

**ARTICLE 16
CITY OF EUDORA ZONING REGULATIONS**

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16-1120 Wind Energy Conversion Systems (WECS)

16-1121 Purpose. The City of Eudora regulates Wind Energy Conversion Systems (WECS) for the purpose of accommodating the development of wind power resources in the City while providing standards to protect the public health, safety and general welfare.

16-1122 Definitions. For the purpose of this section, and in addition to words defined in other sections of these regulations, certain terms or words used in this subsection of these regulations shall be interpreted or defined as follows, unless the context clearly indicates otherwise:

Facility Owner: the entity or entities having equity interest in the Wind Energy Conversion System, including their respective successors and assigns.

Hub Height: The distance from the base of the tower to the center of the hub to which rotors are connected.

Meteorological Tower: Temporary towers erected by WECS owner-applicants to measure wind speed and directions, as well as other data relevant to siting WECS. Meteorological towers do not include towers and equipment used by airports or similar structures to monitor weather conditions.

Operator: The entity responsible for the day-to-day operation and maintenance of the Wind Energy Facility.

Property line: The boundary line of the area over which the entity applying for a WECS permit has legal control for the purposes of installation of a WECS. This control may be attained through fee title ownership, easement, or other appropriate contractual relationship between the facility owner/developer and landowner.

Rotor diameter: The diameter of the circle described by the moving rotor blades.

Substations: Any electrical facility designed to convert electricity produced by wind turbines to a voltage greater than 35,000 V (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 WECS.

Turbine Height: The distance measured from the surface of the tower foundation to the highest point of the turbine rotor plane.

Tower: Towers include vertical structures that support the electrical generator, rotor blades, or meteorological equipment.

Tower height: The total height of the WECS exclusive of the rotor blades.

Transmission Line: Those 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. In a commercial WECS, a transmission line will carry electricity from the WECS substation to the point of interconnect (POI).

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 metrological towers, which operate by converting the kinetic energy of wind into electrical energy. The energy may be used on-site or distributed into the electrical grid. Categories of WECS are distinguished for regulatory purposes as follows:

1. Micro-WECS: A WECS of up to 10.0 kW name plate generating capacity or less and utilizing supporting towers of 60 feet or less.
2. Commercial-WECS: A WECS of more than 10.0 kW and less than 100 kW in total name plate generating Capacity.
3. Large-capacity Commercial-WECS: A WECS greater than 100 kW in total name plate generating capacity.
4. Alternative-WECS: A WECS other than a standard turbine-mounted propeller-type blade system, such as a vertical axis or a horizontal axis wind conversion system, a helix wind turbine, or similar alternative design.

Wind Energy Facility: a WECS.

Wind Turbine (or Turbine): Any piece of electrical generating equipment that converts the kinetic energy of wind into electrical energy through the use of airfoils or similar devices to capture the wind, and includes the nacelle, rotor, tower, and pad transformer, if any.

16-1123 Applicability. Circumstances Requiring Application of the WECS Regulations.

- (1) No WECS shall be considered for a building permit without first being granted approval by the City for a Use Permitted Upon Review (UPUR) as provided in this Section; except that, the regulations in this Section shall not apply to:
 - (a) Large-capacity Commercial-WECS, which shall be prohibited within the City corporate limits; and
 - (b) A subdivision or re-subdivision of land, or a lot split for a micro-WECS that meets all other requirements of these regulations, which may be approved administratively.
- (2) Any physical modification to a permitted WECS that materially alters the size, type and number of Wind Turbines or other equipment shall require approval under the same Zoning procedures as an original application. Like-kind replacements shall not require a permit modification.
- (3) The Planning Commission or Governing Body, when considering a UPUR for a WECS, shall have the ability to grant a deviation from these standards subject to

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review and approval of detailed information submitted by the applicant illustrating the need and justification for the deviation.

16-1124 General Provisions. The following general provisions apply.

- (1) **Damage to Public Property.** Applicants shall be held liable for any damage to public roads or rights-of-way resulting from tower construction, deconstruction, and/or maintenance activity.
- (2) **Tower Design.** No lattice structures shall be permitted. All tower structures shall be of self-supporting, monopole construction; except that, a wind turbine designed to be attached to a structurally reinforced roof shall not require a self-supporting monopole design where such support is not warranted, provided that the roof-mounted turbine height is no greater than one half the height of a standard two-story building.
- (3) **The UPUR for a WECS is to run with the land, not with the UPUR applicant;** provided, however, if the land or WECS ownership is transferred to another party, then the UPUR is to be transferred from the approved party to the new land owner or WECS owner; provided further, that said transfer is approved by the City.
- (4) **If a surety bond has been required as a condition of Commercial-WECS approval, first party shall inform the second party of the surety bond and all other requirements of the UPUR. The second party or new holder of the UPUR shall meet the surety bond requirements and all other requirements of the UPUR, subject to “Abandonment and Removal” provisions of these regulations. A transfer fee per turbine, as established by the City in a fee ordinance, shall be paid to the City as a condition of City transfer of the UPUR to the new holder.**

