



## Planning Services Division

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### Chapter 6-14

#### WIND ENERGY CONVERSION SYSTEMS

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##### 6-1401 Purpose and intent.

It is the desire of the city to decrease its dependence upon nonrenewable energy resources and to encourage the use of alternative energy sources such as wind energy conversion systems. It is also the desire of the city to regulate and control the installation of wind energy conversion systems in the city. This chapter is intended to delineate the city's policy of ensuring that the peace, health, safety and welfare of its citizens are protected from inappropriate WECS installations and that the aesthetic and noise aspects of such installations are properly regulated. It is declared that:

- (a) There shall be no windfarms installed in Lafayette for use as a business for producing electrical power for sale.
- (b) Except as otherwise provided in this chapter, there shall be no more than one WECS per lot; each WECS shall be located on the same lot as the land use that it serves, or on a contiguous lot, if a suitable easement is available.
- (c) A planned unit development of more than five dwelling units may have more than one WECS for common or shared usage.
- (d) Any WECS installation existing prior to the effective date of the ordinance codified in this chapter shall be a legal nonconforming use.
- (e) The provisions of this chapter shall govern all WECS installations in the city.  
(Ord. 278 § 1 (part), 1982)

##### 6-1402 Definitions.

For the purposes of this chapter, certain terms are defined as follows:

- (a) "Dominant wind quadrant" means the direction from which 80 percent of the energy contained in the wind flows.

- (b) "Wind energy conversion system" ("WECS") means a device designed or used for the purpose of converting wind energy into electrical or mechanical power, including all interconnection and auxiliary equipment.
- (c) "Overspeed control" means a mechanism used to limit the speed of blade rotation to below the safe design limits of the WECS.
- (d) "Rotor" means the propeller or other device which extracts energy from the windstream by rotating in response to the wind.
- (e) "Swept area" means the largest area of the WECS which extracts energy from the wind stream.
- (f) "Total height" means the maximum height reached by the rotor or propeller blade or any other part of the WECS, to be measured from natural grade level at the base of the tower.
- (g) "Upwind type rotor" means a type of wind generator with the rotor or propeller located upwind of the pole or any other part of the WECS.
- (h) "Windfarm" means multiple WECS installations at a single property or area for the purpose of generating larger quantities of electrical or mechanical power than is normally possible with a single unit. (Ord. 278 § 1 (part), 1982)

#### **6-1403 Land use permits for wind conversion systems.**

The installation and use of a WECS is permitted in every land use district, subject in each instance to obtaining a land use permit. Any WECS, the installation of which commenced prior to January 1, 1986 shall be considered experimental. Any conditional land use permit issued for such an installation shall be subject to review by the planning commission, and after notice and hearing, subject to either revocation, or the imposition of additional or modified conditions, or the deletion of conditions. (Ord. 278 § 1 (part), 1982)

#### **6-1404 Application of other provisions governing use permits.**

The provisions of Chapter 6-2 of this title shall apply to an application for a WECS to the extent they are not in conflict with this chapter. (Ord. 278 § 1 (part), 1982)

#### **6-1405 Application information.**

An application for a land use permit for a WECS shall be made in writing to the planning director on a form provided by the city, and shall include the following information:

- (a) Name and address of the applicant;
- (b) Evidence that the applicant is the owner of the premises involved or that the applicant has written permission of the owner to make the application;
- (c) A plot plan and development plan drawn in sufficient detail clearly to describe:
  - (1) Location of property lines, physical dimensions and topographical layout of the proposed site,
  - (2) Scaled and dimensioned drawings of the WECS as proposed for installation, including method of bracing,
  - (3) A scaled, vertical section through the site and WECS in the same plane as the dominant wind quadrant, showing all structures, trees and topographic conditions for a distance of 300 feet on each side of the WECS,
  - (4) Location, dimensions, descriptions of types, and height of every structure within 150 feet of the WECS tower,
  - (5) Location of the proposed WECS,
  - (6) Location of all above-ground utility lines on site,
  - (7) Location of all above-ground utility lines which are off the site, but which are within a distance from the base of the WECS tower equal to the height of the WECS, including the furthest vertical extension of the rotor assembly,
  - (8) Location of each tree which may potentially grow taller than 35 feet during the lifetime of the WECS within a 150-foot radius of the proposed WECS,
  - (9) The location of all transmission facilities proposed for installing the WECS,
  - (10) The location of all road and other service structures proposed as part of the installation, and the grading necessary for such installation, and

(11)An indication of the dominant wind quadrant and estimated velocity. (Ord. 278 § 1 (part), 1982)

#### **6-1406 Imposition of conditions.**

The planning commission, in approving a land use permit for a WECS, may impose certain conditions under which the proposed use may be allowed, which will prevent material damage to adjacent properties and provide suitable safeguards to the public health, safety and general welfare. (Ord. 278 § 1 (part), 1982)

#### **6-1407 Design and construction standards.**

The WECS shall conform with the following construction standards:

