

## **APPENDIX C**

# **Goodhue County Wind Energy Conversion System (WECS) Text Amendment Affecting Goodhue County Zoning Ordinance**

(See attached)

## Article 18 Wind Energy Conversion System Regulations

### SECTION 1. PURPOSE

**Purpose** – This ordinance is established to regulate the installation and operation of Wind Energy Conversion Systems (WECS) within Goodhue County not otherwise subject to Siting and oversight by the State of Minnesota under the Minnesota Power Plant Siting Act (MS 116C.51-116C.697.)

### SECTION 2. DEFINITIONS

- Subd. 1. **WECS** - Wind Energy Conversion System: An electrical generating facility comprised of one or more wind turbines and accessory facilities, including but not limited to: power lines, transformers, substations and metrological towers that operate by converting the kinetic energy of wind into electrical energy. The energy maybe used on-site or distributed into the electrical grid.
- Subd. 2. **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.
- Subd. 3. **Commercial WECS**: A WECS of equal to or greater than 100 kilowatts in total name plate generating capacity.
- Subd. 4. **Non-Commercial WECS**: A WECS of less than 100 kilowatts in total name plate generating Capacity.
- Subd. 5. **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.
- Subd. 6. **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.
- Subd. 7. **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 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.
- Subd. 8. **Micro-WECS**: Micro-WECS are WECS of 1 kilowatt nameplate generating capacity or less and utilizing supporting towers of 40 feet or less.
- Subd. 9. **Nacelle**: Contains the key components of the wind turbine, including the gearbox, yaw system, and electrical generator.
- Subd. 10. **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.

- Subd. 11. **Rotor diameter:** The diameter of the circle described by the moving rotor blades.
- Subd. 12. **Substations:** Any electrical facility designed to convert electricity produced by wind turbines to a voltage greater than 35,000 volts (35 kilovolts) for interconnection with high voltage transmission lines shall be located outside of the road right of way.
- Subd. 13. **Total height:** The highest point, above ground level, reached by a rotor tip or any other part of the WECS.
- Subd. 14. **Tower:** Towers include vertical structures that support the electrical generator, rotor blades, or meteorological equipment.
- Subd. 15. **Tower height:** The total height of the WECS exclusive of the rotor blades.
- Subd. 16. **Transmission Line:** Those electrical power lines that carry voltages of at least 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.
- Subd. 17. **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.
- Subd. 18. **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 3. PROCEDURES**

- Subd. 1. Land Use Permits, Conditional Use Permits, and Variances shall be applied for and reviewed under the procedures established in Article 2, Article 4 and Article 5 of the Goodhue County Zoning Ordinance, except where noted below.
- Subd. 2. 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. Engineer's certification.
- G. Documentation of land ownership or legal control of the property.

The application for Commercial WECS shall also include:

- 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.
- L. Federal Aviation Administration (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.

Subd. 3. Aggregated Projects – Procedures: Aggregated Projects may jointly submit a single application and be reviewed under joint proceedings, including notices, hearings, reviews, and as appropriate, approvals. Permits will be issued and recorded separately. Joint applications will be assessed fees as one project. Aggregated projects having a combined capacity equal to or greater than the threshold for State oversight as set forth in MS Statute 216F.01 through 216F.07 shall be regulated by the State of Minnesota.

**SECTION 4. DISTRICT REGULATIONS**

Subd. 1. WECS will be permitted, conditionally permitted or not permitted based on the generating capacity and land use district as established in the table below:

DISTRICT	NON-COMMERCIAL MICRO WECS	NON-COMMERCIAL*	COMMERCIAL	METEOROLOGICAL TOWER*
A-1	Permitted	Permitted	Conditionally Permitted	Permitted
A-2	Permitted	Permitted	Conditionally Permitted	Permitted
A-3	Permitted	Conditionally Permitted	Not Permitted	Conditionally Permitted
R-1	Permitted	Not Permitted	Not Permitted	Not Permitted
B-1	Permitted	Conditionally Permitted	Not Permitted	Not Permitted
B-2	Permitted	Conditionally Permitted	Not Permitted	Not Permitted

MXH	Conditionally Permitted	Not Permitted	Not Permitted	Not Permitted
I	Permitted	Permitted	Conditionally Permitted	Permitted
S	Not Permitted	Not Permitted	Not Permitted	Not Permitted
FP	Not Permitted	Not Permitted	Not Permitted	Not Permitted
WS	Not Permitted	Not Permitted	Not Permitted	Not Permitted
CR	Not Permitted	Not Permitted	Not Permitted	Not Permitted
W	Not Permitted	Not Permitted	Not Permitted	Not Permitted

\* Non-Commercial WECS and Meteorological towers shall require a conditional use permit if over 100 feet in total height in accordance with Article 4 of the Goodhue County Zoning Ordinance.

