



City of Grand Island

Tuesday, March 24, 2009

Council Session

Item F3

#9210 - Consideration of Changes to the Grand Island City Code Chapter 36 Relative to Wind Energy Systems

This item relates to the aforementioned Public Hearing Item E-3.

Staff Contact: Chad Nabity

ORDINANCE NO. 9210

An ordinance to amend Chapter 36 of the Grand Island City Code specifically, to amend Sections 36-103 to provide definitions, standards, setbacks and regulations regarding wind energy systems; to repeal any ordinance or parts of ordinances in conflict herewith; and to provide for publication in pamphlet form and the effective date of this ordinance.

BE IT ORDAINED BY THE MAYOR AND COUNCIL OF THE CITY OF GRAND ISLAND, NEBRASKA:

SECTION 1. Sections 36-103 of the Grand Island City Code are hereby amended to read as follows:

36-103 Wind Energy Conversion Systems

Definitions

The following are defined for the specific use of this section.

- A. Aggregate Project shall mean projects that 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 part of the aggregated project.
- B. Commercial WECS shall mean a wind energy conversion system of equal to or greater than 100 kW in total name plate generating capacity.
- C. Connector Line shall mean any power conductor that carries electrical power from one or more wind turbines to the point of interconnection with the distribution system.
- D. Hub Height shall mean the distance from ground level as measured to the centerline of the rotor.
- E. Fall Zone shall mean the area, defined as the furthest distance from the tower base, in which a guyed or tubular tower will collapse in the event of a structural failure. This area may be less than the total height of the structure.
- F. Meteorological Tower shall mean, for purposes of this regulation, a tower which is erected primarily to measure wind speed and directions plus other data relevant to siting a Wind Energy Conversion System. Meteorological towers do not include towers and equipment used by airports, the Nebraska Department of Roads, or other applications to monitor weather conditions.

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- G. **Property Line** shall mean the boundary line of the area over which the entity applying for a Wind Energy Conversion System permit has legal control for the purpose of installing, maintaining and operating a Wind Energy Conversion System.
- H. **Public Conservation lands** shall mean land owned in fee title by State or Federal agencies and managed specifically for conservation purposes, including but not limited to State Wildlife Management Areas, State Parks, federal Wildlife Refuges and Waterfowl Production Areas. For purposes of this regulation, public conservation lands will also include lands owned in fee title by non-profit conservation organizations, Public conservation lands will also include private lands upon which conservation easements have been sold to public agencies or non-profit conservation organizations.
- I. **Rotor Diameter** shall mean the diameter of the circle described by the moving rotor blades.
- J. **Small Wind Energy Conversion System (SWECS)** shall mean a wind energy conversion system consisting of a wind turbine, a tower, and associated control or conversion electronics, which has a rated capacity of not more than 100 kW and which is intended to primarily reduce on-site consumption of utility power.
- K. **Substations** shall mean any electrical facility to convert electricity produced by wind turbines to a higher or lower voltage for interconnection with transmission lines.
- L. **Total Height** shall mean the highest point, above ground level, reached by a rotor tip or any other part of the Wind Energy Conversion System.
- M. **Tower** shall mean the vertical structures, including the foundation, that support the electrical generator, rotor blades, or meteorological equipment.
- N. **Tower Height** shall mean the total height of the Wind Energy Conversion System, between the ground level at the base of the tower and the top of the tower, exclusive of the rotor blades.
- O. **Transmission Line** shall mean the 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.
- P. **Wind Energy Conversion System (WECS)** shall mean 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

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

- Q. Wind Turbines shall mean any piece of electrical generating equipment that converts the kinetic energy of blowing wind into electrical energy using airfoils or similar devices to capture the wind.

Small Wind Energy Conversion Systems

Purpose

It is the purpose of this regulation to promote the safe, effective and efficient use of wind energy systems installed to reduce the on-site consumption of utility supplied electricity.

Requirements

Small wind energy conversion systems shall be permitted as an Accessory Use within any district where the use is listed and allowed. Certain requirements as set forth below shall be met:

A. Tower Height

1. For all residential or residentially zoned properties tower height shall be limited to 80 feet or the maximum height for a structure in that district, tower must meet required setbacks.
2. For non-residential or non-residentially zoned properties between 20,000 square feet and one acre tower height shall be limited to 80 feet or the maximum height for a structure in that district, tower must meet required setbacks.
3. For non-residential or non-residentially zoned properties greater than one acre in size, there is no limitation on tower height, except that the tower must meet required setbacks.

B. Minimum Lot Size

1. Towers shall not be permitted on any lot of less than 20,000 square feet

C. Setbacks

1. No part of the wind system structure, including guy-wire anchors, may extend closer than 10 feet to the property lines of the installation site; tower must meet required underlying setbacks.

D. Noise

1. Small wind energy systems shall not exceed 60 dBA, as measured at the closet neighboring inhabited dwelling unit.
2. The noise level may be exceeded during short term events such as utility outages and/or severe wind storms, wind speeds of greater than 50 miles per hour.

