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Section 23 - Wind Energy Conversion Systems Regulations

23.1 PURPOSE

The current growth in the ability to harvest and the need for locally-generated energies necessitate regulations to manage appropriate siting, height, and design of these systems. The purpose of this Section of the land use regulations is to establish guidelines for the siting and sizing of wind energy conversion systems (WECS). The goals of this ordinance are:

1. To encourage the location of WECS in non-residential areas;
2. To make it as simple and efficient as possible for the installation of WECS without damaging surrounding land uses and diminishing the local quality of life;
3. To encourage new tax revenue in the county.

23.2 DEFINITIONS

The following definitions apply specifically to this Section of the zoning and land use regulations. Terms commonly used in other parts of the ordinance and defined in other sections are defined the same way in this Section.

WECS: Wind Energy Conversion System (WECS). An electrical generating facility comprised of one or more wind turbines and accessory facilities, including but not limited to: power lines, transformers, substations and meteorological towers that operate by converting the kinetic energy of wind into electrical energy. The energy may be used on-site or distributed into the electrical grid.

Aggregated Project. Aggregated projects are those which are developed and operated in a coordinated fashion, but which have multiple entities separately owning one or more of the individual WECS within the larger project. Associated infrastructure such as power lines and transformers that service the facility may be owned by a separate entity but are also included as part of the aggregated project.

Commercial WECS. A WECS of equal to or greater than one hundred (100) kilowatts in total nameplate generating capacity.

Non-Commercial WECS. A WECS of less than one hundred (100) kilowatts in total nameplate generating capacity.

Fall Zone. The area, defined as the furthest distance from the tower base, in which a guyed tower will collapse in the event of a structural failure. This area is may be less than the total height of the structure.

Feeder Line. Any power line that carries electrical power from one or more wind turbines or individual transformers associated with individual wind turbines to the point of interconnection with the electric power grid, in the case of interconnection with the high voltage transmission systems the point of interconnection shall be the substation serving the WECS.

Meteorological Tower. For the purposes of this Wind Energy Conversation System Ordinance, meteorological towers are those towers which are erected primarily to measure wind speed and directions plus other data relevant to site WECS. Meteorological towers do not include towers and equipment used

by airports, the Iowa Department of Transportation, or other similar applications to monitor weather conditions.

Micro-WECS: A WECS of one (1) kilowatt nameplate generating capacity or less and utilizing supporting towers of forty (40) feet or less.

Nacelle: Contains the key components of the wind turbine, including the gearbox, yaw system, and electrical generator.

Property Line. The boundary line of the area over which the entity applying for a WECS permit has legal control for the purposes of installation of a WECS. This control may be attained through fee title ownership, easement, or other appropriate contractual relationship between the project developer and landowner.

Rotor Diameter. The diameter of the circle described by the moving rotor blades.

Substations. Any electrical facility designed to convert electricity produced by wind turbines to a voltage greater than thirty-five thousand (35,000) volts (35 kilovolts) for interconnection with high voltage transmission lines shall be located outside of the road right of way.

Total Height. The highest point, above ground level, reached by a rotor tip or any other part of the WECS.

Tower. Towers include vertical structures that support the electrical generator, rotor blades, or meteorological equipment.

Tower Height. The total height of the WECS exclusive of the rotor blades.

Transmission Line. Those electrical power lines that carry voltages of at least sixty-nine thousand (69,000) volts (69 kilovolts) and are primarily used to carry electric energy over medium to long distances rather than directly interconnecting and supplying electric energy to retail customers.

Public Conservation Lands. Land owned in fee title by State or Federal agencies and managed specifically for conservation purposes, including but not limited to State Wildlife Management Areas, State Parks, State Scientific and Natural Areas, Federal Wildlife Refuges and Waterfowl Production Areas. For the purposes of this section public conservation lands will also include lands owned in fee title by non-profit conservation organizations. Public conservation lands do not include private lands upon which conservation easements have been sold to public agencies or non-profit conservation organizations.