**Setbacks – Wind Turbines and Meteorological Towers**

	<b>WIND TURBINE – NON-COMMERICAL MICRO WECS</b>	<b>WIND TURBINE – NON-COMMERICAL WECS</b>	<b>WIND TURBINE – COMMERCIAL WECS</b>	<b>METEOROLOGICAL TOWERS</b>
Property lines	1.1 times the total height or in A-1 and A-2 Districts only the distance of the fall zone as certified by a professional engineer plus 10 feet.	1.1 times the total height or in A-1 and A-2 Districts only the distance of the fall zone as certified by a professional engineer plus 10 feet.	1.25 times the total height	The fall zone, as certified by a professional engineer plus 10 feet or 1.1 times the total height.
Neighboring Dwellings*	750 feet This setback requirement may be reduced by the Zoning Administrator subject to maintaining adequate health and safety requirements.	750 feet	750 feet	The fall zone, as certified by a professional engineer plus 10 feet or 1.1 times the total height.
ROAD RIGHTS OF WAY**	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 Times The Total Height	1.1 Times The 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 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.	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 fall zone, as certified by a professional engineer plus 10 feet or 1.1 times the total height.
Public conservation lands managed as grasslands	NA	NA	600 feet	600 feet
Wetlands	NA	NA	NA	NA
Other Structures	The fall zone, as certified by a professional engineer plus 10 feet or 1.1 times the total height.	The fall zone, as certified by a professional engineer plus 10 feet or 1.1 times the total height.	The fall zone, as certified by a professional engineer plus 10 feet or 1.1 times the total height.	The fall zone, as certified by a professional engineer plus 10 feet or 1 times the total height.
Other Existing WECS	NA	NA	To be determined through cup review 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 -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 times the total height.  -Extent of wake interference impacts on existing WECS shall be considered

Bluffs	750 feet from top of bluff (Mississippi river and cannon river), 500 feet from top of bluff from other bluffs in shoreland areas or for non-shoreland bluffs.	750 feet from top of bluff (Mississippi river and cannon river), 500 feet from top of bluff from other bluffs in shoreland areas or for non-shoreland bluffs.	1350 feet from top of bluff (Mississippi river and cannon river), 500 feet from top of bluff from other bluffs in shoreland areas or for non-shoreland bluffs.	1350 feet from top of bluff (Mississippi river and Cannon River), 500 feet from top of bluff from other bluffs in shoreland areas or for non-shoreland bluffs.
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\* The setback for dwellings shall be reciprocal in that no dwelling shall be constructed within 750 feet of a commercial wind turbine.

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

**Setbacks – Substations and Accessory Facilities:**

Minimum setback standards for substations and feeder lines shall be consistent with the standards for essential services established in Article 15 (Essential Services) of the Goodhue County Zoning Ordinance.

**Substation setbacks**

- 0 feet / structure setback from road ROW – located wholly outside the ROW.
- Property lines 0 feet / structure setback from property lines/side yard.

**SECTION 5. REQUIREMENTS AND STANDARDS**

**Subd. 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 12 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.

**Subd. 2. Standards.**

- A. Total height – Non-Commercial WECS shall have a total height of less than 200 feet.
- B. Section 5, Subd. 1., of this ordinance requires a conditional use for all structures over 100 feet in total height. 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 of over 100 feet in height.

- Subd. 3. Tower configuration – All wind turbines, which are part of a commercial WECS, shall be installed with a tubular, monopole type tower.
- Subd. 4. Meteorological towers may be guyed.
- Subd. 5. 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 meteorological towers, where concerns exist relative to aerial spray applicators.
- Subd. 5. 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 for meteorological towers, where concerns exist relative to aerial spray applicators.
- Subd. 6. Other Signage – All signage on site shall comply with Article 11 (Performance Standards), Section 18. (Sign Regulations) of the Goodhue County Ordinance. The manufacturer's or owner's company name and/or logo may be placed upon the nacelle of the WECS.
- Subd. 7. Feeder Lines – All communications and feeder lines, equal to or less than 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 Goodhue County Ordinances.
- Subd. 8. 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.
- Subd. 9. Impacts on Public Infrastructure – Costs related to excessive wear and tear or damage to public infrastructure such as but not limited to township roads, county highways, storm water management related improvements or public utilities that are caused by the construction or maintenance of WECS shall be reimbursed to the affected local government. A determination shall be made by the Zoning Administrator after consultation with the County Engineer and the applicable Township Officials to establish if excessive wear and tear or damage has occurred and to estimate the cost of repair.
- Subd. 10. 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 Goodhue County Zoning Administrator outlining the steps and schedule for returning the WECS to service.
- A. All WECS and accessory facilities shall be removed in their entirety including all footing and foundations within 90 days of the discontinuation of use.
  - B. 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.
  - C. 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.

- D. 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.
  - E. Goodhue County may require financial security in the form of a cash escrow, and irrevocable letter of credit or a performance bond to ensure that decommissioning of Commercial WECS is completed as required in this subdivision.
- Subd. 11. Orderly Development – Upon issuance of a conditional use permit, all Commercial WECS shall notify the PUC or Department of Commerce, Energy Facility Permitting staff of the project, location, and details on the survey form specified by the PUC.

**SECTION 6. OTHER APPLICABLE STANDARDS**

- Subd. 1. Noise – All WECS shall comply with Minnesota Rules, Chapter 7030 governing noise.
- Subd. 2. Electrical codes and standards – All WECS and accessory equipment and facilities shall comply with the National Electrical Code and other applicable standards.
- Subd. 3. Federal Aviation Administration– All WECS shall comply with FAA standards and permits.
- Subd. 4. Uniform Building Code – All WECS shall comply with the Uniform Building Code adopted by the State of Minnesota.
- Subd. 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 so as to interfere with County or Minnesota Department of Transportation microwave transmissions.