

Adopted November 14, 2018

Section 603.3 Commercial/Utility Grade Wind Energy Systems

..01 Purpose:

It is the purpose of this regulation to promote the safe, effective and efficient use of commercial/utility grade wind energy systems Madison County.

..02 Definitions:

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

Aggregate Project: Projects that are developed and operated in a coordinated fashion, but which have multiple entities separately owning one or more of the individual wind turbines 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.

Clustering: The grouping of wind turbines positioned or occurring closely together around a particular dwelling.

Developer: Any individual, corporation, or other organized entity that is planning, proposing, collecting easements/contracts from property owners, or anything other activity associated with a proposed WECS project, WECS project under construction, or operator of the completed WECS system including individual wind turbines, and/or their successors.

Daytime Hours shall mean a time beginning at sunrise and ending at sunset.

Fall Zone: The area, defined, as the furthest distance from the tower base, in which turbine will collapse in the event of a structural failure. This area is typically less than the total height of the structure.

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 electric power grid, in the case of interconnection with the high voltage transmission systems the point of interconnection shall be the substation serving the wind energy conversion system.

Habitable Structure: See Article 2

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.

Hub Height: The overall height measured from grade of a wind turbine to the center point of the hub of the turbine.

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

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 WECS project.

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

Meteorological Tower: For purposes of this regulation, a tower that is erected primarily to measure wind speed and directions plus other data relevant to citing 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.

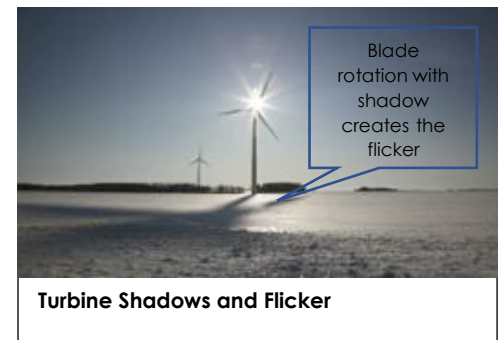
Non-participating Landowner Impact Easement: Any easement given by a non-participating Landowner allowing a WECS project to be constructed. Said easement shall be negotiated between the properties and a release signed by the landowner.

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.

Rotor Diameter: The diameter of the circle described by the moving rotor blades shown in Figure 1.

Shadow Flicker: The shadow cast from the rotating blades of a WECS system, which moves, with the blades.

Small Wind Energy System 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.



Substations Any electrical facility to convert electricity produced by wind turbines to a voltage greater than 35,000 (35 kV) for interconnection with high voltage transmission lines.

Total Height The highest point, above ground level, reached by a rotor tip or any other part of the Wind Energy Conversion System.

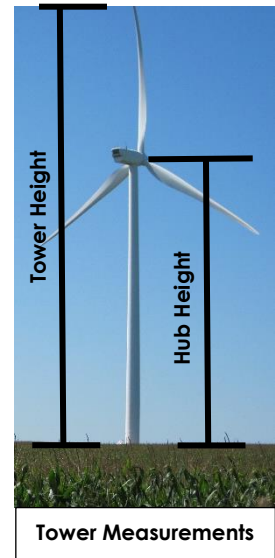
Tower: The vertical structures that support the electrical, rotor blades, or meteorological equipment.

Tower Height: The total height of the Wind Energy Conversion System exclusive of the rotor blades.

Transmission Line 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.

Wind Energy Conversion System (WECS): 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. These may also be referred to in this Section as "system".

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.



6.03.03 Requirements:

Commercial/Utility Grade wind energy systems Conditional Use Permit applications shall include the requirements below:

1. The name(s) of project applicant.
2. The name of the project owner.
3. The legal description and address of the project.
4. 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 feeder lines.
5. Site layout, including the location of property lines, wind turbines, electrical grid, and all related accessory structures. This site layout shall include distances and be drawn to scale.
6. Certification by an Engineer competent in disciplines of wind turbines and WECS projects that the electrical, acoustics, and structural systems are compliant with all code.
7. Documentation of land ownership or legal control of the property through the presentation of all deeds, leases (less financial disclosures), affidavit or other instrument indicating a landowner is a willing participant in the project.
8. The latitude and longitude of individual wind turbines.
 9. A USGS topographical map, or map with similar data, of the property and surrounding area, including any other Wind Energy Conversion System not owned by the applicant, within 10 rotor diameters of the proposed Wind Energy Conversion System.
 10. Location of wetlands, scenic, and natural areas (including bluffs) within 1,320 feet of the proposed Wind Energy Conversion System (see table below)
 11. Shadow flicker models indicating the total impact on nearby habitable structures.
 12. FAA and FCC permit: Applicant shall submit permits from the appropriate agency prior to any power being produced.