Wind Turbine: A wind turbine is any piece of electrical generating equipment that converts the kinetic energy of blowing wind into electrical energy through the use of airfoils or similar devices to capture the wind.

23.3 PERMITTING PROCESS FOR A WECS PROJECT

1. The application for all WECS shall include the following information:
   a. The name(s) and address of the project applicant.
   b. The name of the project owner.
   c. The legal description of the site where development is planned.
   d. A preliminary description of the project including: Number, type, name plate generating capacity, tower height, rotor diameter, and total height of all wind turbines and means of interconnecting with the electrical grid.

e. Preliminary site layout, including the location of property lines, wind turbines, electrical wires, interconnection points with the electrical grid, and all related accessory structures. The site layout shall include distances and be drawn to scale.
f. Documentation of land ownership, land ownership agreements, or legal control of the property.

2. The building permit (after zoning approval) for the Commercial WECS shall also include:
   a. Final site plan.
   b. Final legal description.
   c. Engineer's certification.
   d. The latitude and longitude of individual wind turbines.
   e. A USGS topographical map, or map with similar data, of the property and surrounding area, including any other WECS within ten (10) rotor diameters of the Proposed WECS.
   f. Location of wetlands, scenic, and natural areas [including bluffs] within 2 miles of the proposed WECS.
   g. An acoustical analysis.
   h. Proof of engagement with the Department of Defense Military Aviation and Installation Assurance Siting Clearance House. (https://www.dodclearinghouse.osd.mil/project-review/-informal-review/)
   i. Federal Aviation Administration (FAA) Permit Application.
   j. Location of all known Communications Towers within two (2) miles of the proposed WECS.
   k. Decommissioning Plan.
   l. Description of potential impacts on nearby WECS and wind resources on adjacent properties.
3. Aggregated Project Procedures: Aggregated Projects may jointly submit a single application and be reviewed under joint proceedings, including notices, waivers, reviews, and as appropriate, approvals. Permits will be issued and recorded separately. Joint applications will be assessed fees as one project.
4. Road Use Agreement Requirement: An executed Road Use, Maintenance, and Repair Agreement between the Developer and Clarke County is a prerequisite for the issuance of any Special Use Permit for the WECS project. This agreement must be in a form acceptable to the County Attorney. The Developer shall initiate the process of entering into this Road Use Agreement no less than 45 days prior to the commencement of any significant on-site construction activities for the WECS project
5. No WECS within two miles of any city limits.

23.4 DISTRICT AND HEIGHT REGULATIONS (BULK REGULATIONS)

1. WECS may be permitted as a principal permitted use in an A-1 district, subject to the following requirements.
   a. Substations setbacks: zero (0) feet structure setback from road right-of-way, located wholly outside of the right-of-way. Zero (0) feet structure setback from property line on the side or rear yard.
   b. Wind turbines and meteorological tower setback requirements, see table below:

Table 8. WECS Setback requirements

	Wind Turbine- Non-Commercial Micro WECS	Wind Turbine- Non-Commercial WECS	Wind Turbine- Commercial WECS	Meteorological Towers
Property Lines	1.1 times the total height or the distance of the fall zone as certified by a professional engineer plus 10 feet.	1.1 times the total height or the distance of the fall zone as certified by a professional	2640ft or 1.5 times the height whichever is greater or a waiver from the joined land owner.	The fall zone, as certified by a professional engineer plus 10 feet or 1.1 times the total height.