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E. Approved Wind Turbines

1. Small wind turbines must have been approved under the Emerging Technologies program of the California Energy Commission or any other small certification program recognized by the American Wind Energy Association.

F. Compliance with Building and Zoning Codes

1. Applications for small wind energy systems shall be accomplished by standard drawings of the wind turbine structure, including the tower base, and footings.
2. An engineering analysis of the tower showing compliance with official building code of the governing body and/or the State of Nebraska and certified by a licensed professional engineer shall also be submitted.

G. Compliance with FAA Regulations

1. Small wind energy conversion systems must comply with applicable FAA regulations, including any necessary approvals for installations close to airports.
2. No small wind energy system shall be installed until evidence has been given that the Central Nebraska Regional Airport has been informed of the applicant's intent to install a SWECS.

H. Compliance with National Electrical Code

1. Permit applications for small wind energy systems shall be accompanied by a line drawing of the electrical components in sufficient detail to allow for a determination that the manner of installation conforms to the National Electrical Code and the National Electric Safety Code.

I. Utility Notification

1. No small wind energy system shall be installed until evidence has been given that the utility company has been informed of the customer's intent to install an interconnected customer-owned generator.
2. Off-grid systems shall be exempt from this requirement.

Setbacks

All towers for SWECS shall adhere to the setbacks established in the following table:

	<u>Required Setbacks for SWECS Towers</u>
<u>Property Lines</u>	<u>One times the total height plus underlying setback</u>
<u>Road Rights-of-Way*</u>	<u>One times the total height plus underlying setback</u>
<u>Other Rights-of-Way</u>	<u>One times the total height plus underlying setback</u>

* The setback shall be measured from any future Rights-of-Way if a planned change or expanded Right-of-Way is known.

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Commercial/Utility Grade Wind Energy Conversion Systems

Purpose

It is the purpose of this regulation to promote the safe, effective and efficient use of commercial/utility grade wind energy conversion systems within the City of Grand Island and its Extraterritorial Zoning Jurisdiction

Requirements

Commercial/Utility Grade wind energy systems shall be a Conditional Use within the AG-2 Secondary Agricultural District, the TA Transitional Agriculture District and the AG-SI Special Agriculture/Industrial Zone. The following requirements and information shall be met and supplied:

- A. The name(s) of project applicant.
- B. The name 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, feeder lines, and all related accessory structures. This site layout shall include distances and be drawn to scale.
- F. Certification by an Engineer competent in disciplines of WEC's.
- G. Documentation of land ownership or legal control of the property.
- H. The latitude and longitude of individual wind turbines; included with this shall be an area or zone in close proximity that meets all setbacks; where actual WEC will be considered.
- I. A USGS topographical map, or map with similar data, of the property and surrounding area, including any other Wind Energy Conversion System, within 10 rotor distances of the proposed Wind Energy Conversion System not owned by the applicant.
- J. Location of migratory waterfowl flyways, wetlands, scenic, and natural areas within 1,320 feet of the proposed Wind Energy Conversion System.
- K. An Acoustical Analysis that certifies that the noise requirements within this regulation can be met
- L. The applicant shall supply the emergency management agency and/or fire departments with a basic emergency response plan.
- M. FAA and FCC permit, if necessary. Applicant shall submit permit or evidence that the permit has been filed with the appropriate agencies and that the Central Nebraska Regional Airport has been notified of the project.
- N. Evidence that there will be no inference with any commercial and/or public safety communication towers.
- O. Decommissioning Plan as required by this regulation.

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Setbacks

All towers shall adhere to the setbacks established in the following table:

	<u>Wind Turbine – Commercial/Utility WECS</u>	<u>Meteorological Towers</u>
<u>Property Lines</u>	<u>150 feet from property lines; however, the setback may be less when two adjoining property owners are within the aggregate project.</u>	<u>One times the tower height.</u>
<u>Neighboring Dwelling Units</u>	<u>1,000 feet</u>	<u>One times the tower height.</u>
<u>Road Rights-of-Way*</u>	<u>One-half the rotor diameter.</u>	<u>One times the tower height.</u>
<u>Other Rights-of-Way</u>	<u>NA</u>	<u>NA</u>
<u>Wildlife Management Areas and State Recreational Areas</u>	<u>600 feet</u>	<u>600 feet</u>
<u>Wetlands, USFW Types III, IV, and V</u>	<u>600 feet</u>	<u>600 feet</u>
<u>Other structures and cemeteries adjacent to the applicant's sites</u>	<u>One-half the rotor diameter.</u>	<u>One times the tower height.</u>
<u>Other existing WECS not owned by the applicant.</u>	<u>NA</u>	<u>NA</u>

* The setback shall be measured from any future Rights-of-Way if a planned change or expanded Right-of-Way is known.