16-1125 Standards and Regulations. All WECS shall meet or exceed the following standards:

- (1) **Federal and State Regulations.** All WECS shall meet or exceed State and Federal standards and regulations.
- (2) **Electrical Codes and Standards.** All WECS and accessory equipment and facilities shall comply with the National Electrical Code and other applicable standards. All electrical wires associated with a WECS shall be located underground except for those wires necessary to connect the wind generator to the tower wiring, the tower wiring to the disconnect junction box, and the grounding wires. Wherever possible collection cables will be placed underground. When necessary collection cables may be placed above ground.
- (3) **Collection Lines.** All communications and collection lines, equal to or less than 34.5kV in capacity, installed as part of a WECS shall be buried wherever possible.

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- (4) Clearance. The minimum distance between the ground and any part of the rotor blade system of a Commercial-WECS shall be 30 feet. The blade tip clearance for Micro-WECS shall, at its lowest point, have a ground clearance of not less than 25 feet.
- (5) Self-Support Structures. All tower structures shall be of monopole construction unless attached to a structurally reinforced roof where such support is not warranted. Meteorological towers may be guyed. For all guyed towers, visible and reflective objects, such as plastic sleeves, reflectors or tape, shall be placed on the guy wire anchor points and along the outer and innermost guy wires up to a height of 8 feet above the ground. Visible fencing shall be installed around anchor points of guy wires.
- (6) Tower Access. All access doors to the tower and electrical equipment shall be lockable. If access doors are not lockable the supporting tower shall be enclosed with a six foot tall fence with a locking portal placed around the tower's base or the tower climbing apparatus shall be limited to no lower than 12 feet above ground level.
- (7) Signage. Appropriate warning signage shall be placed on wind turbine towers, electrical equipment and WECS facility entrances. Signs and/or logos shall be limited to the manufacturers, installer's, or owner's identification and appropriate warning signs. Commercial advertising is prohibited.
- (8) Building code compliance. All wind turbines shall meet or exceed the current standards expressed in the adopted building codes. A building permit is required prior to the installation of any wind turbine.
- (9) Utility connections. Reasonable efforts shall be made to locate utility connections from the wind turbine(s) underground, depending on appropriate soil conditions, shape, and topography of the site and any requirements of the utility provider. Electrical transformers for utility interconnections may be above ground if required by the utility provider. For electrical transformers with a 40 footprint greater than two (2) square feet in area, landscaping shall be provided where necessary to substantially screen the structure from public view and/or the view of adjacent homeowners. Maintenance of all landscaping shall be the responsibility of the property owner.
- (10) Electrical wires. All electrical wires associated with a wind turbine shall be located underground except for those wires necessary to connect the wind generator to the tower wiring, the tower wiring to the disconnect junction box, and the grounding wires.
- (11) Safety Shutdown. No wind turbine shall be permitted that lacks an automatic braking, furling, or feathering system to prevent uncontrolled rotation, over-speeding and excessive pressure on the tower structure, rotor blades, and turbine components. Owner shall maintain the ability to shut down turbines in an emergency.

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- (12) Lighting. Wind turbines shall not be artificially lighted except as required by the FAA and as necessary for safety and security purposes. Except as required by the FAA any lighting shall be directed downward and shall incorporate full cut-off fixtures to reduce light pollution.
- (13) Color/Finish. Wind turbines, exclusive of the towers, shall be painted a non-reflective, non-obtrusive color such as the manufacturer’s default color option or a color that conforms to the environment and architecture of the community.
- (14) Alternative-WECS. For regulatory purposes the standard turbine-mounted, propeller-type blade WECS shall be the basis for these regulations. Alternative-WECS shall be evaluated by the standards that are applicable to standard turbine-mounted, propeller-type blade WECS that are found to be in the same category of WECS; and by the manufacturers’ published installation standards as to noise, setback and related matters for the health, safety and welfare of the public.

16-1126 Size and Lot or Parcel Restrictions. The wind turbines constructed under these regulations shall meet the following size and setback restrictions:

WECS Type	Minimum Lot or Parcel Size	Maximum Turbine Height	Minimum Setback *	Enhanced Requirements
Micro-WECS	1-acre	60 feet	110% of the Turbine Height	None
Commercial-WECS	2-acres	150 feet	110% of the Turbine Height	Sect. 16-1130
Large-capacity Commercial-WECS	Prohibited			

* Measured from the closest adjacent lot line or parcel line or above ground public utility.

16-1127 Applications for Commercial-WECS. The following items shall be submitted in support of an application for a Commercial-WECS; except that, the City may require additional technical studies deemed necessary to fully evaluate the application, such as a noise study or geotechnical report:

- (1) Name of the project applicant(s), facility owner(s) and operator(s).
- (2) Legal description and address of the project.
- (3) Documentation of land ownership or legal control of the property.
- (4) Description of the project including: model, size, number, type, nameplate generating capacity, rated power output, tower height, rotor material, rotor diameter, performance, safety, and noise characteristics of each wind turbine being proposed; also, tower and electrical transmission equipment, and total height of all wind turbines and means of interconnecting with the electrical grid.