		engineer plus 10 feet.		
Neighboring Dwellings [1]	1,000 feet. This setback requirement may be reduced by the Zoning Administrator subject to maintaining adequate health and safety requirements or waived by the dwelling occupant	1,000 feet.	2640ft or 1.5 times the height whichever is greater or a waiver from the joined land owner.	n/a
Road Rights-of-Way [2]	The distance of the fall zone, as certified by a professional engineer plus 10 feet or 1.1 times the total height.	The distance of the fall zone, as certified by a professional engineer plus 10 feet or 1.1 times the total height.	1000ft or 1.5 times the height whichever is greater	The fall zone, as certified by a professional engineer plus 10 feet or 1.1 times the total height.
Other Rights-of-Way (Railroads, power lines, etc.)	The lesser of 1.1 times the total height or the distance of the fall zone, as certified by a professional engineer plus 10 feet.	The lesser of 1.1 times the total height or the distance of the fall zone, as certified by a professional engineer plus 10 feet.	1000ft or 1.5 times the height whichever is greater	The fall zone, as certified by a professional engineer 10 feet or 1.1 times the total height.
Public lands	N/A	N/A	2 Miles	
Wetlands	N/A	N/A	N/A	N/A
Other Structures	2000 ft or 1.5 times the height of the tower which is greater.	The fall zone, as certified by a professional engineer plus 10 feet or 1.1 times the total height.	2000ft or 1.5 times the height whichever is greater	The fall zone, as certified by a professional engineer plus 10 feet or 1.1 times the total height.
Other Existing WECS	N/A	N/A	To be determined through review based on: relative size of the existing and proposed WECS, alignment of the WECS relative to the predominant winds, topography, extent of the wake interference impacts on existing WECS, other setbacks required waived for multiple turbine projects including aggregated projects.	The fall zone, as certified by a professional engineer plus 10 feet or 1.1 times the total height. Extent of wake interference impacts on existing WECS shall be considered.

[1] The setback for dwellings shall be reciprocal in that no dwelling shall be constructed within two thousand six hundred and forty feet (2640) feet of a commercial wind turbine.

[2] The setback shall be measured from future rights-of-way if a planned changed or expanded right-of-way is known.

c. Height standard for principal permitted or accessory uses in an A district: Total Height - WECS shall have a total height of less than seven hundred ft, subject also to the airport zoning regulations, if applicable, in Section 21.

2. Non-Commercial WECS may be permitted as a conditional use in any district, subject to the following requirements.
   a. The bulk regulations in Subsection 23.4.1 are met.
   b. In an R-1 district, one WEC of less than 100 kilowatts can be located as a principal use on an individual lot to provide power to a development. A WEC with a maximum tower height of fifty (50) feet and a maximum size of twenty (20) kW can be installed as an accessory use on a residential lot.
   c. In an R-2 district, one WEC of less than 100 kilowatts can be located as a principal use on an

individual lot to provide power to a development.

d. In a C-1 district, one WEC of less than 100 kilowatts can be located as a principal use on an individual lot to provide power to a development. A WEC with a maximum tower height of fifty (50) feet and a maximum size of twenty (20) kW can be installed as an accessory use.
e. In an 1-1 district, one WEC of less than 100 kilowatts can be located as a principal use on an individual lot to provide power to a development. A WEC with a maximum tower height of sixty (60) feet and a maximum size of fifty (50) kW can be installed as an accessory use.
f. In a PD district, one WEC of less than 100 kilowatts can be located as a principal use on an individual lot to provide power to a development. A WEC with a maximum tower height of fifty (50) feet and a maximum size of twenty (20) kW can be installed as an accessory use.
g. In all districts, if located within the AP overlay district, all airport zoning height regulations shall apply.

