

SECTION XVI – RENEWABLE ENERGY

Subdivision 1.0 Wind Energy Conversion Systems (WECS)

1.1 Purpose

This ordinance is established to regulate the installation and operation of Wind Energy Conversion Systems (WECS) within Yellow Medicine 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.

1.2 Enforcement, Violations, Remedies, and Penalties

Enforcement of the Wind Energy Conversion System Ordinance shall be done in accordance with process and procedures established in the Yellow Medicine County Land Use and Related Resource Management Ordinance.

1.3 Definitions *(These definitions pertain to Subdivision 1.1 – 1.7)*

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.

1.4 Procedures

Land Use Permits, Conditional Use Permits and Variances shall be applied for and reviewed under the procedures established in the Yellow Medicine County Land Use and Related Resource Management 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 name(s) of project applicant.
- B. The name(s) 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.

1.5 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:

District	Non-Commercial	Commercial	Meteorological Tower
Rural Preservation #1 - #8	Permitted	Conditionally Permitted	Permitted
Urban Expansion	Conditionally Permitted	Conditionally Permitted	Conditionally Permitted
Shoreland	Conditionally Permitted	Not Permitted	Not Permitted
General Business District	Not Permitted	Not Permitted	Not Permitted
Wild and Scenic River District	Conditionally Permitted	Not Permitted	Not Permitted
Industry	Conditionally Permitted	Conditionally Permitted	Conditionally Permitted

*Commercial WECS shall require a variance if over 35' in height.

**In those Districts where meteorological towers are a permitted use, meteorological towers less than 200' in height shall be exempt from the variance requirement established for structures exceeding 35' in height.

***Meteorological towers are temporary structures and are not intended to be a permanent structure.

1.6 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	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	1 times the total	The fall zone, as

	fall zone, as certified by a professional engineer + 10 feet or 1 times the total height.	height, may be reduced for minimum maintenance roads or a road with an Average Daily Traffic Count of less than 10.	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
Internal Turbine Spacing	NA	5 Rotor diameters downwind spacing 3 rotor diameters apart for crosswind spacing	
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 aggregated projects.	NA

*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 – minimum setback standards shall be determined in the permitting process.

1.7 Requirements and Standards

A. Safety Design Standards

1. Engineering Certification. For all WECS, the manufacturer'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 meteorological towers of less than 200 feet.

B. Standards.

1. Total height. Non-commercial WECS shall have total height of less than 200 feet.

C. Tower configuration.

1. All wind turbines, which are a part of commercial WECS, shall be installed with a tubular, monopole type tower.
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 matt or non-reflective. Exceptions may be made by the Zoning Administrator for meteorological 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 meteorological towers, where concerns exist relative to aerial spray applicators.

5. Other Signage. All signage on site shall comply with Section XX of the Yellow Medicine County Land Use and Related Resource Management 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 Yellow Medicine 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 XIII, Subdivision 6.0, 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 Yellow Medicine 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. Components must have a Underwriters Laboratory Listing (UL).
4. 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, substations 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.

Subdivision 2.0 Solar Energy Systems

2.1 Definitions

Solar Energy Systems – Accessory – A solar panel or array mounted on a building, pole or rack that is secondary to the primary use of the parcel on which it is located, and is directed, connected or designed to serve the energy needs of the primary use.

Solar Farms - A solar array composed of multiple solar panels on ground mounted rack or poles, which is the primary land use for the parcel on which it is located.

2.2 Standards

Solar Farms shall be subject to the administrative requirements of Section VI, Subdivision 2.0 of this Ordinance and the following performance standards:

- A. Solar farms are the primary land use for the parcel on which the array is located and are distinguished from solar arrays that are a secondary or accessory use. Solar farms are composed of multiple solar panels on multiple mounting systems (poles or racks), and generally have a Direct Current (DC) rated capacity greater than 100 kilowatts.

