



CITY OF RAPID CITY

RAPID CITY, SOUTH DAKOTA 57701-2724

PLANNING DEPARTMENT

300 Sixth Street

Bill Lass, Senior Planner
Urban Division
city web: www.ci.rapid-city.sd.us

Phone: 605-394-4120
Fax: 605-394-6636
e-mail: bill.lass@ci.rapid-city.sd.us

MEMORANDUM

TO: Rapid City Planning Commission

FROM: Bill Lass, Senior Planner

DATE: April 24, 2001

RE: Draft of Wind Energy Conversion System Ordinance

Attached please find a draft of the Ordinance language intended to allow wind energy conversion systems as a Use on Review. There are three separate proposed Ordinance amendments as follow:

Ordinance #1 - This Ordinance sets forth the various requirements under which an application for a Use on Review for a wind energy conversion system must be reviewed. The Ordinance includes requirements related to: the legalities associated with operation of wind energy conversion systems, size and height restrictions, noise, electromagnetic interference, safety requirements and impacts upon neighboring properties.

Ordinance #2 – This Ordinance amendment sets forth the definition of a wind energy conversion system.

Ordinance #3 – This Ordinance would amend the Park Forest, General Commercial, General Agriculture, Light Industrial, Heavy Industrial, Mining and Earth Extraction, and Public Zoning Districts to allow wind energy conversion systems as a Use on Review.

Currently, wind energy conversion systems are allowed only as an accessory use by the Rapid City Zoning Ordinance. The proposed Ordinance Amendments will clarify that wind energy conversion systems are allowed as an accessory structure only after a Use on Review is obtained. This Ordinance does not address the construction of stand-alone wind energy conversion systems specifically intended for the commercial sale of power.



EQUAL OPPORTUNITY EMPLOYER

It is important to note that this Ordinance is only in draft format. As per the Planning Commission's direction, the draft is being brought to the Commission for discussion purposes. Some of the requirements included in the draft Ordinance are standard requirements that cannot be changed because they are safety-related or because they are addressed by some other federal or state law. However, a number of requirements can be modified to fit our community standards. It is these requirements in particular that the Planning Commission should carefully review. Some such requirements open to discussion include setbacks, tower height, noise, and tower design. Tower height in particular is a sensitive issue. Staff has researched several other wind energy conversion system codes from other cities and has found a wide range of maximum tower heights ranging from thirty feet to over 150 feet. The economic feasibility and practicality of a wind energy conversion system is largely based on the system size and the height. Very small systems can be constructed on roof tops or short towers but these systems only generate a very small amount of electricity. In order to construct larger systems capable of providing a substantial amount of power, towers over 125 feet are required.

Please review the attached information. If you have any questions please feel free to contact me.

Thank you.

WIND ENERGY CONVERSION SYSTEMS – DRAFT ORDINANCES

Note: **Bold lettering** indicates proposed new text.

SECTION 17.50.215 – WIND ENERGY CONVERSION SYSTEMS

- A. Wind Energy Conversion Systems shall be allowed as accessory structures as a Use on Review in certain zoning districts. In addition to the standards set forth in Chapter 17.54.030 regarding all Uses on Review, all Wind Energy Conversion Systems shall also meet all requirements of Section 17.50.215 herein.**
- B. Commercial Sale of Power Prohibited:** Any wind energy conversion system shall be used only for the purpose of generating power for the property on which the wind energy conversion system is located, or for the purpose of transmitting power to the electrical grid of an electric utility company through an approved interconnection.
- C. Utility Interconnections:** Any wind energy conversion system shall be constructed and operated, and any interconnection between a wind energy conversion system and a electric utility company shall be allowed only in accordance with all local, state and federal regulations including the Public Utilities Commission and any Federal Aviation Administration requirements. Additionally, electrical interconnections shall be allowed only in accordance with the applicable standards of the electric utility company.
- D. Required Setbacks:** A minimum setback of one and one-half times the height of the wind energy conversion system and any property line, structure intended for human occupation, overhead utility line, or other tower support base shall be maintained.
- E. Tower Height:** In no event shall the height of a wind energy conversion system exceed one hundred and fifty feet. Further, there shall be no less than thirty feet between the lowest arc of the rotors of a wind energy conversion system and the ground, any portion of a structure, or tree.
- F. Rotor Size/Operation:** The maximum size of the rotors of a wind energy conversion system shall be reviewed upon application for a Use on Review. In determining the appropriate size for the rotors, the City shall consider such factors as noise, proximity to surrounding residences, safety and aesthetic issues. All systems shall be equipped with appropriate braking devices or similar protective devices to slow down or stop the rotors if the wind exceeds the capacity of the system.
- G. Noise:** No wind energy conversion system shall produce more than sixty decibels of sound measured at the closest point on the closest property line from the base of the system. Information from the manufacturer of the wind energy conversion system shall be submitted at the time of submittal of the Use on Review ensuring that this requirement can be met once the system is operational.

