Section 900.2 WIND ENERGY INSTALLATIONS

This section is intended to regulate wind energy conversion systems, including such devices as wind charger, windmill, or wind turbines in the County in conformance with the American Wind Energy Association (AWEA) and the United States Department of Energy standards and requirements. Wind energy systems regulations in the County are adopted to protect residential areas and land uses from potential adverse impact of installation of wind energy systems through careful design , sitting, and camouflaging and to avoid potential damage to property caused by wind energy systems by ensuring such structures are soundly and carefully designed, constructed, modified, maintained ,repaired, and removed when no longer used or determined to be structurally unsound and to ensure that wind energy systems are compatible with surrounding land uses.

SMALL WIND ENERGY SYSTEMS

Section 900.2.100 Purpose. It is the purpose of this regulation to promote the safe, effective and efficient use of small wind energy systems installed to reduce the on-site consumption of utility supplied electricity.

Section 900.2.101 Definitions. The following are defined for the specific use of this section.

1. ROTOR DIAMETER: Shall mean the diameter of the circle described by the moving rotor blades.

2. SMALL WIND ENERGY SYSTEMS: 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 kilowatt and which is intended to primarily reduce on-site consumption of utility power.

3. STRUCTURALLY MOUNTED SYSTEM: Shall mean a Small Wind Energy System that is designed to be mounted on a building including residential dwellings.

4. 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.

5. TOWER HEIGHT: Shall mean the height above grade of the first fixed portion of the tower, excluding the wind turbine itself.

Section 900.2.102. Requirements. Certain requirements as set forth below shall be met:

1. Tower Height
    a. For property sizes between ½ acre and one acre the tower height shall be limited to 80 feet.
    b. For property sizes of one acre or more, there is no limitation on tower height, except as imposed by Federal Aviation Administration regulations.
    c. Property under 1/2 acre not eligible.

2. Setbacks
    a. No part of the wind system structure, including guy-wire anchors, may extend closer than accessory building setbacks of the appropriate zoning district of the property lines of the installation site.

3. Noise
    a. Small wind energy systems shall not exceed 50 dBA, as measured at the closest neighboring inhabited dwelling unit; however,
    b. The noise level may be exceeded during short term events such as utility outages and/or severe wind storms.

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

5. Compliance with Building and Zoning Ordinances
    a. Applications for small wind energy systems shall be accompanied by standard drawings of the wind turbine structure, including the tower base, and footings.
    b. An engineering analysis of the tower showing compliance with official building code of the governing body and/or the State of Nebraska certified by a professional engineer licensed and certified in Nebraska shall also be submitted.
    c. The manufacturer frequently supplies this analysis.
    d. Wet stamps shall be required.
    e. Review of applicable Airport Zoning Ordinances (AZO) and restrictions as set forth by the Federal Aviation Administration (FAA).

6. Compliance with Federal Aviation Administration (FAA) and Nebraska Department of Transportation, Aeronautics Division.
    a. Small wind energy systems must comply with applicable Federal Aviation Administration and Nebraska Department of Aeronautics regulations, including any necessary approvals for installation close to an airport. Airports that may impact the addition of Wind Turbines in Dakota County include but are not limited to:
        i. Sioux Gateway Airport, 2403 Aviation Blvd, Sioux City, IA
        ii. Martin Field, South Sioux City NE
        iii. Any private/public owned
    b. Regardless of AZO adoption, presence of structures and certain wildlife attractants near airports are regulated by the FAA.

7. Compliance with National Electrical Code
    a. 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.
    b. The manufacturer frequently supplies this analysis.

8. Utility Information
    a. 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,
    b. Off-grid systems shall be exempt from this requirement.

	Wind Turbine - Non-Commercial	Meteorological Towers
Property Lines (other than right angle corners	1.1 times the total height	One times the total height
Neighboring Dwelling Units	1.1 times the total height	One times the total height
Road Rights-of-Way	1.1 times the total height	One times the total height
Other Rights-of-Way	1.1 times the total height	One times the total height
Public Conservation Lands including Wildlife Management Areas and State Recreation Areas	not applicable	600 feet
Wetlands, US Fish & Wildlife Service Types III, IV, and V	not applicable	600 feet
Other Structures not on the applicant's site	not applicable	One times the total height

COMMERCIAL/UTILITY GRADE WIND ENERGY SYSTEMS

Section 900.2.200 Purpose. It is the purpose of this regulation to promote the safe, effective and efficient use of commercial/utility grade wind energy systems within Dakota County, Nebraska.

