

CHAPTER 19

WIND ENERGY FACILITY REGULATIONS

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Section 19.010 Purpose.

The purpose of this Chapter is to provide regulations for the safe and effective construction and operation of Wind Energy Facilities in Lehi City, subject to reasonable restrictions, which will preserve the public health and safety.

Section 19.020 Findings.

The Planning Commission and City Council make the following findings:

- A. That wind energy is an abundant, renewable and nonpolluting energy resource and;
- B. That the conversion of wind to electricity will reduce our dependence on nonrenewable energy resources and decrease the air and water pollution that results from the use of conventional energy sources and;
- C. That wind energy systems enhance the reliability and power quality of the power grid, reduce peak power demands and help diversify energy supply.
- D. The unnecessary proliferation of wind energy facilities throughout the City creates a negative visual impact (visual pollution) on the community.
- E. The visual effects of wind energy facilities can be mitigated by fair standards regulating their siting, construction, maintenance and use.

Section 19.030 Definitions.

As used in this Section, the following terms shall have the meanings indicated:

FAA - The Federal Aviation Administration.

Hub Height - When referring to a Wind Turbine, the

distance measured from ground level to the center of the turbine hub.

MET Tower - A meteorological tower used for the measurement of wind speed.

Shadow Flicker - The on-and-off flickering effect of a shadow caused when the sun passes behind the rotor of a wind turbine.

Small Wind Energy Facility – 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. Small wind energy systems are typically designed for on-site home, farm, and small commercial use.

Total Height - When referring to a Wind Turbine, the distance measured from ground level to the blade extended at its highest point.

Wind Energy Facility - An electricity generating facility consisting of one or more wind turbines under common ownership or operating control, and includes substations, MET Towers, cables/wires and other buildings accessory to such facility, whose main purpose is to supply electricity to off-site customer(s).

Wind Turbine - A wind energy conversion system which converts wind energy into electricity through the use of a wind turbine generator, and includes the turbine, blade, tower, base and pad transformer, if any; provided that such a system shall only be a wind turbine for purposes of this Section if it both has a total height greater than 100 feet and nameplate capacity of greater than 100 kilowatts (Note: wind turbines less than 100 feet in height and less than 100 kilowatts will be regulated pursuant to the Small Wind Energy Facility provisions in this Section).

Section 19.040 Zoning Requirements.

A. Wind Overlay Zone.

- 1. Wind Energy Facilities may only be allowed in a Wind Overlay Zone as a conditional use.
- 2. Wind Overlay Zones may be created only in the Industrial and Technical Manufacturing Zones.

3. No Wind Overlay Zone may be initially created without specific requests for wind energy facilities. Requests for a Wind Overlay Zone shall be submitted concurrently with an application for Concept Plan for a Wind Energy Facility.

4. All other uses listed as permitted or conditional uses in the underlying zoning district of the overlay zone may be allowed subject to the applicable permitted or conditional use approval processes.

5. Once a Wind Overlay Zone has been created, new wind energy facilities or accessory structures or facilities may be allowed in that zone as a Conditional Use.

B. **Conditional Use Permit.** Wind Energy Facilities shall require a Conditional Use Permit, and are subject to the requirements for conditional use and site plan approval as per Chapters 9 and 11 of this Code. In approving the Conditional Use Permit, the Commission may impose such reasonable conditions or restrictions as it deems necessary to secure the purposes of this Chapter.

C. **Minimum parcel size.** A Wind Energy Facility must be located on a parcel that is at least ten (10) acres in size and one additional acre per wind turbine.

Section 19.050 Procedures for Establishment of a Wind Overlay Zone.

A. **Concept Plan.** Prior to a request for a Wind Overlay Zone, a Concept Plan shall be submitted. A Concept Plan must be reviewed by the City Council, following Planning Commission and Development Review Committee review, prior to property being considered for a Wind Overlay Zone.

1. The Concept Plan gives the applicant, staff, Planning Commission and City Council an opportunity to discuss the proposed wind energy facility prior to the Zoning being established and prior to the preparation of a more detailed Site Plan and Conditional Use Permit application. The applicant can use the Concept Plan meetings to ask questions, and receive direction on project layout as well as discuss the procedure for approval, access, drainage, water, sewerage, fire protection, mitigation of environmental impacts, and similar matters, and the availability of existing services.

2. The applicant is encouraged to discuss the

proposed wind energy facility concept plan with the various utility service providers and neighboring property owners to get their views and concerns.