23.5 DESIGN REQUIREMENTS

1. Safety Design Standards:
   a. Engineering Certification: For all WECS, the manufacture's engineer or another qualified engineer shall certify that the turbine, foundation and tower design of the WECS is within accepted professional standards, given local soil and climate conditions.
   b. Clearance: Rotor blades or airfoils must maintain at least thirty (30) feet of clearance between their lowest point and the ground.
   c. Warnings: For all Commercial WECS, a sign or signs shall be posted on the tower, transformer and substation warning of high voltage.
   d. To limit climbing access to the tower, a fence six (6) feet in height with a locking portal, or an anti-climbing device may be required around the tower base.
2. Meteorological towers may be guyed.
3. Color and Finish: All wind turbines and towers that are part of a commercial WECS shall be white, grey or another non-obtrusive color. Blades may be black in order to facilitate deicing. Finishes shall be matte or non-reflective. Exceptions may be made for metrological towers, where concerns exist relative to aerial spray applicators.
4. Lighting: Lighting, including lighting intensity and frequency of strobe, shall adhere to but not exceed requirements established by Federal Aviation Administration permits and regulations. Red strobe lights are preferred for nighttime illumination to reduce impacts on migrating birds. Red pulsating incandescent lights should be avoided. Exceptions may be made for metrological towers, where concerns exist relative to aerial spray applicators.
5. Other Signage: All signage on site shall comply with Section 16 of this Ordinance. The manufacturer's or owner's company name and/or logo may be placed upon the nacelle of the WECS.
6. Feeder Lines: All communications and feeder lines, equal to or less than thirty-four and one-half (34.5) kilovolts in capacity, installed as part of a WECS shall be buried where reasonably feasible. Feeder lines installed as part of a WECS shall not be considered an essential service. This standard applies to all feeder lines subject to Clarke County Ordinances.
7. 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.
8. WECS Developer to begin process of entering into road use agreement no less than 45 days before project begins.

23.6 DISCONTINUATION AND DECOMMISSIONING

1. The applicant shall submit a decommissioning and reclamation plan to the Zoning Director with the conditional use permit application. The Zoning Director shall review the plan for completeness and

may refer it to the Adjustment Board for review in conjunction with the conditional use permit and the County Board for final consideration. An approval shall be obtained prior to the applicant commencing construction. The plan shall include:

2. A description of the life of the WECS; the anticipated manner which the project will be decommissioned, including plans to recycle components; the anticipated site restoration actions; the estimated decommissioning costs in current dollars; and the method for ensuring that funds will be available for decommissioning and restoration.
3. Estimates for the total cost for decommissioning at the current value at site as determined by a licensed engineer. Decommissioning cost estimates shall take salvage and resale value into account.
4. A description of the means to remove the WECS and restore the land to its previous use upon the end of its life, as stated in the conditional use permit or this ordinance.
5. Provisions to remove structures, debris and associated equipment on the surface and to a level of not less than six (6) feet below the surface, and the timeline/sequence in which removal is expected to occur.
6. Provisions to restore the soil, vegetation, and disturbed earth, which shall be graded and reseeded and/or the property may be returned to agricultural use. Avoidance of removing topsoil is preferred. The plan shall include environmental monitoring at the cost of the developer to be used in returning the project area back to agricultural use. Environmental monitoring shall include best practices to address at minimum invasive species prevention, erosion, sediment control and debris removal.
7. A provision that the terms of the decommissioning plan shall be binding upon the owner or operator of the WECS and any of their successors, assigns or heirs, and that the landowner has granted permission for access and easements of the property for decommissioning.
8. FINANCIAL SURETY: No later than the eighth (8th) year following the date the applicant or WECS owner completes construction, as evidenced by a certificate of completion, the applicant of WECS owner shall provide a financial surety instrument to cover the cost of decommissioning in accordance with the following:
    a. Decommissioning funds or financial surety shall be in an amount equal to the net cost for decommissioning the site, plus a 15 percent (15%) contingency.
    b. The financial surety shall be maintained in the form of cash, certificate of deposit, performance bond, escrow account, surety bond, corporate guarantee or other form of financial assurance acceptable to the County Board. Any document evidencing the maintenance of the financial surety shall include provisions for releasing the funds to the County in the event decommissioning is not completed in a timely manner as specified in section 23.6(11).
    c. Financial surety shall be maintained for the remaining life of the WECS.
    d. Every five (5) years, the WECS owner or operator shall retain an independent licensed engineer to re-estimate the total cost of decommissioning and attest that the value of the financial surety instrument is appropriate. This report shall be filed with the Zoning department and the Auditor. The decommissioning surety shall match the re-estimated cost of decommissioning plus a 15 percent (15%) contingency. Within ninety (90) days of filing the re-estimation report with the County through the Zoning Department, the WECS owner or operator shall cause the fund balance of the financial surety instrument to be adjusted, if applicable.

    e. Beginning year eight (8) All WECS shall have financial surety for 5 years of estimated future property Tax liability.
9. RELEASE OF FINANCIAL SURETY: Financial surety may only be released by the County Board by the recommendation from the Zoning Director, after inspection and confirmation that all conditions of the decommissioning plan have been met.

