

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~~Siting and oversight by the State of Minnesota ~~under the Minnesota Power Plant Siting Act (MS 116C.51-116C.697.)~~ pursuant to Minnesota Statutes, Chapter 216F, Wind Energy Conversion Systems, as amended.

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. Airfoil: A part such as a blade, with a flat or curved surface, designed to provide a desired reaction.
- Subd. 3. Azimuth: A horizontal angle measured clockwise in degrees with 00° 00' 00" being the north reference point.
- Subd. ~~24.~~ **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. 5. C-BED Project: As defined in Minnesota Statutes 216B.1612, as amended. Based on the total name plate generating capacity, C-BED Projects are considered to be (1) Micro-WECS, (2) Non-Commercial WECS or (3) Commercial WECS as defined in this Section.
- Subd. ~~38.~~ **Commercial WECS:** A WECS of equal to or greater than 100 kilowatts in total name plate generating capacity.
- Subd. 9. Comprehensive Plan: Comprehensive Plan means the policies, statements, goals, and interrelated plans for private and public land and water use, transportation, and community facilities including recommendations for plan execution, documented in texts, ordinances and maps which constitute the guide for future development of the unincorporated area of the County.
- Subd. 10. County: Goodhue County, Minnesota.
- Subd. 11. County Board: Goodhue County Board of Commissioners.

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- Subd. 412. **Non-Commercial WECS:** ~~A WECS of less than 100 kilowatts in total name-plate generating capacity.~~ Decibel: A unit of measure of sound pressure.
- Subd. 13. dB (A), A-Weighted Sound Level: A measure of over-all sound pressure level in decibels, designed to reflect the response of the human ear.
- Subd. 514. **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. 615. **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. 16. Flicker: The moving shadow cast by the rotating blades of a WECS, or any intermittent, repetitive, or rhythmic lighting effect that is a direct result of rotating WECS blades.
- Subd. 17. Flicker Analysis: A study showing the duration and location of flicker potential.
- Subd. 18. Generator nameplate capacity: The maximum rated output of electrical power production of a generator under specific conditions designated by the manufacturer with a name plate physically attached to the generator.
- Subd. 19. Hub Height: The distance from the ground to the center axis of the turbine rotor.
- Subd. 720. **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. 821. **Micro-WECS:** Micro-WECS are WECS of 1 kilowatt nameplate generating capacity or less and utilizing supporting towers of 40 feet or less.
- Subd. 922. **Nacelle:** Contains the key components of the wind turbine, including the gearbox, yaw system, and electrical generator.
- Subd. 23. Noise Profile: A study certifying the WECS is in compliance with Minnesota Chapter 7030, as amended, of the Minnesota Pollution Control Agency noise standards.

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- Subd. 24. **Non-Commercial WECS:** A WECS of less than 100 kilowatts in total name plate generating Capacity.
- Subd. 25. Non Prevailing Wind: The non-dominant wind direction in Goodhue County.
- Subd. 26. 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 of power.
- Subd. 27. Preliminary Acoustic Study: A study certifying the WECS will be in compliance with Minnesota Chapter 7030, as amended, of the Minnesota Pollution Control Agency.
- Subd. 28. Prevailing Wind: The predominant wind direction in Goodhue County.
- Subd. 29. Project: A WECS or combination of WECS.
- Subd. 30. Project Boundary: The boundary line of the area over which the entity applying for a WECS permit has legal control for 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. 31. Project Owner: An individual or entity with legal ownership of WECS project.
- Subd. 32. 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. 33. Qualified Independent Acoustical Consultant: A person with Full Membership in the Institute of Noise Control Engineers/INCE, or other demonstrated acoustical engineering certification. The Independent Qualified Acoustical Consultant can have no financial or other connection to a WECS developer or related company.
- ~~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. 35. Rotor: A system of airfoils connected to a hub that rotates around an axis.
- Subd. 36. Rotor Blades: See Airfoil.
- Subd. 4437. **Rotor diameter (RD):** The diameter of the circle described by the moving rotor blades.

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- Subd. ~~4239~~. **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. ~~4340~~. **Total height:** The highest point, above ground level, reached by a rotor tip or any other part of the WECS.
- Subd. Total Name Plate Capacity: The total of the maximum rated output of the electrical power production equipment for a WECS project
- 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. 17 **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. 18 **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. ~~4819~~. **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 Micro and Non-Commercial WECS shall include the following

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information:

- A. The names and address (es) of ~~project~~all project applicant(s).
- B. The name(s) and address (es) of the project owner.
- C. The legal description(s) and address of the project(s). For C-BED projects, the percentage of ownership for each of the project owners.
- 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.
- H. Signed copy of the Power Purchase Agreement or documentation that the power will be utilized on-site.
- ~~G.~~ Copies of all permits or documentation that indicates compliance with all other applicable State and Federal Regulatory Standards.
- I. Flicker Analysis.

