

ORDINANCE NO.

AN ORDINANCE AMENDING ORDINANCE NO. 1060
KNOWN AS THE WILLMAR ZONING ORDINANCE BY
ADDING SECTION 11 RELATING TO
WIND ENERGY CONVERSION SYSTEMS (WECS)

The City of Willmar does ordain as follows:

SECTION 11. Ordinance No. 1060 is hereby amended by adding a new SECTION 11 so as to read as follows:

SECTION 11. Wind Energy Conversion Systems (WECS)

A. PURPOSE AND INTENT. The purpose of this Section is to establish standards and procedures by which the installation and operation of wind energy conversion systems and vertical axis wind energy conversion systems shall be governed within the City.

B. DEFINITIONS:

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, that operate by converting the kinetic energy of wind into electrical energy. The energy may be used on-site or distributed into the electrical grid.

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 15 kW in total name plate generating capacity.

Vertical Axis WECS: A WECS of less than 14 kW in total name plate generating capacity.

Feeder Line: Any power line that carries electrical power from one or more wind turbines or individual transformers associated with the 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.

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 greater than 35,000 volts for interconnection with high voltage transmission lines shall be located outside of the road right of way.

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, or rotor blades.

Tower height: The total height of the WECS exclusive of the rotor blades.

Transmission Line: Those electrical power lines that carry voltages of at least 69,000 volts (69 KV) and are primarily used to carry electric energy over medium to long distances rather than directly interconnecting and supplying electric energy to retail customers.

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.

C. APPLICATION PROCEDURES:

Application for WECS shall be reviewed and processed in accordance with the conditional use permit procedures established in Section 9.E.1-9. of the Willmar Zoning Ordinance. The following information is required in addition to the information required for a conditional use permit application:

The application for all WECS shall include the following information:

1. A description of the project including: number, type, name plate generating capacity, tower height, rotor diameter, and total height of all wind turbines and all means of interconnecting with the electrical grid.
2. Property survey, 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.
3. Evidence that the applicant can obtain and maintain adequate liability insurance for the WECS and subject property.
4. Licensed Professional Engineer's certification.
5. Documentation of land ownership or legal control of the property.

The application for Commercial WECS shall also include:

1. The latitude and longitude of individual wind turbines. A USGS topographical map, or map with similar data, of the project site including boundaries of the project area, surrounding property within ¼ mile, and any other WECS within 10 rotor diameters of the proposed project.
2. Location of wetlands, scenic, and natural areas (including bluffs) within one mile of the proposed WECS.

3. FAA Permit Application.
4. Location of all known Communications Towers within 2 miles of the proposed project. Provide proof that the WECS will not interfere with emergency or other microwave transmission.
5. A noise study, prepared by a qualified professional that demonstrates that except for intermittent episodes, the WECS shall not emit noise in excess of the limits established in Minnesota Rules 7030 governing noise and Section 8.G.1-3. of Willmar Zoning Ordinance, as applicable.
6. A shadow flicker model that demonstrates that shadow flicker shall not fall on, or in, any existing residential structure. Shadow flicker expected to fall on a roadway or a portion of a residentially zoned property may be acceptable if the flicker does not exceed 30 hours per year; and the flicker will fall more than 100' from an existing residence; or the traffic volumes are less than 500 vehicles (ADT). The shadow flicker model shall:
 - a. Map and describe with a 1,000' radius of the proposed dispersed wind energy system the topography, existing residences and location of their windows, location of other structures, wind speeds and directions, existing vegetation and roadways. The model shall represent the most probable scenarios of wind constancy, sunshine constancy, and wind directions and speed;
 - b. Calculate the locations of shadow flicker caused by the proposed project and the expected durations of the flicker at these locations, calculate the total number of hours per year of flicker at all locations.
 - c. Identify problem areas where shadow flicker will interfere with existing or future residences and roadways and describe proposed mitigation measures, including, but not limited to, a change in siting of WECS, a change in the operation of the WECS, or grading or landscaping mitigation measures.
7. Decommissioning Plan.
8. Description of potential impacts on nearby WECS and wind resources on adjacent properties.

Application Procedures for Aggregated Projects:

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.

One WECS shall be permitted per property in R-1 and R-2 Districts, aggregated shall be allowed in all other Districts as the conditional use permitting process allows.

D. DISTRICT REGULATIONS:

Vertical Axis WECS are permitted with a conditional use permit in the following districts:

R-1, R-2, R-3, R-4, R-5, LB, CBD, SCD, GB, I-1, I-2, Ag, G/I

Commercial WECS are permitted with a conditional use permit in the following districts:

LB, CBD, SCD, GB, I-1, I-2, Ag, G/I

Guyed Towers shall be prohibited in all districts.