3. A Concept Plan shall be effective for a period of one (1) year from the date that the Concept Plan is reviewed by the City Council, at the end of which time an application for Site Plan and Conditional Use shall have been submitted and under review by the City. If an application for Site Plan and Conditional Use has not been filed within the one (1) year period the Concept Plan shall be void. The City Council may grant up to a six (6) month extension to the original one (1) year period for due cause; however the Applicant must request the extension prior to the expiration of the original one (1) year period.

B. **Zone Change, Conditional Use and Site Plan.** A Wind Overlay Zone shall be established pursuant to the procedures for amending the Zoning District Map of Lehi City, as provided by Section 04.050 of The Lehi City Development Code. Requests for a Wind Overlay Zone shall be submitted concurrently with an application for Conditional Use Permit and Site Plan for a Wind Energy Facility.

Section 19.060 Application Requirements.

As part of the application requirements for a Conditional Use Permit and Site Plan, an application for a Wind Energy Facility shall include the following:

A. A written description of the project, including the number and maximum rated capacity of each Wind Energy Facility. For each proposed Wind Energy Facility, include make, model, picture and manufacturer's specifications, including noise decibels data.

B. A plot plan prepared by a licensed surveyor or engineer drawn at an appropriate scale and in sufficient detail to clearly describe the following:

1. Proposed boundaries of the Wind Overlay Zone with an accompanying legal description.

2. Location of all proposed wind turbines with circles drawn around each one demonstrating compliance with the setback requirements of this Section.

3. The location of the proposed wind energy facility as it relates to the boundaries of the

parcel, adjacent ownerships and existing residences, schools, churches, hospitals, libraries, parks and public places to a distance of 2,000 feet.

4. All proposed facilities, including access roads, electrical lines, substations, storage or maintenance units.

5. Any federal, state, county or local recognized historic or heritage sites, delineated wetlands, and important bird areas as identified in federal, state, county, or local GIS databases or other generally available documentation.

6. Proposed landscaping, screening and fencing.

C. A vertical drawing of each wind turbine showing total height, turbine dimensions, tower and turbine colors, ladders, distance between ground and lowest point of any blade, location of climbing pegs, and access doors. One drawing may be submitted for each wind turbine of the same type and total height.

D. A lighting plan showing any FAA-required lighting and other proposed lighting.

E. Information relating to the construction/installation of the wind energy conversion facility including a construction schedule describing commencement and completion dates, and a description of the routes to be used by construction and delivery vehicles with the gross weights and heights of those loaded vehicles.

F. A visual impact study of the proposed Wind Energy Facility as installed, which should include computerized before and after photo simulations, elevation drawings showing the height, design, color, night lighting etc., and the location of the proposed facility as viewed from neighboring areas. The visual analysis shall also indicate any visual screening incorporated into the project that is intended to lessen the system's visual prominence.

G. A wind or feasibility study that recommends a specific location for all wind turbines. The study must also recommend an optimal height for all wind turbines and if the location is feasible for a wind turbine(s).

H. A study on potential shadow flicker that identifies locations where shadow flicker may be caused by the Wind Energy Facility and the expected

durations of the flicker at these locations. The study shall identify areas where shadow flicker may interfere with residences and describe measures that shall be taken to eliminate or mitigate the problems.

I. A noise analysis prepared by a competent acoustical consultant documenting the noise levels associated with the proposed Wind Energy Facility. The study shall document noise levels at property lines and at the nearest residence or public building or use not on the site (if access to the nearest residence is not available, the Planning Commission may modify this requirement).

J. An assessment of potential electromagnetic interference with microwave, radio, television, personal communication systems and other wireless communication.

K. A fire protection and emergency response plan, created in consultation with the Lehi City Fire Department.

L. A decommissioning plan, which shall include:

1. The anticipated life of the Wind Energy Facility;

2. The estimated decommissioning costs in current dollars;

3. How said estimate was determined;

4. The method of ensuring that funds will be available for decommissioning and restoration;

5. The method, such as by annual re-estimate by a licensed engineer, that the decommissioning cost will be kept current; and

6. The manner in which the Wind Energy Facility will be decommissioned and the site restored, which shall include removal of all structures and debris to a depth of 3 feet, restoration of the soil, and restoration of vegetation (consistent and compatible with surrounding vegetation).

Section 19.070 Design Standards.

A. Visual Appearance; Lighting; Power lines.

1. The design of Wind Energy Facilities, including any buildings or related structures, shall to the extent reasonably possible, use

materials, colors, textures, screening and landscaping that will help reduce the visual impact of the Wind Energy Facility.