Section 900.2.201. Definitions. The following are defined for the specific use of this section.

1. ACCESS ROADS: Shall mean a public or private road providing vehicular access to the boundary of a parcel of real property being proposed for development.

2. 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 wind energy conservation system 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.

3. ANEMOMETER TOWER: Shall mean a structure, including all guy wires and accessory facilities, on which an anemometer is mounted, that is fifty (50) feet in height above the ground or higher, is not located within the boundaries of a municipality, and whose appearance is not otherwise regulated by state of federal law. An “Anemometer” means an instrument for measuring and recording wind speed.

4. CLUSTERING: The grouping of wind turbines positioned or occurring closely together around a non-participating inhabited dwelling.

5. COMMERCIAL WIND ENERGY CONSERVATION SYSTEM: Shall mean a wind energy conversion system of equal to or greater than 100 kilowatt in total name plate generating capacity.

6. dBA: Shall represent an A-weighted decibel measurement of sound in the air as perceived by the human ear. Noise is measured in units of sounds pressure levels called decibels.

7. DEVELOPER: Any individual, corporation, or other organized entity which is planning, proposing, collecting easement/contracts from property owners, or any other activity associated with a proposed wind energy conservation system project, wind energy conservation system project under construction, or operator of the completed wind energy conservation system including individual wind turbines, and/or their successors.

8. DAYTIME HOURS: Shall mean a time period from 8:00 a.m. local time to 8:00 p.m. local time.

9. FALL ZONE: Shall mean 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.

10. FEEDER 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 electrical power grid, in the case of inter connection with the high voltage transmission systems the point of interconnection shall be the substation serving wind energy conservation system.

11. HABITABLE STRUCTURE: A building which provides protection from the weather. The structure shall also contain the necessary plumbing facilities found in livable spaces and the structure shall be connected to all utilities.

12. HUB: The mechanical area sitting atop of a wind turbine structure containing the generation equipment and the point where the blades are connected to the system.

13. HUB HEIGHT: The overall height measured from grade of a wind turbine to the center point of the hub of the turbine.

14. ICE BRAKING: A means built into individual wind turbines that will shut the turbine down if ice build-up is detected.

15. LANDOWNER, NON-PARTICIPATING: An individual or group of individuals not involved in the overall project via land leases, contracts, easements and other such means that may or may not be directly impacted by the wind energy conservation system project. This definition applies to specific parcels; therefore, an individual or group of individuals may be considered participating on one parcel but not another.

16. LANDOWNER, PARTICIPATING: An individual or group of individuals involved, directly or indirectly, in the overall project via land leases/contract and other such means.

17. METEOROLOGICAL TOWER: 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 Sioux Gateway and Martin Field Airport, the Nebraska Department of Roads, or other applications to monitor weather conditions.

18. NON-PARTICIPATING LANDOWNER IMPACT EASEMENT: Any easement given by a non-participating Landowner allowing a wind energy conservation system project to be constructed. Said easement shall be negotiated between the parties and a release signed by the landowner and then attached to the property deed in the Register of Deeds Office.

19. PROJECT OWNER: The individual, or corporate entity responsible for the development of a wind energy conservation system project and is typically the applicant for an overall project.

20. PUBLIC CONSERVATION LANDS: 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.

21. ROTOR DIAMETER: Shall mean the diameter of the circle described by the moving rotor blades.

22. SHADOW FLICKER: The shadow cast from the rotating blades of a turbine which moves with the blades.

23. SUBSTATIONS: Any electrical facility to convert electricity produced by wind turbines to a voltage greater than 35,000 volts (35 kilovolt) for interconnection with high voltage transmission line.

24. 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.

25. TOWER: Shall mean the vertical structures that support the electrical, rotor blades, or meteorological equipment.
26. TRANSMISSION LINE: The electrical power lines that carry voltages of at least 69,000 volts (69 kilovolt) and are primarily used to carry electric energy over medium to long distances rather than directly interconnecting and supplying electric energy to retail customers.

27. WIND ENERGY CONSERVATION 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 may be used on-site or distributed into the electrical grid.

