REDWOOD COUNTY ZONING ORDINANCE
SECTION 19
WIND POWER MANAGEMENT

TABLE OF CONTENTS

SECTION 19. WIND POWER MANAGEMENT

SUBDIVISION 1. PURPOSE

Purpose: This ordinance is established to regulate the installation and operation of Wind Energy Conversion Systems (WECS) within Redwood County not otherwise subject to siting and oversight by the State of Minnesota under the Minnesota Power Plant Siting Act, Minnesota Statutes § 216F, as the same may from time to time be amended. Nothing in this ordinance is intended to contravene, limit or otherwise modify any wind power management or siting requirements of the State of Minnesota. If applicable, applicants will need to comply with any and all permitting and siting requirements of the State of Minnesota.

SUBDIVISION 2. DEFINITIONS

In addition to terms defined elsewhere in the Redwood County Zoning Ordinance, the following definitions shall apply to this section:

1. Aggregated Projects: 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. The planned kW generating capacity of the entire aggregated project will be used to determine whether an aggregated project is a Commercial WECS or Non-Commercial WECS.

2. Commercial WECS: A WECS of equal to or greater than 100 kW in total nameplate generating capacity.

3. C-BED Projects: A C-BED Project is a Community Based Energy Development Project that must have local owners, no single owner may be allowed to own more than 15 percent of a project, must have a local resolution of support, and the Power Purchase Agreement must ensure levelized cash flow to the project owners. Based on their total name plate generating capacity, C-BED projects are considered Micro-WECS, Non-Commercial WECS or Commercial WECS as defined in this section.

4. 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.

5. Feed 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.

6. Generator Nameplate Capacity: The maximum rated output of a generator under specific conditions designated by the manufacturer. Generator nameplate capacity is usually indicated in units of kilovolt-amperes (kVA) and in kilowatts (kW) on a nameplate physically attached to the generator.

7. Interconnect: Large wind developments need to interconnect to transmission lines through a substation, and residential wind turbines simply connect to the electrical panel serving the residence. Community wind projects, which, vary in size from slightly less than 1 MW to 10 MW, can interconnect at the distribution, subtransmission, or transmission level depending on a number of factors such as the size of the project and the capacity of the grid at the project site.

8. KVA: KVA is kilovolt-ampere and is the unit of apparent power. KVA is used for measuring the power consumption of non-resistive equipments such as motors, computers, and most non-incandescent lighting.

9. Kilowatt: A unit of power equal to 1000 watts

10. Megawatt: A unit of power equal to one million watts.

11. Meteorological Tower: For the purposes of this ordinance, meteorological towers are those towers which are erected primarily to measure wind speed and directions plus other data relevant to the placement of 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.

12. Micro-WECS: Micro-WECS are WECS of 1 kW to 40 kW nameplate generating capacity or less and utilizing supporting towers of 100 feet or less.

13. Non-Commercial WECS: A WECS of less than 100 kW but greater than 40 kW in total nameplate generating capacity and utilizing supporting towers of 200 feet or less.

14. 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.

15. Project Boundary/Property Line: The boundary line of the area over which the entity applying for a WECS permit has legal control for the purpose 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.

16. Residence: any structure or a dwelling suited for and intended for human habitation. Residence shall not include any dwelling unfit for human habitation or any dwelling that has remained vacant for more than three years

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

18. Substations: Any electrical facility designed to convert electricity produced by wind turbines to a voltage greater than 35 KV for interconnection with high voltage

transmission lines. The substations shall be located outside of the road right of way.

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

20. Tower: All vertical structures including those that support the electrical generator, rotor blades, or meteorological equipment.

21. Tower height: The total height, above ground level, of the WECS exclusive of the rotor blades.

22. Transformer: An electrical device by which alternating current of one voltage is changed to another voltage.

23. Transformer pole: A single structure made of metal or wood which the transformer is attached to.

24. Watt (W): The basic unit of electric, mechanical, or thermal power. For electric power it is equal to one volt-ampere.

25. 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 meteorological 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.

26. Wind Turbine: Any piece of electrical generating equipment that converts the kinetic energy of wind into electrical energy through the use of airfoils or similar devices to capture the wind.