One tower shall be permitted per property in all residential districts, and multiple WECS per property shall be considered via a conditional use permit and the following standards:

1. Proximity to another WECS and the property line.
2. Aesthetics.
3. Design professional data shall be provided proving that the property can accommodate and safely facilitate more than one WECS.

E. SETBACKS/HEIGHT LIMITS:

1. WECS shall adhere to the setbacks established as follows:
 - a. Vertical Axis WECS and Commercial WECS shall be setback ~~44~~ 1.25 times the total height from the property line.
2. WECS shall adhere to the height limits established in Section 3.D.1. regarding height limitations as follows:
 - a. Commercial WECS shall not exceed 55 feet in height.
 - b. Vertical Axis WECS in a residential area shall not exceed 35 feet in height.
3. *WECS shall adhere to mounting parameters as follows:*
 - a. *Lots that are equal to or exceed 100' in width can mount WECS in rear yards or on a structure.*
 - b. *Lots that are less than 100' in width shall be limited to structure mounts only.*
4. *WECS unit blades shall be limited to 7' in diameter and unit height to 10' maximum.*

F. REQUIREMENTS AND STANDARDS:

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. All electrical devices interconnected to the local grid must adhere to IEEE 1547 (standard for interconnecting distributed resources with electric power systems) as adopted by Willmar Municipal Systems.
- d. Warnings- 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.

2. Standards

- a. Tower configuration- All wind turbines, which are part of a commercial WECS, shall be installed with a tubular, monopole type tower.
- b. Color and Finish- All wind turbines and towers 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.
- c. Lighting- Lighting, including 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 impact on migrating birds. Red pulsating incandescent lights should be avoided.
- d. Other Signage- All signage on site shall comply with the City of Willmar Sign Ordinance. The manufacturers or owners company name and/or logo may be placed upon the nacelle, compartment containing the electrical generator, of the WECS.
- e. Feeder Lines- All communications and feeder lines, equal to or less than 34.5 kV 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 City authority. No communication and feeder lines that are not part of a public project shall be allowed within public right-of-way, nor shall any such lines be the responsibility of any public entity for locates.
- f. Shadow Flicker- Shadow flicker may not exceed 30 hours per year and shall not fall more than 100' from an existing residential property.

- g. 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.
- h. 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 Zoning Administrator outlining the steps and schedule for returning the WECS to service. All commercial WECS and accessory facilities, including the foundation, shall be completely removed within a year of discontinuation of use for commercial WECS projects. For non-commercial projects, the footings for the WECS may be left in place provided the slab remains in place.
- i. 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.
- j. Orderly Development- Upon issuance of a conditional use permit, all Commercial WECS shall notify the Energy Facility Permitting staff of Department of Commerce of the project location and details on the form specified by the Department.
- k. Noise- ~~All WECS shall comply with Minnesota Rules 7030 governing noise and Section 8.G. of the City of Willmar Zoning Ordinance 1060. All WECS shall not exceed 30 Db at the property line.~~
- l. Electrical codes and standards- All WECS and accessory equipment and facilities shall comply with the National Electrical Code and other applicable standards.
- m. Federal Aviation Administration- All WECS shall comply with FAA standards and permits.
- n. International Building Code- All WECS shall comply with the International Building Code adopted by the State of Minnesota.
- o. 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 City for permits. No WECS shall be constructed so as to interfere with any microwave transmissions.

- p. Right of Entrance- By the acceptance of the conditional use permit, the owner/operator grants permission to the City of Willmar to enter the property to remove the WECS pursuant to the terms of the conditional use permit and to assure compliance with other conditions set forth in the permit.
3. Avoidance and Mitigation of Damages to Infrastructure and Utilities
- a. Roads- Applicants shall: Identify all county, city or township roads to be used for the purpose of transporting commercial WECS, substation parts, concrete, and/or equipment for construction, operation or maintenance of the commercial WECS and obtain applicable weight and size permits from the impacted road authority(ies) prior to construction.
 - b. Be responsible for restoring or paying damages as agreed to by the applicable road authority(ies) sufficient to restore the road(s) and bridges to preconstruction conditions.
 - c. Drainage System- The applicant shall be responsible for immediate repair of damage to public drainage systems stemming from construction, operation or maintenance of the WECS.
 - d. The owner of the WECS is responsible for any damage to any below grade public or private utilities