28. WIND TURBINES: 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.

Section 900.2.202. Requirements. Permanent Meteorological towers shall be considered part of the system. Temporary meteorological towers may be permitted in the Primary Agricultural and Secondary Agricultural Districts by a Zoning Permit and limited to two years or less. When requesting a

conditional use permit for a commercial/utility grade wind energy conversion system and/or a zoning permit for a temporary meteorological tower; the following requirements and information shall be met and supplied at the time of the Conditional Use Permit application:

1. The name(s) of the project owner.

2. The name of the project.

3. The legal description and address of the project.

4. A description of the project including for all anticipated turbine models; Number, type, name plate generating capacity, tower height, rotor diameter, and total height of all wind turbines and means of interconnecting with the feeder lines.

5. Site layout, including the location of property lines, and the anticipated location of wind turbines, electrical grid, access roads and all related accessory structures. This site layout shall include distances and be drawn to scale. Included with this shall be an area or zone (within 300 feet of the initial location) that meets all setbacks: where actual wind energy conservation system will be considered.

6. Documentation of land ownership or legal control of the property.

7. A U.S. Geological Survey topographical map, or map with similar data, of the property and surrounding area, including any other wind energy conservation system not owned by the applicant, within 10 rotor diameters of the proposed wind energy conservation system.

8. Location of wetlands, scenic, and Public Conservation Lands including Wildlife Management Areas and State Recreation Areas natural areas within 1,320 feet of the proposed wind energy conservation system.

9. Location of all Sioux Gateway and Martin Field Airport's Communication Towers and all other known Communication Towers within two miles of the proposed wind energy conservation system.

10. Description of potential impacts on nearby wind energy conservation system and wind resources on adjacent properties not owned by the applicant.

11. The applicant shall supply the emergency management agency and/or fire departments with basic emergency response plan.

    a. Applicants shall be required to establish a separate road repair and maintenance agreement with the County and the commercial wind energy conservation system developer which shall be created and made part of the Conditional Use Permit. The agreement shall detail road improvements, road reconstruction, additional right-of-way needs, location of transmission lines, easements, bond, and payment requirements. The agreement shall require the owner to ascertain an irrevocable line of credit or an escrow bearing account equal to 1 million dollars per wind turbine not to exceed 10 million dollars to ensure sufficient funding is available for road repair. For every county bridge crossed an additional 1 million dollars per wind turbine not to exceed 10 million

dollars to ensure sufficient funding is available for bridge repair. The wind energy conservation system developer to pay for inspection for bridges before and after by a county approved inspector. The escrow account for decommissioning to be held in a Dakota County Commissioner approved financial institution.

Section 900.2.203. Zoning Permit Application and necessary Materials.

1. The latitude and longitude of individual wind turbines.

2. Engineer's certification. Certification by an Engineer competent in disciplines of wind energy conservation.

3. An Acoustical Analysis that certifies that the noise requirements within this regulation can be met.

4. Federal Aviation Administration and Nebraska Department of Transportation review and permit application.

5. Decommissioning Plan including the financial means to implement the plan.

Section 900.2.204. Aggregated Projects. The following concerns an aggregated project(s).

1. Aggregated projects may jointly submit a single application and be reviewed under joint proceedings, including notices, public hearings, reviews and as appropriate approvals.

2. Permits may be issued and recorded separately.

3. Setbacks to property lines, not road rights-of way, may be less when adjoining property owners are within the same aggregate project.

4. Clustered wind turbines shall not:
    a. Have more than two turbines between the distances of 2700 feet and 4000 feet from a dwelling on a non-participating landowner property.
    b. These standards shall apply unless the developer and non-participating landowner provide the county with an approved impact easement.
5. Approval of an aggregated project shall give the applicant the approval necessary to begin final site locations, if necessary, within any variations allowed by the Planning Commission and County Board.

6. Approval of an aggregated project shall provide authorization to the developer to commence on the project unless specific conditions are applied during the review and approval process.