- H. Electromagnetic Interference:** No wind energy conversion system shall produce electromagnetic interference so as to disrupt transmissions such as those from radio, television, or microwave towers. At the time of application of the Use on Review the petitioner must submit information from the manufacturer indicating that once operational the wind energy conversion system will not adversely affect such transmissions. If necessary, generators and alternators shall be filtered, shielded, or both so as to prevent the emission of radio and television signals.
- I. Tower Access:** Appropriate safety measures must be undertaken to discourage unauthorized climbing of a wind energy conversion system tower. Appropriate measures shall include either:
- a. The construction of a six-foot tall chain link fence with locking gate around the tower;
 - b. The tower shall be constructed so that the lowest climbing access shall be at least twelve feet above the ground; or,
 - c. A locked anti-climb device shall be installed on the tower.
- J. Warning Information:** Information related to the maximum power output, nominal voltage and maximum current, and emergency shut-down procedures for the wind energy conversion system shall be posted near the base of the tower in a visible location.
- K. Lighting:** Unless required by a more restrictive regulation, no lighting shall be installed on a wind energy conversion system.
- L. Tower Design:** In reviewing the Use on Review for a wind energy conversion system, the City shall consider the design of the tower to ensure that no significant adverse impacts are occurring to neighboring property owners including but not limited to infringement into view-sheds.
- M. Manufacturer Warranty:** Upon application for a Use on Review for a wind energy conversion system, the petitioner shall submit a manufacturer's statement documenting that the system has been successfully and safely operated in atmospheric conditions that are similar to conditions in Rapid City. Further, the petitioner shall provide a copy of the manufacturer's warranty indicating that the system is warranted against any system failures reasonably expected during severe weather conditions.
- N. Construction Standards:** Any wind energy conversion system shall be constructed in accordance with all applicable Life, Safety, Building and Fire Codes including but not limited to the following.
- a. An applicant for a building permit for a wind energy conversion system shall submit plans and specifications stamped by a registered engineer.
 - b. **Lightning Protection:** Any wind energy conversion system shall have appropriate lightning protection to sufficiently protect all connected and adjacent equipment and structures from damage. The lightning protection system shall effectively discharge lightning energy from the structure to the ground through the application of shielding, lightning arresters, and deep earth grounding.

- O. **Abandonment:** Any wind energy conversion system which has not been used for a period of six months or more shall be declared abandoned. Upon abandonment of the system, the City shall revoke the Use on Review and the system shall be removed at the expense of the property owner.

Ordinance Amendment #2 -

Section 17.04.752 Wind Energy Conversion System

A wind energy conversion system (WECS) is an aggregation of parts including the base, tower, generator, rotor, blades, supports, guy wires, and accessory equipment such as utility interconnections, battery banks, etc. in such a configuration as necessary to convert the power of wind into mechanical or electrical energy. WECS are also known as wind chargers, windmills, or wind turbines.

Ordinance Amendment #3 – Revise the following zoning districts to add “**Wind Energy Conversion Systems according to the requirements of 17.50.215**” as a Use on Review in the Park Forest, General Commercial, General Agriculture, Light Industrial, Heavy Industrial, Mining and Earth Extraction, and Public Zoning Districts.