

## **ARTICLE 21. WIND ENERGY CONVERSION SYSTEMS (WECS)**

### **SECTION 21.1 PURPOSE.**

This ordinance is established to regulate the installation and operation of Wind Energy Conversion Systems (WECS) within Lyon County not otherwise subject to siting and oversight by the State of Minnesota pursuant to Minnesota Statutes, chapter 216F, Wind Energy Conversion Systems, as amended.

### **SECTION 21.2 ENFORCEMENT, VIOLATIONS, REMEDIES AND PENALTIES.**

Enforcement of the Wind Energy Conversion System Ordinance shall be done in accordance with process and procedures established in of the Lyon County Zoning Ordinance.

### **SECTION 21.3 DEFINITIONS.** *These definitions pertain to Sections 21.1 – 21.7.*

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 100 kW in total name plate 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 less than the total height of the structure.

Feeder Line. Power lines that transport electrical power from one or more wind turbines to the point of interconnection with a high voltage transmission line.

High-voltage transmission line. A conductor of electric energy and associated facilities designed for and capable of operation at a nominal voltage of 100 kilovolts or more and is greater than 1,500 feet in length.

Meteorological Tower. For the purposes of this Wind Energy Conversion Systems

Ordinance, meteorological towers are those towers which are erected primarily to measure wind speed and directions plus other data relevant to siting WECS. Meteorological towers do not include towers and equipment used by airports, the Minnesota Department of Transportation, or other similar applications to monitor weather conditions.

Micro-WECS. Micro-WECS are WECS of 1 kW nameplate generating capacity or less and utilizing supporting towers of 40 feet or less.

Non-Commercial WECS. A WECS of less than 100 kW in total name plate generating Capacity.

Power Purchase Agreement. A legally enforceable agreement between two or more persons where one or more of the signatories agrees to provide electrical power and one or more of the signatories agrees to purchase the power.

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.

Public conservation lands. Land owned in fee title by State or Federal agencies and managed specifically for [grassland] 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.

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 for interconnection with transmission lines.

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.

WECS - Wind Energy Conversion System. A device such as a wind charger, windmill, or wind turbine and associated facilities that converts wind energy to electric energy.

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.

## **SECTION 21.4 PROCEDURES.**

Land Use Permits, Conditional Use Permits and Variances shall be applied for and reviewed under the procedures established in the Lyon County's Zoning Ordinance, except where noted below. An application to the County for a permit under this section is not complete and will not be accepted by the County until a size determination is made pursuant to Minnesota Statutes, chapter 216F.011, as amended.

The application for all WECS shall include the following information:

- A. The names of project applicant.
- B. The name of the project owner.
- C. The legal description and address of the project.
- D. A 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. 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 or legal control of the property.
- G. Evidence of a Power Purchase Agreement.
- H. The latitude and longitude of individual wind turbines.
- I. A USGS topographical map, or map with similar data, of the property and surrounding area, including any other WECS within 10 rotor diameters of the Proposed WECS.
- J. Location of wetlands, scenic, and natural areas including bluffs within 1,320 feet of the proposed WECS.
- K. An Acoustical analysis, when determined by the Zoning Administrator.
- L. FAA Permit Application.

- M. Location of all known Communications Towers within 2 miles of the proposed WECS.
- N. Decommissioning Plan
- O. Description of potential impacts on nearby WECS and wind resources on adjacent properties.
- P. Additional information stated in Minnesota Rules, part 7836.0500 (subpart 1), as amended.

## SECTION 21.5 DISTRICT REGULATIONS.

WECS will be permitted, conditionally permitted or not permitted based on the generating capacity and land use district as established in the table below:

<b>District</b>	<b>Non-Commercial</b>	<b>Commercial</b>	<b>Meteorological Tower</b>
Agriculture	Permitted	Conditionally Permitted	Permitted
Suburban Residence	Conditionally Permitted	Not Permitted	Conditionally Permitted
Urban Expansion	Conditionally Permitted	Conditionally Permitted	Conditionally Permitted
Highway Commercial	Conditionally Permitted	Conditionally Permitted	Conditionally Permitted
Rural Residential	Conditionally Permitted	Conditionally Permitted	Permitted
Unincorporated Village	Conditionally Permitted	Not Permitted	Not Permitted
Shoreland	Conditionally Permitted	Not Permitted	Not Permitted

## SECTION 21.6 SETBACKS – WIND TURBINES AND METEOROLOGICAL TOWERS.

All towers shall adhere to the setbacks established in the following table.