Section 900.2.205. Setbacks. All towers shall adhere to the setbacks as measured from the base established in the following table:

	Wind Energy Conservation System Wind Turbine -- Commercial/Utility Wind Energy Conservation System	Meteorlogical Towers
Property Lines	1.1 times the total height	1.1 times the total height
Neighboring Dwelling Units - Participating	1,500 feet	1.1 times the total height
Neighboring Dwelling Units - Non-Participating	2 miles. These requirements may be lessened when an impact easement has been signed with said non-participating landowner.	1.1 times the total height
Road* Rights-of-Way	1.1 times the total height, if ice-braking procedures are put in place during the conditional use process; otherwise 1.5 times the hub height + the rotor diameter.	1.1 times the total height
Other Rights-of-Way	1.1 times the total height, if ice-braking procedures are put in place during the conditional use process; otherwise 1.5 times the hub height + the rotor diameter.	1.1 times the total height
Public Conservation Lands including Wildlife Management Areas, NRD and State Recreation Areas	2 miles or a distance required by any state or Federal Agency	Greater of 600 feet or a distance required by any state or Federal Agency
Wetlands, US Fish & Wildlife Service Types III, IV, and V	2 miles or a distance required by any state or Federal Agency	Greater of 600 feet or a distance required by any state or Federal Agency
* The setback shall be measured from any future Rights-of-Way if a planned change or expanded right-of-way is known, as identified in the County's 1 and 6-year Road Program at the time of the application.		

* The setback shall be measured from any future Rights-of-Way if a planned change or expanded right-of-way is known, as identified in the County's 1 and 6-year Road Program at the time of application.

Section 900.2.206 Special Safety and Design Standards and Additional Requirements. Special safety and design standards for all towers and additional listed requirements are stated below, which shall be adhered to and are specifically written for this section:

1. Clearance of rotor blades or airfoils must maintain a minimum of 24 feet of clearance between their lowest point and the ground.

2. All Commercial/Utility wind energy conservation system shall have a sign or signs posted on the tower, transformer and substation, warning of high voltage. Other signs shall be posted at the entrance to the site with the 911 address and emergency contact information.
3. All wind turbines, which are a part of a commercial/utility wind energy conservation system, shall be installed with a tubular, monopole type tower.

4. Consideration shall be given to painted aviation warnings on all towers less than 200 feet.

5. Color and finish
    a. All wind turbines and towers that are part of a commercial/utility wind energy conservation system 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.

6. Lighting
    a. Lighting, including lighting intensity and frequency of strobe, shall adhere to but not exceed requirements established by Sioux Gateway and Martin Field Airport, Federal Aviation Administration, and Nebraska Department of Aeronautics permits and regulations. Red strobe lights shall be used during nighttime illumination to reduce impacts on neighboring uses and migratory birds. Red pulsating incandescent lights should be avoided.

7. Other signage
    a. All other signage shall comply with the sign regulations found in these regulations.

8. Feeder Lines
    a. All communications and feeder lines installed as part of a wind energy conservation system shall be buried, where feasible. Feeder lines installed as part of a wind energy conservation system shall not be considered an essential service

9. Waste Disposal
    a. 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 rules and regulations.

10. Removal of Abandoned Wind Turbine Generators or Anemometer Towers
    a. Applicants shall submit a decommissioning plan, prior to commencing construction of any approved project to the Dakota County Zoning Administrator, and the developer and/or owner of the wind energy conservation system shall be solely responsible for decommissioning and removal of the tower and all equipment. At such time that an on-site wind turbine is scheduled to be abandoned or discontinued, the owner of said wind turbine shall notify the Dakota County Zoning Administrator of the proposed date of abandonment or discontinuance of said operation.

       A biannual energy production report shall be sent to the Dakota County Zoning Administrator and the Dakota County Assessor. A wind turbine and/or wind energy conservation system shall be considered as discontinued use after 3 months without energy production, unless a plan is developed and submitted to the Zoning Administrator outlining the steps and schedule for returning the wind turbine and/or wind energy conservation system to service.

    b. Upon abandonment or discontinuation of use, the developer/owner of the on-site wind turbine and/or wind energy conservation system shall physically dismantle all above ground components of said wind turbine or system within 12 months from the date of abandonment or discontinuation of use.

c. If a project owner of said wind turbine or system fails to give Notice of abandonment or discontinuation of use, the wind energy conservation system shall be considered abandoned and discontinued if the system is out-of-service for a period of 3 months. The Dakota County Zoning Administrator shall issue a written Notice of Abandonment by certified mail to the owner of said wind turbine and/or system at the address indicated for the site in the County Assessor's Office. The owner shall have 30 days to reply to such notice. The owner will then have twelve months to remove the wind turbine and/or system or anemometer tower. The owner shall restore the site to its original condition and will be required to remove the foundation to a depth of eight feet below the existing grade. Any of the transmission equipment, buildings or fences shall also be removed. If the owner does not comply with such order: the owner will be in violation of this regulation and the removal of the wind turbine and/or system or anemometer tower will be paid for as stated in #11 and #12 of this section.

d. All wind turbines and accessory facilities shall be removed to eight feet below ground level within 180 days of the dismantling of all above ground components. This period may be extended by the Zoning Administrator following a written request by an agent of the owner of the system.