The application for Commercial WECS shall also include:

- ~~H.~~J. The latitude and longitude of individual wind turbines.
- ~~I.~~K. 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.~~L. Location of wetlands, scenic, and natural areas [including bluffs] within 1,320 feet of the proposed WECS.
- ~~K.~~M. An Acoustical Analysis.
- ~~L.~~N. ~~Federal Aviation~~Federal Aviation Administration (FAA) Permit Application.
- O. Location of all known Communications Towers within a 2-5 miles radius of the proposed WECS.
- ~~M.~~P. Location of all known public or private Airports or Heliports within a five (5) mile radius of the proposed WECS.
- Q. Detailed Decommissioning Plan including how decommissioning costs would be covered.
- ~~N.~~R. Documentation of land ownership or legal control of all property within a project boundary and current land use on the site and surrounding area.

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S. Description of potential impacts on nearby WECS and wind resources on adjacent properties.

T. Identification of any and all Haul Routes to be utilized for material transportation and construction activities including State, Federal, County, Township, or private roads within Goodhue County.

Q.U. Locations and site plans for all temporary, non-residential construction sites and staging areas.

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-COMMERICAL*	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~~

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100 feet in total height in accordance with Article 4 of the Goodhue County Zoning Ordinance.

Setbacks – Wind Turbines and Meteorological Towers

	WIND TURBINE – NON-COMMERICAL MICRO WECS	WIND TURBINE – NON-COMMERICAL WECS	WIND TURBINE – COMMERCIAL WECS	METEOROLOGICAL TOWERS
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 <u>3 RD Non-prevailing and 5 RD Prevailing***</u>	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	750-1000 feet from participating neighboring dwellings and 1500 feet from non-participating dwellings.	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	THE LESSER OF 1.1 TIMES THE TOTAL HEIGHT OR THE DISTANCE OF THE FALL ZONE, AS CERTIFIED BY	THE LESSER OF 1.1 TIMES THE TOTAL HEIGHT OR THE DISTANCE OF THE FALL ZONE, AS CERTIFIED BY	THE FALL ZONE, AS CERTIFIED BY A PROFESSIONAL ENGINEER PLUS 10 FEET OR 1.1 TIMES THE TOTAL HEIGHT.
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	A PROFESSIONAL ENGINEER PLUS 10 FEET.	A PROFESSIONAL ENGINEER PLUS 10 FEET.	A PROFESSIONAL ENGINEER PLUS 10 FEET.	
Public conservation lands managed as grasslands	NA <u>1.1 TIMES THE TOTAL HEIGHT</u>	NA <u>The fall zone, as certified by a professional engineer plus 10 feet or 1.1 times the total height.</u>	<u>600-foot 3 RD Non-Prevailing and 5 RD Prevailing***</u>	600 feet
Wetlands	NA <u>1.1 TIMES THE TOTAL HEIGHT</u>	NA <u>The fall zone, as certified by a professional engineer plus 10 feet or 1.1 times the total height.</u>	<u>NA 1,000 FEET OR 3 RD NON-PREVAILING AND 5 RD PREVAILING***</u>	NA <u>600 feet</u>
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 <u>and Internal Turbine Spacing</u>	NA	NA <u>3 RD Non-Prevailing and 5 RD Prevailing***</u>	<u>3 RD Non-Prevailing and 5 RD Prevailing</u> 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 <u>Waived for multiple turbine projects including</u>	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

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			aggregated projects	
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.

* The setback for dwellings, schools, churches, health care facilities, campgrounds 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.

***Prevailing and Non Prevailing Rotor Diameter setbacks shall be measured horizontally from the tower base.

- Prevailing Wind –Azimuth between 290 degrees to 30 degrees and between 130 degrees and 230 degrees.
- Non-Prevailing Wind – Azimuth between 30 degrees and 130 degrees and between 230 degrees and 290 degrees.

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.

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- 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~~ manufacturers 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 ~~Avoidance and mitigation of damages to Public Infrastructure: 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~~

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~~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.~~

- ~~A. Identify all public 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.~~
- ~~B. Contact the road authority for road closures, road signage removals, road signage removals, road signage re-locating, road signage restoring, moving permits, culverts, access/driveway permits, tile outlet permits, widening road intersections, standard utility permits and any other road activities that may require permits.~~
- ~~C. Contact Goodhue County Dispatch prior to any road closures for the re-routing of emergency vehicles. Notify and consult with affected property owners to ensure reasonable access.~~
- ~~D. Contact the road authority to conduct an inspection of the road conditions of the haul routes prior to and after construction.~~
- ~~E. The applicant shall retain a Minnesota Licensed Engineer to analyze bridges along the haul routes to determine if the bridges have the capacity to support the oversized vehicles. The applicant shall provide a signed report by the registered engineer to the road authority to the use of the bridges identified on the haul routes.~~
- ~~F. The applicant shall provide financial assurance in the form of a cash escrow or irrevocable letter of credit in an amount equal to 125% of the cost(s) determined by the road authority, to be held by the County until the Township and/or County road authority(ies) have provided the County Public Works Director and the County Finance Director with a written release that all haul routes within their jurisdiction in Goodhue County have been returned to pre-construction condition.~~

~~Subd. 10. The Applicant shall be responsible for immediate repair of damage to public and private drainage systems stemming from construction, operation, maintenance, or decommissioning.~~

Subd. ~~40~~11. 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.