10. INDEMNIFICATION AND LIABILITY: The applicant, owner and/or operator of the WECS shall defend, indemnify, and hold harmless the County and its officials from and against any and all claims, demands, losses, suits, causes of action, damages, injuries, costs, expenses, and liabilities whatsoever, including attorneys' fees, without limitation, arising out of acts or omissions of the applicant, owner, and/or operator associated with the construction and/or operations of the WECS.
11. CESSATION OF OPERATIONS: Any WECS that has not been in operation and producing electricity for at least one hundred and eighty (180) consecutive days, unless caused by a natural . catastrophic event, shall be decommissioned. The Zoning Director shall notify the owner to decommission and remove the WECS. Within two hundred and seventy (270) days thereafter, the owner shall either submit evidence showing that the WECS has been operating and producing electricity or that it has been fully decommissioned in compliance with this Ordinance. If the owner fails to or refuses to remove the WECS, the violation shall be referred to the County Attorney for further action. In the case of a natural catastrophic event, a detailed restoration plan to return to operational status must be provided to the Zoning Director.
12. RELATED RULES AND REGULATIONS: Each WECS shall comply with all applicable local, state and federal requirements.
13. SEVERABILITY: The provisions of this ordinance are severable, and the invalidity of any section, subdivision, paragraph, or other part of this ordinance shall not affect the validity or effectiveness of the remainder of the ordinance.
14. CONDITIONAL USE PERMIT FEE(S) FOR WECS: The conditional use permit application fee(s) will be approved and adopted by resolution of the County Board of supervisors

23.7 OTHER APPLICABLE STANDARDS

1. Noise: Noise shall not exceed sixty (60) decibels (dB).
2. Electrical codes and standards: All WECS and accessory equipment and facilities shall comply with the National Electrical Code and other applicable standards.
3. Federal Aviation Administration: All WECS shall comply with FAA standards and permits.
4. Uniform Building Code: All WECS shall comply with the State Building Code adopted by the State of Iowa.
5. Interference: The applicant shall minimize or mitigate interference with electromagnetic communications, such as radio, telephone, microwaves, or television signals cause by any WECS. The applicant shall notify all communication tower operators within two miles of the proposed WECS location upon application to the county for permits. No WECS shall be constructed to interfere with County or Iowa Department of Transportation microwave transmissions.
6. Max height of any constructed wind structure shall be no more than 700ft.
7. Setback from parks and lakes shall be no closer than 2 miles.
8. Lights on top of tower shall only be operating when aircraft is detected within a predetermined radius of tower.
9. Property tax shall be the responsibility of the land owner should tower be abandoned by last entity with ownership.
10. One-time permit fee per tower shall be $2500.00 for any type of commercial wind tower.
11. At least every twenty-four (24) months, every tower shall be inspected by an expert 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 check list provided in the Electronics Industries Association (EIA) Standard 222, “Structural Standards for Steel Antenna Towers and Antenna Support Structures.” A copy of such inspection record shall be provided to the County.

12. Nothing in this ordinance is intended to abrogate or amend Iowa Code 427B.26 or any relevant Clarke County Ordinance. At the time of enactment, Clarke County has adopted an ordinance providing for the special valuation of wind energy conversion property under Iowa Code Section 427B.26 as Clarke County Ordinance 32. In the event that Iowa Code Section 427B.26 is amended, or the County amends or repeals County Ordinance 32 pertaining to the special valuation of wind energy conver
13. In addition to the wind energy Clarke county Zoning Board limits commercial solar fields to a max of 400 acres for the entire county