11. Damages
    a. If such structures are not removed within the required time limits, Dakota County may have them removed at the owners of the wind turbine and/or system expense and Dakota County may sell any salvageable material subject to the requirements of #10 and #12.

12. Irrevocable Line of Credit or Escrow Account
    a. Dakota County shall require the owner to ascertain an irrevocable line of credit or an escrow bearing account equal to at least 60% of the original cost of the wind turbine and/or system to ensure sufficient funding is available for removal of same as described in #10 and #11 of this section prior to commencing construction. If a surety bond is to be substituted for a cash bond, it shall be prepaid for a period of five years, with the insurance carrier instructed to notify Dakota County Board of Commissioners of any delinquency in payment within 30 days of the occurrence of such delinquency, and to be renewed in five-year increments until the project is decommissioned. Such delinquency shall be considered abandonment and full and sufficient grounds for Dakota County to dispose of the equipment as stated above. The escrow account for decommissioning to be held in a Dakota County Commissioner approved financial institution.

    If the applicant or any subsequent owner of the wind turbine and/or system intends to transfer ownership of the wind turbine and/or system, the proposed new owner shall provide Dakota County Board of Commissioners with adequate evidence demonstrating that substitute decommissioning security has been made as provided above prior to the transfer of ownership.

    Each wind energy conservation project under this section shall have a Decommissioning Plan outlining the anticipated means and cost for removing wind energy conservation system at the end of their serviceable life or upon being discontinued use. The cost estimates shall be made by a competent party: such as a Professional certified Wind Engineer of decommissioning or a person with suitable expertise or experience with

decommission. The plan shall also identify the financial resources that will be available to pay for decommissioning and removal of the wind energy conservation system and accessory facilities.

13. Noise
    a. No Commercial/Utility wind energy conservation system shall exceed 50 dBA as measured per American National Standards Institute or subsequent standards and at the distances prescribed from a habitable dwelling unit. Exception: a Commercial /Utility wind energy conservation system may exceed 50 dBA during periods of severe weather as defined by the US Weather Service.

14. Shadow Flicker
    a. Shadow flicker on any dwelling of a non-participating landowner shall not exceed 30 hours per year. The applicant shall provide the appropriate modeling as part of the application; unless an approved easement is presented to the county by the Developer and non-participating landowner.

15. Interference
    a. The applicant shall minimize or mitigate interference with electromagnetic communications, such as radio, telephone, microwaves, or television signals caused by any wind energy conservation system. The applicant shall notify all communication tower operators within five miles of the proposed wind energy conservation system location upon application to the county for permits.

16. Drainage system
    a. The project owner shall be responsible for immediate repair of damage to public/private drainage systems stemming from construction, operation or maintenance of the wind energy conservation system.

17. Control Dust
    a. The permittees shall utilize all reasonable measures and practices of construction to control dust during the installation and removal process of any and all wind turbines.

18. Soil and Sediment Control Plan
    a. The permittees shall develop a Soil Erosion and Sediment Control Plan prior to construction and submit the plan to the County. The Soil Erosion and Sediment Control Plan shall address the erosion control measures for each project phase and shall at a minimum identify plans for grading, construction and drainage of roads and turbine pads: necessary soil informational detailed design features to maintain downstream water quality; a comprehensive revegetation plan to maintain and ensure adequate erosion control and slope stability and to restore the site after temporary project activities; and measures to minimize the area of surface disturbance. Other practices shall include continuing excavated material protecting exposed soil, stabilizing restored material and removal of silt fences or barriers when the area is stabilized. The plan shall identify methods for disposal or storage of excavated material.

19. Permit Fees
    a. Applicant shall remit an application fee set by the County Board of commissioners.