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- 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 approved by the County; 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~~ The applicant shall provide ~~require~~ financial security in the form of a cash escrow, ~~and or an~~ irrevocable letter of credit ~~or a performance bond in an amount equal to 125% of the cost estimate prepared by a competent party (see paragraph C)~~ to ensure that decommissioning of Commercial WECS is completed as required in this subdivision.

Subd. ~~44~~12. 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. Stray Voltage Testing

~~Subd. 1. Pre-construction Stray Voltage Test Results. The applicant shall perform at least two pre-construction stray voltage tests at all livestock facilities within the proposed project boundary and within a one-mile radius beyond the proposed project boundary.~~

~~Subd. 2. The tests shall be performed by a person determined by the County to be qualified as a stray voltage investigator and shall be conducted once in the spring and once in the fall of the year.~~

~~Subd. 3. A copy of the test results shall be sent to each of the following: property owners, Minnesota Public Utilities Commission, local utilities, and the County. The applicant shall obtain written permission from property owners prior to stray voltage testing. If permission is denied, all responsibility for stray voltage problems shall be with the property owner.~~

~~Subd. 4. **Stray Voltage.** Any Owner/Operator of a Commercial Wind Energy Conversion System shall respond within (3) three calendar days to any request for a stray voltage investigation by a non participating property owner within the project boundary and one mile beyond the project boundary.~~

~~Subd. 5. The tests shall be performed by a person determined by the County to be qualified as a stray voltage investigator.~~

~~Subd. 6. Testing shall commence within (10) ten working days of the request. If testing cannot be initiated within (10) days, the Wind Turbine(s) in question shall be shut down until the testing can be started.~~

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- Subd. 7 The investigation shall be provided to the property owner at no cost up to a maximum of two investigations within a 12-month period. At no time shall the operation of a Commercial WECS increase the measured cow contact voltage (Vcc) or primary neutral to remote voltage (Vpn) on a livestock facility within the project boundary and a one-mile radius beyond the project boundary, above the maximum pre-construction levels.
- Subd. 4. Owner/operator is responsible for mitigating within five working days from determination any net increase in cow contact voltages (Vcc) or primary neutral to remote voltages (Vpn) attributed to the operation of the Commercial WECS.
- Subd. 5. If corrections cannot be initiated within (3) three calendar days, the Wind Turbine(s) in question shall be shut down until the voltages in question are mitigated. A copy of the test results shall be sent to the property owner and Goodhue County within (30) days of test completion.

SECTION 7. FLICKER ANALYSIS

- Subd. 1. A Flicker Analysis shall include the duration and location of flicker potential for all receptors and roadways within a one (1) mile radius of each turbine within the project. The applicant shall provide a site map identifying the locations of shadow flicker at these locations from sun-rise to sun-set over the course of the year. The analysis shall account for topography but not for obstacles such as accessory structures and trees. Flicker at any receptor shall not exceed thirty (30) hours per year within the analysis area. Flicker at non-participating dwellings shall be limited to zero (0) hours.

SECTION 8. PRELIMINARY ACOUSTIC STUDY FOR COMMERCIAL WECS PROJECTS

- Subd. 1. An acoustic study that demonstrates the project will be compliant with Minnesota rules 7030, as amended.
- Subd. 2. This shall include the estimated dB (A) levels at all receptors within one (1) mile of the nearest turbine within a project area and shall include accumulated sound within the project.

SECTION 9. LOCAL EMERGENCY SERVICES NOTIFICATION REQUIREMENTS FOR COMMERCIAL WECS PROJECTS

- Subd. 1 The Applicant shall provide a copy of the project summary and site plan to local emergency services, including paid or volunteer Fire Department(s) that serve the WECS project area.
- Subd. 2. The Applicant shall coordinate with local emergency response serves for the WECS Project. A copy of the plan shall be submitted to the Goodhue County Office of Emergency Management.

SECTION 6. OTHER APPLICABLE STANDARDS

- Subd. 1. Noise – All WECS shall comply with Minnesota Rules, Chapter 7030 governing noise.

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- 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- Minnesota State~~ Building Code – All WECS shall comply with the ~~Uniform Minnesota BuildingState 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.