13. Location of and evidence that there will be no interference with any commercial and/or public safety communication towers within two miles of the proposed Wind Energy Conversion System.

14. Decommissioning Plan as required by this regulation.

15. Description of potential impacts on nearby Wind Energy Conversion Systems and wind resources on adjacent properties not owned/contractually obligated by the applicant.

16. Applicants shall be required to establish a separate road repair and maintenance agreement with the County Roads Department and County Board.

6.03.04 Aggregated Projects

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. Joint projects will be assessed fees as one project.

4. Locations of a proposed turbine may vary within a project boundary as long as all setbacks and other zoning requirements are met in order to find appropriate soils and/or to accommodate contracted landowner; however, in no case shall this variation encroach into any of the required separation distances.

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

6. 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.

7. 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.

6.03.05 Setbacks

The Madison County Planning Commission and County Board reserve the right to require greater separation distances or removal of individual turbines. All towers shall adhere to the setbacks as measured from the center of the base established in the following table:

	Wind Turbine – Commercial/Utility WECS	Meteorological Towers
Property Lines	1.1 times the length of a rotor blade	1.1 times the total height
Dwelling Units (participating)	1,000 ft.	1.1 times the total height
Dwelling Units (non-participating) *	2,200 ft. These requirements may be exceeded; however, when an easement has been signed with said non-participating landowner.	1.1 times the total height
Road Rights-of-Way**	1.1 times the length of a rotor blade	1.1 times the total height
Other Rights-of-Way	1.1 times the length of a rotor blade.	1.1 times the total height
Public Conservation Lands including Wildlife Management Areas and State Recreation Areas	1.1 times the length of a rotor blade or a distance established by any state or Federal agency.	600 ft. or a distance established by any state or Federal agency.
Wetlands, USFW Types III, IV, and V	1.1 times the total height or a distance established by any state or Federal agency.	600 ft. or a distance established by any state or Federal agency.
Other structures not on the applicant's site	1.1 times the total height from any structure larger than 100 square feet.	1.1 times the total height

* The setback for dwelling units shall be reciprocal in that no dwelling unit shall be constructed within the same distance required for a commercial/utility Wind Energy Conversion System. The distance requirements may be decreased or waived by a waiver signed by the property owners. The property owners shall sign a waiver on a form provided by

the County Zoning Administrator which consent shall be acknowledged before a Notary Public and filed in the office of the Madison County Register of Deeds. The waiver, when filed, shall be evidence of the property owner's consent to the decrease and/or waiver of the required spacing distances as described hereof.

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

6.03.06 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 8.08:

1. Clearance of rotor blades or airfoils must maintain a minimum of 25 feet of clearance between their lowest point and the ground.
2. All Commercial/Utility WECS shall have a sign or signs posted on each 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 WECS, 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**

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.

6. **Lighting**

Lighting, including lighting intensity and frequency of strobe, shall adhere to but not exceed requirements established by the FAA and NEDOT 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. **Shadow Flicker**

Shadow flicker on any dwelling of a non-participating landowner shall be considered minimal with the 2,200 foot setback due to shadow diffusion.

8. **Other signage**

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

9. **Feeder Lines**

All communications and feeder lines installed as part of a WECS shall be buried, where feasible. Feeder lines installed as part of a WECS shall not be considered an essential service.

10. **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 rules and regulations.

11. **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 Madison County Zoning Administrator, and the applicant or owner of the WECS 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 Madison County Zoning Administrator of the proposed date of abandonment or discontinuance of said operation.

A wind turbine and/or 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 wind turbine and/or WECS to service.

- B. Upon abandonment or discontinuation of use, the owner of the on-site wind turbine and/or WECS shall physically dismantle all above ground components, as well as the concrete foundation to a minimum of four feet below grade of said wind turbine or system within twelve months from the date of abandonment or discontinuation of use.
- C. If an owner of said wind turbine or system fails to give Notice of abandonment or discontinuation of use, the WECS shall be considered abandoned and discontinued if the system is out-of-service for a period of three years. The Madison 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 Treasurer'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 four feet from 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 # 12 of this section.

12. **Damages**

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

14. **Interference**

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

15. **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.

16. **Noise**

Noise requirements under these regulations will be handled through separation distances.

17. **Permit Fees**

Applicant shall remit an application fee set by the County Board.