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: May 16, 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. The Planning Commission reviewed this proposal for the first time on May 10, 2001 but continued action on the request due to concerns with the potential height of the systems.

As discussed, tower height 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. At the request of the Planning Commission, Staff has attached the Sioux Falls Ordinance regarding wind energy conversion systems. Also, below is a summary of height requirements from several sources including Sioux Falls.

City/Source	Height Requirement
Sioux Falls, South Dakota	No maximum height. Height regulated by setbacks.
Omaha, Nebraska	Varies from 35 feet to 150 feet in residential and agricultural zoning districts.

Missouri City, MO	Height is limited by maximum height in respective Zoning District.
Buffalo, MN	175 feet maximum *or* a 1:1 ratio between base of WECS to closest property line – whichever is less.
Model Ordinance from U.S. Dept. Energy	90 feet to hub (rotors would extend above this of height)
American Wind Energy Association	80 to 120 feet are most common tower heights
Northwoods Energy Alternatives, (private WECS installation business in Michigan)	Tower height must be a minimum of thirty feet above *any* structure within 300 feet.

The Planning Commission on May 10 also asked Staff to research other communities where wind energy conversion systems had actually been constructed. Staff is still researching this information and will provide an update at the May 24 Planning Commission meeting.

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

Thank you.

WIND ENGERGY 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.

Sioux Falls Code of Ordinances: 15.49.030 Wind energy conversion systems.

Previous heading / Next heading / Table of Contents

15.49.030 Wind energy conversion systems.

The regulations regarding wind energy conversion systems (hereafter referred to as WECS) shall be as follows:

(a) Limited use: No WECS installed in accordance with the requirements of this ordinance shall generate power as a commercial enterprise as defined by the public utilities commission.

(b) Setback requirements: The minimum distance between the property line, overhead utility lines or another wind turban, and any tower support base of a WECS shall be equal to the proposed tower height (plus the radius of the rotor for the horizontal axis machines).

Contiguous property owners and planned developments may construct a WECS for their use in common. If property held by more than one single owner is used to meet the setback requirements, a site plan establishing easements or reserved areas must be submitted to the planning commission for their approval.

(c) Tower access: Climbing access to the WECS tower shall be limited either by means of a fence six feet high around the tower base with a locking portal, or by limiting towerclimbing apparatus so there is access to it no lower than 12 feet from the ground.

(d) Electromagnetic interference: If a WECS is installed in any location along or within the major access of an existing microwave communications link, the person desiring to install the WECS shall be required to provide a letter from the business whose link they are within or adjacent to stating that the business whose link is affected would have no objection to the installation of the WECS.

(e) Air space: A WECS shall be located or installed in compliance with the guidelines of the federal aviation regulations with regard to airport approach zones (15.54.030) and clearance around VOR stations.

(f) [Noise limits:] A WECS operation shall not produce noise in excess of the limits established by chapter 9 of the City Code of Ordinances.

(g) Interconnect: The WECS, if interconnected to an electric utility distribution system, shall meet the interconnect requirements of the electric utility company.