SUBDIVISION 3. PERMITTED/NON-PERMITTED USES

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	**Micro-WECS**	**Non-Commercial WECS**	**Commercial WECS**	**Meteorological Tower**
Agriculture (A)	Permitted	Conditional Use Permit	Conditional Use Permit	Permitted
Flood Plain (FP)	Conditional Use Permit	Conditional Use Permit	Conditional Use Permit	Conditional Use Permit
Highway Service Business (B-1)	Conditional Use Permit	Conditional Use Permit	Not Permitted	Conditional Use Permit
Industrial (I)	Conditional Use Permit	Conditional Use Permit	Conditional Use Permit	Conditional Use Permit
Project Riverbend	Not Permitted	Not Permitted	Not Permitted	Not Permitted

Rural Residential (R1)	Conditional Use Permit	Conditional Use Permit	Not Permitted	Not Permitted
Scenic River (S)	Conditional Use Permit	Not Permitted	Not Permitted	Not Permitted
Shoreland	Conditional Use Permit	Conditional Use Permit	Not Permitted	Not Permitted
Urban Expansion (UE)	Conditional Use Permit	Conditional Use Permit	Not Permitted	Conditional Use Permit
Wild and Scenic River District	Not Permitted	Not Permitted	Not Permitted	Not Permitted

SUBDIVISION 4. PERMIT APPLICATION

If a conditional use permit is required, the applicant for the proposed WECS must fill out a conditional use permit application provided by the Redwood County Environmental Office. 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. All applications shall include the following:

1. The name(s) and address(es) of project owner(s). For C-Bed projects, must provide percent of ownership for each of the project owners.

2. Letter from the State Agency responsible for size determination of a project, pursuant to Minnesota Statutes, Chapter 216F.011, as amended.

3. A description of the project, including: number and capacity of turbines, height and diameter of turbine rotors, turbine color, and rotor direction.

4. A site plan, detailing the location of the following: project area boundaries, turbines, roads, county tile lines, transformers, power lines, communication lines, interconnection point with transmission lines, and other ancillary facilities or structures.

5. Signed copy of the Power Purchase Agreement or documentation that the power will be utilized on-site.

6. Location of wetlands, scenic, and natural areas including bluffs within 1,320 feet of the proposed WECS.

7. Copies of all permits or documentation that indicates compliance with all other applicable State and Federal Regulatory Standards:

    a. Description of potential impacts on nearby WECS and wind resources on adjacent properties. A Wake Loss Study may be required if the county determines the proposed projects may have a significant impact on nearby WECS
    b. Locations and site plans for all temporary, non-residential construction sites and staging areas.

8. Additional Information stated in Minnesota Rules, Part 7836.0500 (subpart 1) as amended.

9. A detailed road maintenance plan for prior, during, and at completion of the tower project. Must provide written documentation that all haul routes have been approved by each of the road authorities with jurisdiction.

10. Topographic map of the project site and surrounding areas.

11. The current land use on the site (and surrounding areas) and the location of existing towers within 2 miles.

12. Distance to neighboring properties.

13. Decommissioning plan including how decommissioning costs would be covered. Applicant(s) may be required to establish an escrow account to fund decommissioning costs.

14. Engineering certification(s) of the tower, its foundation, and designed suitability for turbine and soils.

15. Evidence of control of wind easements in the entire project area.

16. Proof of telecommunications notification(s) and meeting minutes.

SUBDIVISION 5. COMPLIANCE WITH CODES AND STANDARDS

Any WECS shall be in compliance with all applicable state and federal regulatory standards including, without limitation:

a. Uniform Building Code, as amended
b. The National Electrical Code, as amended
c. Federal Aviation Administration (FAA) as amended
d. Minnesota Pollution Control Agency (MPCA)/Environmental Protection Agency (EPA), as amended
e. Microwave Beam Path Study
f. Allied Radio Matrix for Emergency Response (ARMER)
g. Acoustical Analysis

SUBDIVISION 6. CERTIFICATIONS

1. Equipment shall conform to applicable industry standards including the American Wind Energy Association standards for wind turbine design and related standards adopted by the American National Standards Institute (ANSI).

2. Special attention will be paid to all turbines that are experimental, used, or prototype devices. Maintenance records, inspection by a qualified wind energy professional, or some other documentation of unit's safety and integrity may be requested.