	Wind Turbine – Non-Commercial WECS	Wind Turbine - Commercial WECS	Meteorological Towers
Property lines	1.1 times the total height or in Agricultural or Highway Commercial Land Use Districts only. The distance of the fall zone, as certified by a professional engineer + 10 feet.	1.1 times the total height	The fall zone, as certified by a professional engineer + 10 feet or 1.1 times the total height.
[Neighboring] Dwellings[*]	NA (If setbacks are met)	1000 feet	The fall zone, as certified by a professional engineer + 10 feet or 1.1 times the total height.
Noise Standard	Minnesota Rule 7030	Minnesota Rule 7030	N/A
Road Rights-of-Way	The distance of the fall zone, as certified by a professional engineer + 10 feet or 1 times the total height .	1 times the total height, may be reduced for minimum maintenance roads or a road with an Average Daily Traffic Count of less than 10.	The fall zone, as certified by a professional engineer + 10 feet or 1 times the total height.
Other Rights-of-Way (Railroads, power lines, etc)	The lesser of 1 times the total height or the distance of the fall zone, as certified by a professional engineer + 10 feet.	To be considered by the planning commission	The fall zone, as certified by a professional engineer + 10 feet or 1 times the total height.
Public conservation lands managed as grasslands	NA	600 feet	600 feet
Wetlands, USFW Types III, IV and V	NA	600 feet	600 feet
Other Structures	NA	To be considered	NA
Other Existing WECS	NA	To be considered based on: - Relative size of the existing and proposed WECS -Alignment of the WECS relative to the predominant winds. -Topography -Extent of wake interference impacts on existing WECS. -Property line setback of existing WECS. -Other setbacks required.  Waived for internal setbacks in multiple turbine projects including	NA

	aggregated projects.	
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\* The setback for dwellings shall be reciprocal in that no dwelling shall be constructed within 1000 feet of a commercial wind turbine.

Setbacks – substations, accessory facilities, and feeder lines not located within a public right-of-way or any utility easement required by the Lyon County Subdivision Regulations shall be setback at least ninety (90) feet from the centerline of any public road.

## **SECTION 21.7 REQUIREMENTS AND STANDARDS.**

### **A. Safety Design Standards.**

1. 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.
2. Clearance. Rotor blades or airfoils must maintain at least 30 feet of clearance between their lowest point and the ground.
3. Warnings.
  - (a) For all Commercial WECS, a sign or signs shall be posted on the tower, transformer and substation warning of high voltage. Signs with emergency contact information shall also be posted on the turbine or at another suitable point.
  - (b) For all guyed towers, visible and reflective objects, such as plastic sleeves, reflectors or tape, shall be placed on the guy wire anchor points and along the outer and innermost guy wires up to a height of 8 feet above the ground. Visible fencing shall be installed around anchor points of guy wires. Consideration shall be given to painted aviation warning on metrological towers of less than 200 feet.

### **B. Standards.**

1. Total height. Non-Commercial WECS shall have a total height of less than 200 feet.
2. In those districts where meteorological towers are a permitted use, meteorological towers of less than 200 feet shall be exempt from Conditional Use process established for structures exceeding height requirements

C. Tower configuration.

1. All wind turbines, which are part of a commercial WECS, shall be installed with a tubular, monopole type tower.
2. Meteorological towers may be guyed.
3. Color and Finish. All c 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 matt or non-reflective. Exceptions may be made by the Zoning Administrator 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 night-time illumination to reduce impacts on migrating birds. Red pulsating incandescent lights should be avoided. Exceptions may be made by the Zoning Administrator for metrological towers, where concerns exist relative to aerial spray applicators.
5. Other Signage. All signage on site shall comply with Article 17 of the Lyon County Zoning Ordinance. The manufacturer's or owner's company name and/or logo may be placed upon the nacelle, compartment containing the electrical generator, of the WECS.
6. All feeder lines subject to Lyon County Authority equal to or less than 34.5 kV in capacity shall be buried. Feeder lines installed as part of a WECS shall not be considered an essential service. If not buried, must apply for a variance and shall follow Section 26.4 also known as the Variance Procedure.
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. Discontinuation and Decommissioning. A WECS shall be considered a discontinued use after 1 year without energy production, unless a plan is developed and submitted to the Lyon County Zoning Administrator outlining the steps and schedule for returning the WECS to service. All WECS and accessory facilities shall be removed four feet below ground level within 90 days of the discontinuation of use.
9. Each Commercial WECS shall have a Decommissioning plan outlining the anticipated means and cost of removing WECS at the end of their serviceable life or upon becoming a discontinued use. The cost estimates shall be made by a competent party; such as a Professional Engineer, a contractor capable of decommissioning or a person with suitable expertise or experience with decommissioning. The plan shall also identify the financial resources that will be available to pay for the decommissioning and removal of the WECS and accessory facilities.
10. Orderly Development. Upon issuance of a conditional use permit, all Commercial WECS shall notify the Environmental Quality Board Power Plant Siting Act program Staff of the project location and details on the survey form specified by the Environmental Quality Board.

D. Other Applicable Standards

1. Noise. All WECS shall comply with Minnesota Rules 7030, as amended, governing noise.
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.

- E. Interference. The applicant shall minimize or mitigate interference with electromagnetic communications, such as radio, telephone, microwaves, or television signals caused 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 so as to interfere with County or Minnesota Department of Transportation microwave



transmissions.

F. Avoidance and Mitigation of Damages to Public Infrastructure.

1. Roads. Applicants shall:

- (a) Identify all county, city or township roads to be used for the purpose of transporting WECS, substation parts, materials, and/or equipment for construction, operation or maintenance of the WECS and obtain applicable weight and size permits from the impacted road authority(ies) prior to construction.

2. Drainage System. The Applicant shall be responsible for immediate repair of damage to public drainage systems stemming from construction, operation or maintenance.