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- (5) A site development plan utilizing a standard engineering scale not to exceed 1:100, indicating the placement of the wind turbine(s) and distances from the proposed turbine location to existing buildings including purpose (e.g. residence, garages, barns, etc.), any above-ground utilities, the nearest tree(s), and all property lines; and including the location of property lines, wind turbines, electrical wires, interconnection points with the electrical grid, and all related accessory structures.
- (6) Meteorological tower information, if applicable, including location, height, and appearance.
- (7) Digital pictorial representations of “before and after” views (photo simulation or similar graphic display) from key viewpoints as may be required by the City.
- (8) Certification by the manufacture’s engineer or another qualified engineer that the turbine, foundation and tower design of the WECS is within accepted professional standards, given local soil and climate conditions.
- (9) Proof of compliance with Airport Hazard Regulations in accordance with Federal Aviation Administration (FAA) and Kansas Department of Transportation (KDOT) Aviation Section standards under FAR Part 77, “Objects Affecting Navigable Airspace.”
- (10) A noise compliance summary statement to demonstrate that the wind turbine will not exceed noise standards of these regulations, except for during short-term events such as utility outages and severe windstorms. The noise summary shall include:
 - (a) A description and map of the project’s noise producing features, including the range of noise levels expected, and the basis for such expectations.
 - (b) A description and map of the noise sensitive environment, including any sensitive noise receptors (e.g. residences, resident care facilities, libraries, schools, and other facilities where quiet is important or where noise could be a nuisance) within one thousand (1,000) feet.

16-1128 Applications for Micro-WECS. The following items shall be submitted in support of an application for a Micro-WECS:

- (1) Name of the project applicant(s), facility owner(s) and operator(s).
- (2) Legal description and address of the project.
- (3) A plot plan utilizing a standard engineering scale not to exceed 1:100, indicating the placement of the wind turbine(s) and distances from the proposed turbine location to existing buildings including purpose (e.g. residence, garages, barns, etc.), any above-ground utilities, the nearest tree(s), and all property lines.

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- (4) Turbine information: specific information on the type, model, size, height, rotor material, rated power output, performance, safety, and noise characteristics of each wind turbine being proposed, tower and electrical transmission equipment.
- (5) A noise compliance summary statement to demonstrate that the wind turbine will not exceed noise standards of these regulations, except for during short-term events such as utility outages and severe windstorms.
- (6) Drawings of the electrical components in sufficient detail to allow for a determination that the manner of electrical wiring is in compliance with the manufacturer's specifications
- (7) Any other data that the City may require of the applicant for the proposed wind turbine structure, including the tower, base, and footings in sufficient detail to allow for a determination that the proposed Micro-WECS shall meet all the aforementioned standards. The City may require an engineering analysis of the tower showing compliance with the manufacturer's specifications.

16-1129 Use Limitations. All WECS shall comply with the following use limitations:

- (1) Noise. The noise emitted from any wind turbine shall not exceed 50 dbA within 100 feet of the nearest property line, except during short-term events such as utility outages and severe windstorms.
- (2) Materials, signs and markings. Structures for wind turbines shall be self-supporting tubular towers painted a neutral color such as a white or pale gray. No lattice structure shall be used. No logos or advertisements are allowed on these structures. Each turbine shall be marked with a visible identification number located no higher than fifteen (15) feet above ground level.
- (3) Electromagnetic interference. No individual tower facility shall be installed in any location where its proximity with fixed broadcast, retransmission or reception antenna for radio, television or wireless phone or other personal communications systems would produce electromagnetic interference with signal transmission or reception. In the event the WECS and its associated facilities or its operations cause such interference, the facility owner(s) and/or operator(s) shall take timely measures necessary to correct the problem.
- (4) Separation requirements. If two or more ground-mounted wind turbines are located on one lot, they shall be separated by a distance 110 percent of the total height of the tallest wind turbine on the lot.

16-1130 Removal after Disuse of a Commercial-WECS. Upon disuse by the facility owner(s) and operator(s) of a Commercial-WECS for a continuous period of fifteen (15) months, the turbine shall be considered abandoned, and the owner(s) of such wind turbine shall remove the WECS within ninety (90) days of receipt of notice from the City notifying the owner of such abandonment. The following additional conditions and procedures shall apply:

- (1) The Facility Owner and Operator shall, at their expense, complete decommissioning of the turbine.
- (2) Decommissioning shall include removal of turbines and any associated buildings, cabling, electrical components, roads, and all other associated facilities. Foundations of turbines shall be removed to a depth of four (4) feet below the ground surface. Any access roads shall be removed to the landowner's satisfaction, and the ground shall be reseeded in grasses; except that, requirements to remove access roads shall not apply to roads in existence before the WECS application was filed. The landowner may choose to have access roads left intact with the approval of the City.
- (3) If such turbine and associated facilities are not removed within said ninety (90) days, the City may remove them at the owner's expense.