- B. Foundations. The manufacturer's engineer or another qualified engineer shall certify that the foundation and design of the solar panels is within accepted professional standards, given local soil and climate conditions.
- C. Other standards and codes. All solar farms shall be in compliance with any applicable local, state and federal regulatory standards, including the State of Minnesota Uniform Building Code, as amended; and the National Electric Code, as amended.
- D. Power and communication lines. Power and communication lines running between banks of solar panels and to electric substations or interconnections with buildings shall be buried underground. Exemptions may be granted by the Department in instances where shallow bedrock, water courses, or other elements of the natural landscape interfere with the ability to bury lines.
- E. Application requirements. The following information shall be provided to the Department prior to issuance of the conditional use permit:
 - 1. A site plan of existing conditions showing the following:
 - (a) Existing property lines and property lines extending 100 feet from the exterior boundaries, including the names of the adjacent property owners and current use of those properties.
 - (b) Existing public and private roads, showing widths of the roads and any associated easements
 - (c) Location and size of any abandoned wells, sewage treatment systems and dumps
 - (d) Existing buildings and any impervious surface
 - (e) Existing vegetation (list type and percent of coverage; i.e. grassland, plowed field, wooded areas, etc.)
 - (f) Waterways, watercourses, lakes and public water wetlands
 - (g) Delineated wetland boundaries
 - (h) The 100-year flood elevation and Regulatory Flood Protection Elevation, if available
 - (i) Floodway, flood fringe, and /or general flood plain district boundary, if applicable
 - (j) The shoreland district boundary, if any portion of the project is located in a shoreland district.
 - (k) In the shoreland district, the ordinary high water level and the highest known water level.
 - (l) In the shoreland district, the toe and top of any bluffs within the project boundaries.
 - (m) Mapped soils according to the Yellow Medicine County Soil Survey
 - (n) Surface water drainage patterns

2. Site Plan of Proposed Conditions

- (a) Location and spacing of solar panels
 - (b) Location of access roads
 - (c) Planned location of underground or overhead electric lines connecting the solar farm to the building, substation or other electric load
 - (d) New electrical equipment other than at the existing building or substations that is the connection point for the solar farm.
 - (e) Sketch elevation of the premises accurately depicting the proposed solar energy conversion system and its relationship to structures on adjacent lots (if any);
3. Manufacturer's specifications and recommended installation methods for all major equipment, including solar panels, mounting systems and foundations for poles or racks;
 4. The number of panels to be installed;
 5. A description of the method of connecting the array to a building or substation;
 6. A copy of the interconnection agreement with the local electric utility or a written explanation outlining why an interconnection is necessary;
 7. A decommissioning plan shall be required to ensure that facilities are properly removed after their useful life. Decommissioning of solar panels must occur in the event they are not in use for 12 consecutive months. The plan shall include provisions for removal of all structures and foundations, restoration of soil and vegetation and a plan ensuring financial resources will be available to fully decommission the site. The Board may require the posting of a bond, letter of credit or the establishment of an escrow account to ensure proper decommissioning.

2.3 Standards for Solar Energy Systems, Accessory.

Solar energy systems are a permitted accessory use in all zoning districts, subject to the following standards:

- A. Height. Active solar systems are subject to the following height requirements:
 1. Building- or roof- mounted solar systems shall not exceed the maximum allowed height in any zoning district.
 2. Ground- or pole- mounted solar systems shall not exceed 15 feet in height when oriented at maximum tilt.
- B. Location within Lot. Solar systems must meet the accessory structure setback for the zoning district.

1. Roof-mounted Solar Systems. In addition to the building setback, the collector surface and mounting devices for roof-mounted solar systems that are parallel to the roof surface shall not extend beyond the exterior perimeter of the building on which the system is mounted or built. The collector and racking for roof-mounted systems that have a greater pitch than the roof surface shall be set back from all roof edges by at least 2 feet. Exterior piping for solar hot water systems shall be allowed to extend beyond the perimeter of the building on a side yard exposure.
 2. Ground-mounted Solar Systems. Ground-mounted solar energy systems may not extend into the side-yard or rear setback when oriented at minimum design tilt.
- C. Maximum Coverage. Roof or building mounted solar systems, excluding building-integrated systems, shall not cover more than 80% of the south-facing or flat roof upon which the panels are mounted. The total collector surface area of pole or ground mount systems in non-rural preservation districts shall not exceed one percent of the lot area.
- D. Approved Solar Components. Electric solar system components must have a Underwriters Laboratory (UL) listing.
- E. Compliance with State Electric Code. All photovoltaic systems shall comply with the Minnesota State Electric Code.
- F. Utility Notification. No grid-intertie photovoltaic system shall be installed until evidence has been given to the Department that the owner has notified the utility company of the customer's intent to install an interconnected customer-owned generator. Off-grid systems are exempt from this requirement.