Special Safety and Design Standards

All towers shall adhere to the following safety and design standards:

- A. Clearance of rotor blades or airfoils must maintain a minimum of 12 feet of clearance between their lowest point and the ground.
- B. All Commercial/Utility WECS shall have a sign or signs posted on the tower, transformer and substation, warning of high voltage. Other signs shall be posted on the tower base or perimeter fencing with emergency contact information.
- C. All wind turbines, which are a part of a commercial/utility WECS, shall be installed with a tubular, monopole type tower.
- D. Consideration shall be given to painted aviation warnings on all towers less than 200 feet.
- E. Color and finish:
All wind turbines and towers that are part of a commercial/utility WECS 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.
- F. Lighting:
Lighting, including lighting intensity and frequency of strobe, shall adhere to but not exceed requirements established by the FAA permits and regulations. Red strobe lights shall be used during nighttime illumination to reduce impacts on

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neighboring uses and migratory birds. Red pulsating incandescent lights should be avoided.

G. Other signage:

All other signage shall comply with the sign regulations found in the City Code.

H. Feeder Lines:

All communications and connector lines associated with the project distribution system installed as part of a WECS shall be buried. Where obstacles to the buried lines create a need to go above ground, these lines may be placed above ground only to miss the obstacle.

I. 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.

J. Discontinuation and Decommissioning:

A WECS shall be considered a discontinued use after one 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 WECS and accessory facilities shall be completely removed to twelve feet below ground level within 180 days of the discontinuation of use. The 180 days may be extended if proof of weather delays is provided.

Each Commercial/Utility WECS shall have a Decommissioning plan outlining the anticipated means and cost of removing WECS at the end of their serviceable life or upon use being discontinued. 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 decommissioning and removal of the WECS and accessory facilities. The initial plan shall be submitted with the application. An updated plan shall be filed with the City every 5 years.

K. Noise:

No Commercial/Utility WECS shall exceed 50 dBA at the nearest structure or use occupied by humans.

L. Interference:

The applicant shall not cause interference with power quality of area utility feeder circuits and shall not introduce noise to the connected electric distribution system. WECS shall not cause interference with any commercial or public safety electromagnetic communications, such as radio, telephone, microwaves, or television signals. The applicant shall notify all electric utilities and

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communication tower operators within five miles of the proposed WECS location upon application for permits.

M. Environmental Permits:

The developer shall present evidence the project meets the environmental permitting requirements of all applicable state and federal agencies if such permits are required.

N. 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.

~~§36-103. Wind Energy Systems~~

~~In any zoning district, a conditional use permit may be granted to allow wind energy conversion system, including such devices as wind charger, windmill, or wind turbine; subject to the following conditions:~~

~~-(A) The distance from any tower support base to any tower support base of another wind energy device under other ownership shall be a minimum of five (5) rotor distances figured by the size of the largest rotor.~~

~~-(B) The wind energy system operation shall not cause interference to the radio and television reception on adjoining property.~~

~~-(C) To limit climbing access to the tower, a fence six (6) feet high with a locking portal shall be placed around the tower base or the tower climbing apparatus shall be limited to no more than twelve feet from the ground, or the tower may be mounted on a roof top.~~

~~-(D) The setback distances from all lot lines to any tower support base shall be determined according to the following setback table:~~

SETBACK TABLE

<u>Rotor Diameter</u>	<u>Setback Distance</u>	<u>Minimum Lot Area[†]</u>
5 feet	100 feet	1.0 Acre
10 feet	165 feet	2.5 Acres
15 feet	220 feet	4.5 Acres
20 feet	270 feet	6.75 Acres
25 feet	310 feet	9.0 Acres
30 feet	340 feet	10.75 Acres
35 feet or larger	365 feet	12.25 Acres

~~[†]Where there are several towers under single ownership the minimum lot areas may be adjusted down provided the minimum setback distances are met on all perimeter units. In addition, the landing areas for all internal towers and rotors shall be within the property owned by the operator.~~

~~-(E) Data pertaining to the machine's turbine safety and stability shall be filed with the application. Such data shall include turbine safety and acceptance results from tests conducted by a qualified individual or organization based upon standards set by the U.S.~~

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~~Department of Energy (DOE), Electric Power Research Institute (EPRI) Utility Wind Turbine Verification Program. (U.S. Department of Energy — EPRI Wind Turbine Verification Program. Electric Power Research Institute — 3412 Hillview Avenue, Palo Alto, California 94304.)~~

~~-(F) The application shall provide covenants, easements, or similar documentation from the abutting owners providing access to wind sufficient for its adequate operation, unless adequate accessibility to the wind is provided on the site.~~

Amended by Ordinance No. _____, effective _____

SECTION 2. Sections 36-103 as existing prior to this amendment, and any ordinances or parts of ordinances in conflict herewith, are repealed.

SECTION 3. The validity of any section, subsection, sentence, clause, or phrase of this ordinance shall not affect the validity or enforceability of any other section, subsection, sentence, clause, or phrase thereof.

SECTION 4. That this ordinance shall be in force and take effect from and after its passage and publication in pamphlet form within 15 days according to law.

Enacted: March 24, 2009.

Margaret Hornady, Mayor

Attest:

RaNae Edwards, City Clerk