3. On all Commercial WECS, a professional engineer registered with the State of Minnesota shall certify that the tower and foundation are compatible with and appropriate for the turbine to be installed and that the specific soils at the site can support the apparatus.

SUBDIVISION 7. OVERSPEED CONTROLS

All turbines to be installed on Commercial WECS projects shall be equipped with redundant braking systems. This includes both aerodynamic (including variable pitch) overspeed controls, and mechanical brakes. Mechanical brakes shall be operated in a fail-safe mode, whereby they are engaged in the case of loss of load on the generator. Stall regulation shall not be considered a sufficient braking system for overspeed protection.

SUBDIVISION 8. SETBACK, HEIGHT, AND OTHER REQUIREMENTS

1. Commercial WECS/ Meteorological Tower:

    A. Structures/Residences:
        a. Commercial WECS: 1000 feet from the nearest residence.
        b. Meteorological Towers: 750 feet from the nearest residence.
    B. Other Commercial WECS: no closer than five (5) rotor diameters (RD)
    C. Rights of Way: no closer than 1.1 times the height of the tower and blades
    D. Property Lines: no closer than 1.1 times the height of the tower and blades
    E. Public conservation lands managed as grasslands: 600 feet from the property line
    F. Wetlands, USFW Types III, IV, V: 600 feet from the wetlands top edge
    G. Minnesota River Bluff line: 1,320 feet from the bluff break

2. Non-Commercial WECS/ Meteorological Tower:

    A. Structures/Residences: 200 feet from the nearest residence. The applicant's residence and/or other on-site structures are not subject to this restriction
    B. Rights of Way: no closer than 1.1 times the height of the tower and blades
    C. Property Lines: no closer than 1.1 times the height of the tower and blades
    D. Tower height, of less than 200 feet

3. Micro-WECS:

    A. Structures/Residences: 200 feet from the nearest residence. The applicant's residence and/or other on-site structures are not subject to this restriction
    B. Rights of Way: no closer than 1.1 times the height of the tower and blades
    C. Property Lines: no closer than 10 feet from any neighboring property
    D. Tower height less than 100 feet

4. Other Application Requirements:

    A. Prior to submitting an application for a conditional use permit, all applicants shall obtain any and all required FAA permits or approvals.

B. The setback for any dwelling shall be reciprocal in that no dwelling shall be constructed within the same setback as a new turbine would need to meet to an existing dwelling.

C. All line under 34.5 KV must be buried.

D. All Substations will have the same setbacks as any other structure.

E. Any/all transformers must be located within the road right of way.

SUBDIVISION 9. NOISE STANDARDS

Noise is regulated by the Minnesota Pollution Control Agency under Chapter 7030. These rules establish the maximum nighttime and daytime noise levels that effectively limit wind turbine noise to 50 dB. However, these standards may not be sufficient for the "preservation of public health and welfare" in relation to impulsive noises. Additional local limits relative to impulsive and pure tone noises may be required.

SUBDIVISION 10. 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.

   C. Aviation warning shall be painted on meteorological towers of 200 feet or less.

SUBDIVISION 11. DECOMMISSIONING PLANS

For all Commercial WECS applications, the submitted decommissioning plan shall include, at a minimum, the following:

1. When and how a facility is to be decommissioned

2. Removal of all structures and debris to a depth of four (4) feet

3. Restoration of the soil

4. Restoration of vegetation (consistent and compatible with surrounding vegetation)

5. Estimated cost of decommissioning the WECS

6. Financial resources to be used to accomplish decommissioning

7. Road maintenance during and after completion of the decommissioning

Any WECS that have not been used or have not had energy production of a period of twelve months must be decommissioned. If the applicant has future plans for the tower(s) and site(s) he/she must have the conditional use permit and the future plans reviewed by the Redwood County Planning Commission. The applicant will be responsible for paying the required fees. If the tower is to be decommissioned, the applicant must follow all the guidelines that were set forth in the approved decommissioning plan.

SUBDIVISION 12. WASTE MANAGEMENT

1. Solid Waste: Construction of WECS, as with other facilities, will lead to the generation of various types of waste: packaging, equipment parts, litter, and debris generated by clearing. Removal of such material shall be accomplished in a timely manner. Similarly, ongoing operation and maintenance of these machines results in the generation of various waste products. This may include worn parts and packaging for new parts. All such materials shall be removed from the site immediately and managed in an appropriate manner.