- (a) Compliance with Uniform Building Code. The building permit application shall be accompanied by standard drawings of the structural components of the WECS and support structures, including base and footings. The application shall also include engineering data and calculations to demonstrate compliance of the support structure with seismic and structural design provisions of the Uniform Building Code. Drawings and engineering calculations shall be certified in writing by a California registered structural engineer, or by the manufacturer. Where the structural components of an installation vary from the standard design or specification, the proposed modifications shall be certified by a California registered structural engineer for compliance with the seismic and structural design provisions of the Uniform Building Code. All equipment and materials shall be used or installed in accordance with the approved drawings.
- (b) Soils Report. The building permit application shall be accompanied by a soils report for the site of each proposed WECS and the WECS structure shall be constructed to meet the requirements of the soils report and be designed for 100-mile-per-hour wind conditions.
- (c) Compliance with National Electrical Code. The building permit application shall be accompanied by a drawing identifying the location of the metering, protection and control devices and transformer equipment in sufficient detail to allow for a determination that the manner of installation will conform to the provisions for grounding, lightning arrestors, wiring methods, conductors for general wiring, motors, generators, transformers and transformer vaults of the National Electrical Code. The application shall include a statement from a California registered electrical engineer certifying that the electrical system conforms with good engineering practices, complies with the above articles of the National Electrical Code, and will comply with the minimum performance standard of Section 10(1)(b) thereof. The required certification may be supplied by the manufacturer. If the electrical components of an installation vary from the standard design or specifications, the proposed modifications shall be reviewed and certified by a California registered electrical engineer for compliance with the requirements of the National Electrical Code and good engineering practices. Certification by a California registered electrical engineer may be used to demonstrate conformance with all applicable requirements of the National Electrical Code.
- (d) Rotor Safety. A WECS must be equipped with both manual and automatic controls to limit the rotational speed of the blade below the design limits of the rotor. The building permit application shall include a statement by a California registered mechanical engineer certifying that the rotor and overspeed controls have been designed and fabricated for the proposed use in accordance with good engineering practices. The engineer shall certify the compatibility of possible towers and available rotors. Alternately, such certification may be supplied by the manufacturer.
- (e) Tower Access. Tower climbing apparatus shall be no lower than 12 feet from the ground. All towers shall be equipped with a climbing deterrent apparatus at a height no less than ten feet above the ground, which shall prevent direct climbing of the tower from ground level. In addition to the climbing deterrent, safety fencing to prevent unauthorized access to the tower may be required by the planning commission.
- (f) Signs. The generator, alternator or service entrance shall be posted with the following information:
  - (1) Maximum power output (kw), rated voltage (volts) and current;
  - (2) Normal and emergency shutdown procedures;
  - (3) The maximum wind speed the WECS in automatic unattended operation can sustain without damage to structural components or loss of the ability to function normally; and

- (4) Emergency phone numbers.
- (g) Size. This chapter provisionally authorizes a WECS whose swept area is 500 square feet or less. For conventional propeller WECS, the diameter of blade configuration shall not be greater than 25 feet, unless the planning commission finds that the applicant's needs on the site justify a WECS having a greater capacity.
- (h) Height. Notwithstanding any other provisions of this chapter, the maximum allowed total height, including the highest rotor or propeller blade reach, is 100 feet or the distance from the tower base to any adjacent property line, whichever is less. In no case shall the lowest reach of the propeller blade be less than 20 feet from the ground.
- (i) Setback. The WECS shall meet all side, rear and front yard setbacks for the site, as prescribed by zoning regulations.
- (j) Type of Tower and Siting. Only single pole type towers are allowed. Siting must be such as to minimize visual impact. If guy wires are a structural necessity, they shall be attached to the pole at a point not higher than 50 percent of pole height and shall have visual and safety cover below six feet in height above grade at the anchor point. Other than guy wires and climbing deterrent, the tower may not have any ancillary attachments, including, but not limited to, transmitting or receiving antennas or dishes. Tower siting must adhere to the provisions of the hillside and ridgeline preservation regulations, Section 6-2008, relating to the location of structures near major ridgelines.
- (k) Type of Machine. Only upwind-type wind generator rotors are allowed.
- (l) Undergrounding Electrical Lines. Electrical lines serving the WECS shall be installed underground.
- (m) Color and Materials. Colors and materials shall be used to minimize all visual impacts of the WECS to the maximum feasible extent. (Ord. 278 § 1 (part), 1982)

**6-1408 Minimum performance standards.**

- (a) The WECS as constructed and operated shall comply with the following minimum performance standards:
  - (1) Maintenance and inspection records shall be maintained on the site and shall be made available for inspection by city or county officials upon request.
  - (2) No interference with radio or television broadcasting or reception may be caused.
  - (3) Maximum allowable sound levels are as follows (see Chapter 5-2 of this code for measurement procedure):

Measurement Location	Maximum Sound Level—dBA
Any point on neighboring residential property line, 5 feet above grade level, no closer than 3 feet from any wall.	45
Center of any neighboring patio deck, or similar outdoor activity area, 5 feet above grade level, no closer than 3 feet from any wall.	40
Outside the neighboring living area window nearest the WECS location, not more than 3 feet from window opening, but at least 3 feet from any other surface.	40
At 50 ft. from WECS tower if the above locations are at greater distance:	
In single-family, two-family and multiple family residential districts	50

- (b) Applicant must demonstrate that there is sufficient average wind velocity in the dominant wind quadrant successfully to operate the proposed WECS unit.
- (c) The planning commission may impose more stringent performance standards, if it finds that the public health, safety and welfare require more stringent standards. (Ord. 278 § 1 (part), 1982)

**6-1409 Abandonment.**

A WECS which has not produced energy for one year for reasons other than lack of wind, may be declared abandoned and the land use permit may be revoked, after notice to the property owner and/or tenant, and after hearing before the planning commission. (Ord. 278 § 1 (part), 1982)

**6-1410 WECS for common use.**

Contiguous property owners or a planned development project may construct a WECS for use in common, subject to this chapter. In such a case, the planning commission may permit a WECS machine to have a diameter of blade configuration greater than 25 feet, and for the WECS to be located on a lot other than the one it serves. (Ord. 278 § 1 (part), 1982)