match the color of the building on which it is mounted. Other colors may be allowed at the discretion of the [*Board of Adjustment*]. The surface shall be non-reflective.
 7. Lighting: No lights shall be installed on the tower, unless required to meet FAA regulations.
 8. Signage: No signage or advertising of any kind shall be permitted on the tower or any associated structures.
 9. Climbing Apparatus: The tower must be designed to prevent climbing within the first ten feet (10').
 10. Maintenance: Facilities shall be well maintained in accordance with manufacturer’s specifications and shall remain in an operational condition that poses no potential safety hazard nor is in violation of any provisions contained within this [*Chapter/Subchapter/Article*] or elsewhere within the [*City/County*] code.
 11. Displacement Of Parking Prohibited: The location of the SWECS shall not result in the net loss of required parking as specified elsewhere in the [*City/County*] zoning code.

12. Utility Notification: The [City/County] shall notify the utility of receipt of an application to install an interconnected customer-owned generator. Off-grid systems shall be exempt from this notification requirement.
13. Interconnection: The SWECS, if not off-grid, shall meet the requirements for interconnection and operation as set forth by the utility and the Iowa utilities board. No permit of any kind shall be issued until the [City/County] has been provided with a copy of an executed interconnection agreement. Off-grid systems shall be exempt from this requirement.
14. Restriction On Use Of Electricity Generated: A SWECS shall be used exclusively to supply electrical power to the owner for on site consumption, except that excess electrical power generated by the SWECS and not presently needed for use by the owner may be used by the utility company in accordance with Section 199, Chapter 15.11(5) of the Iowa Administrative Code, as may be subsequently amended.
15. Noise: A SWECS shall be designed, installed and operated so that the noise generated does not exceed the maximum noise levels established elsewhere in the [City/County] code.
16. Shadow Flicker: No SWECS shall be installed and operated so to cause a shadow flicker to fall on or in any existing residential structure.
17. Safety Controls: Each SWECS shall be equipped with both an automatic and manual braking, governing, or feathering system to prevent uncontrolled rotation, over-speeding, and excessive pressure on the tower structure, rotor blades, or turbine components. Said automatic braking system shall also be capable of stopping turbine rotation in the event of a power outage so as to prevent back feeding of the grid.
18. Shut Off: A clearly marked and easily accessible shut off for the wind turbine will be required as determined by the [Fire Marshal/Building Official/Community Development Director].
19. Electromagnetic Interference: All SWECS shall be designed and constructed so as not to cause radio and television interference. If it is determined that the SWECS is causing electromagnetic interference, the owner/operator shall take the necessary corrective action to eliminate this interference including relocation or removal of the facilities, subject to the approval of the appropriate [City/County] authority. A permit granting a SWECS may be revoked if electromagnetic interference from the SWECS becomes evident.
20. Wind Access Easements: The enactment of this chapter does not constitute the granting of an easement by the [City/County]. The SWECS owner/operator shall have the sole responsibility to acquire any covenants, easements, or similar documentation to assure

and/or protect access to sufficient wind as may or may not be necessary to operate the SWECS.

21. Insurance: The owner/operator of a SWECS must demonstrate and maintain liability insurance of not less than \$_____ coverage.
22. Engineer Certification: Applications for any SWECS shall be accompanied by standard drawings of the wind turbine structure, including the tower, base, and footings. An engineering analysis of all components of the SWECS showing compliance with the applicable regulations and certified by an Iowa licensed professional engineer shall also be submitted.
23. Installation: Installation must be done according to manufacturer's recommendations. All wiring and electrical work must be completed according to the applicable building and electric codes. All electrical components must meet code recognized test standards.
24. Removal: If the SWECS remains nonfunctional or inoperative for a continuous period of six (6) months, the system shall be deemed to be abandoned. The SWECS owner/operator shall remove the abandoned system at their expense. Removal of the system includes the entire structure, transmission equipment and fencing from the property excluding foundations. Non-function or lack of operation may be proven by reports from the interconnected utility. For off-grid systems the [City/County] shall have the right to enter the property at its sole discretion to determine if the off-grid system is generating power. Such generation may be proven by use of an amp meter. The SWECS owner/operator and successors shall make available to the Director of _____ or their designee all reports to and from the purchaser of energy from the SWECS if requested. If removal of towers and appurtenant facilities is required, the Director of _____ or designee shall notify the SWECS owner/operator. Removal shall be completed within six (6) months of written notice to remove being provided to the owner/operator by the [City/County] of _____.
25. Right Of Entrance: As a condition of approval of a [Conditional/Special Use] use permit an applicant seeking to install SWECS shall be required to sign a petition and waiver agreement which shall be recorded and run with the land granting permission to the [City/County] of _____ to enter the property to remove the SWECS pursuant to the terms of approval and to assure compliance with the other conditions set forth in the permit. Removal shall be at the expense of the owner/operator and the cost may be assessed against the property.
26. Feasibility Study: It is highly recommended that a feasibility study be made of any site prior to installing a wind turbine. The feasibility study should include measuring actual wind speeds at the proposed turbine site for at least 3 months.

SECTION IV - BULK REGULATIONS

1. Setbacks:
 - a. The minimum distance between any freestanding SWECS and any property line shall be a distance that is equivalent to one hundred fifty percent (150%) of the total system height. The setback shall be measured from the property line to the point of the SWECS closest to the property line.
 - b. The required setback for any building mounted SWECS shall be equal to the required setback of the principal building to which the SWECS is to be attached at such time that the application to install a building mounted SWECS is received by the [City/County].
2. Maximum Height: Height shall be measured from the ground to the top of the tower, including the wind turbine generator and blades.
 - a. For lots of more than one (1) and fewer than three (3) acres, the maximum height shall be 65 feet.
 - b. For lots of three (3) to seven (7) acres, the maximum height shall be 80 feet.
 - c. For lots of more than seven (7) acres the maximum height shall be 100 feet.
 - d. Building mounted SWECS may be a maximum of 10 feet higher than the point of attachment to the building on which they are attached.
3. Minimum Lot Size:
 - a. The minimum lot size for a freestanding SWECS shall be one (1) acre.
 - b. The minimum lot size for a building mounted SWECS shall be one (1) acre for any building mounted SWECS to be mounted on a building of less than five (5) stories in height.
 - c. There shall be no minimum lot size for building mounted SWECS to be mounted on buildings of five (5) or more stories in height.
4. Clearance Of Blade: No portion of a horizontal axis SWECS blade shall extend within 30 feet of the ground. No portion of a vertical axis SWECS shall extend within 10 feet of the ground. No blades may extend over parking areas, driveways or sidewalks. No blade may extend within 20 feet of the nearest tree, structure or above ground utility facilities.
5. Location:

- a. No part of a SWECS shall be located within or over drainage, utility or other established easements.
- b. A freestanding SWECS shall be located entirely in the rear yard.
- c. A SWECS shall be located in compliance with the guidelines of applicable Federal Aviation Administration (FAA) regulations as amended from time to time.
- d. No SWECS shall be constructed so that any part thereof can extend 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 (5) feet.
- e. Building mounted SWECS shall be prohibited unless the owner has obtained a written analysis from an Iowa licensed structural engineer determining that installation of a SWECS will not cause damage to the structure and that the SWECS can be securely fastened so as to not pose a hazard caused by detaching from the structure.

SECTION V - APPLICATION REQUIRED

1. Application for SWECS shall be made on forms provided by the [City/County] of _____ . No action may be taken regarding requests for SWECS until completed applications have been filed and fees paid.