2. Hazardous Waste: Operation and maintenance of WECS may result in the generation of some hazardous materials. This will primarily be used lubricating materials. All such material shall be removed from the site immediately and managed in a manner consistent with all appropriate federal, state, and local rules and regulations.

SUBDIVISION 13. TOWER TYPE

All installed Commercial WECS must utilize self-supporting tubular towers. Non-Commercial WECS may use tubular or lattice construction towers. Meteorological towers may be guyed. Tubular towers provide several benefits:

1. Improved aesthetics, including intra and inter visual consistency

2. Minimized impact on farming activities

3. Reduced potential for unauthorized climbing

4. Improved maintenance access increasing the total turbine operating availability

5. Reduced need for ancillary structures to house control equipment

SUBDIVISION 14. AESTHETICS

The following items are required standards to mitigate visual impacts of Commercial WECS:

1. Coatings and Coloring: All Commercial WECS shall be finished in a non-reflective unobtrusive color. Black blades are acceptable for mitigation of icing.

2. Signage: Any printed or visual markings on the tower or nacelle shall be consistent with the Redwood County Ordinance pertaining to signage.

3. Turbine Consistency: To the extent feasible, the project shall consist of turbines of similar design and size, including tower height. Further, all turbines shall rotate in the same direction. Turbines shall also be consistent in design, color, and rotational direction with nearby facilities.

4. Lighting: Lighting, including light 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. It may be appropriate for permits to allow for some infrared lights or heat lamps to prevent icing of sensors.

5. Intra-project Power and Communication Lines: All power lines used to collect power from individual turbines in a Commercial WECS, and all communication lines shall be buried underground. Allowances shall be provided where shallow bedrock interferes with the ability to bury underground lines.

SUBDIVISION 15. INTERFERENCES

1. No wind turbine shall be permitted that causes any interference with commercial or private use and enjoyment of other legally operating telecommunication devices including but not limited to radios, televisions, telephones, personal communication devices and other electronic equipment and devices.

2. All applicants that propose to construct, maintain, or operate a Commercial WECS must notify in writing any and all telecommunication companies (including wireless) that have facilities located within one mile of the proposed site of the intent to construct and the proposed location of the wind power facility. It is the applicant's responsibility to hold a meeting if any of the telecommunication companies respond to the applicant's notification. This meeting must be held before the Redwood County Environmental Office shall accept an application to construct a Commercial WECS.

SUBDIVISION 16. ORDERLY AND EFFICIENT USE OF THE RESOURCE

The Redwood County Zoning Ordinance calls for the orderly and efficient use of the wind resource. Applications shall be reviewed to ensure that the project area does not adversely impact wind development potential on adjacent lands.

SUBDIVISION 17. AVOIDANCE AND MITIGATION OF DAMAGES TO ROADS

1. Roads. Applicants shall:
    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 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 the Redwood County Dispatch prior to any road closures for the re-routing of emergency vehicles during the closure.
    d. Contact the road authority to conduct an inspection of the road conditions of the haul routes prior to and after construction.
    e. Provide a Performance Bond to be held by the county until the Township and/or County road authority (ies) have provided the County Auditor with a written release that all haul routes within their jurisdiction in Redwood County have been returned to pre-construction condition.

SUBDIVISION 18. PRE-CONSTRUCTION MEETING

Applicant will conduct a Pre-Construction meeting prior to construction commencement with a written notice sent to the following individuals a minimum of one week prior to said meeting:

1. Township Chairman
2. Redwood County Highway Engineer
3. Redwood County Sheriff
4. Redwood County Zoning Administrator
5. Area Hydrologist, Minnesota Department of Natural Resources
6. Minnesota Pollution Control Agency
7. United States Farm Service Agency
8. Redwood County Soil & Water Conservation District
9. US Fish & Wildlife Service
10. Minnesota State Historical Society
11. Two Planning Commission Members: Chair and County Board Representative
12. Minnesota Department of Roads

SUBDIVISION 19. EFFECTIVE DATE

This amended and restated ordinance shall be in full force and effect upon adoption and publication pursuant to law. Passed and adopted by the Redwood County Board of Commissioners this 4th day of August, 2009.

Allen Kokesch, Chairman Redwood County Board of Commissioners	Vicki Knobloch Redwood County Administrator