2. Wind Energy Facilities shall not project above the top of ridgelines. For the purposes of this section, ridgelines shall consist of prominent ridgelines that are highly visible from any major roadway classified as collector or greater in intensity. A ridgeline shall also include the crest of any ridgeline and the land located within one hundred (100) feet horizontally (map distance) on either side of the crest.

3. Wind energy facilities shall use tubular towers. The use of guy wires is not allowed.

4. Individual wind energy facilities within a Wind Overlay Zone shall be constructed using wind turbines whose appearance, with respect to one another, is similar within and throughout the Zone, to provide reasonable uniformity in overall size, geometry, and rotational speeds.

5. All wind turbines and other structures shall be finished in a single, non-reflective matte finished color or a camouflage scheme.

6. No advertising signs are allowed on any part of the Wind Energy Facility, including fencing, support structures, and wind turbines except for reasonable identification of the manufacturer or operator of the Wind Energy Facility. No lettering, company insignia, advertising, or graphics shall be on any part of the tower, hub, or blades.

7. Wind Energy Facilities shall not be artificially lighted, except to the extent required by the FAA or other applicable authority.

8. Electrical controls and control wiring and power-lines shall be wireless or not above ground except where Wind Energy Facility collector wiring is brought together for connection to the transmission or distribution network, adjacent to that network.

B. Setbacks. The following setbacks and separation requirements shall apply to all Wind Turbines; provided, however, that the Planning Commission may reduce the standard setbacks and separation requirements if the intent of this Section would be better served thereby.

1. Residential zone or public use: Each Wind Turbine shall be set back from the nearest residential zoning district (including any zone that allows for residential uses), school, church, public park or public library, a distance of one thousand (1,000) feet.

2. Property lines: Each Wind Turbine shall be set back from the nearest property line a distance no less than 1.1 times its Total Height, unless appropriate easements are secured from adjacent property owners, or other acceptable mitigation is approved by the Planning Commission.

3. Public Roads: Each Wind Turbine shall be set back from the nearest public road a distance no less than 1.1 times its Total Height, determined at the nearest boundary of the underlying right-of-way for such public road.

4. Communication and electrical lines: Each Wind Turbine shall be set back from the nearest above-ground public electric power line or telephone line a distance no less than 1.1 times its Total Height, determined from the existing power line or telephone line.

5. Wetlands: Each Wind Turbine shall be set back 500 feet from any wetlands as delineated by the U.S. Army Corps of Engineers. This distance may be adjusted to be greater or lesser at the discretion of the reviewing body, based on topography, land cover, land uses and other factors that influence the flight patterns of resident birds.

C. Noise. Audible noise due to Wind Energy Facility operations shall not exceed fifty five (55) dBA for any period of time measured at the wind energy facility site's property line.

D. Height. The total height for a Wind Turbine shall not exceed 250 feet.

E. Density. No more than one turbine per acre shall be allowed.

F. Braking Device. All Wind Turbines shall have braking systems when winds reach speeds in excess of 65 miles per hour or as otherwise required by industry standards.

G. Signal Interference. The applicant shall minimize or mitigate any interference with electromagnetic communications, such as radio,

telephone or television signals caused by any Wind Energy Facility.

H. Safety.

1. Wind Turbine towers shall not be climbable up to twelve (12) feet above ground level.
2. All access doors to Wind Turbine towers and electrical equipment shall be lockable.
3. Appropriate warning signage shall be placed on Wind Turbine towers, electrical equipment, and Wind Energy Facility entrances. Signage shall include emergency contact information.
4. Each Wind Energy Facility shall be equipped with both manual and automatic controls to limit the rotational speed of the rotor blade so it does not exceed the design limits of the rotor.
5. A six-foot-high fence with a locking gate shall be required to enclose each tower or group of towers unless otherwise requested by the applicant and approved by the Planning Commission as part of the Conditional Use permit. The color and type of fencing for each Wind Energy Facility installation shall be determined on the basis of individual applications as safety needs dictate.
6. The minimum distance between the ground and any part of the rotor or blade system shall be twenty (20) feet.

I. Compliance with International Building Code (IBC). All wind turbines and associated buildings and facilities shall comply with all applicable IBC requirements. Building permit applications for wind energy facilities shall be accompanied by a standard drawing of the wind turbine structure including the tower, base, and footing. An engineering analysis of the tower showing compliance with the building code and certified by a licensed professional engineer registered in the state of Utah shall also be submitted. In the case of a conflict between the IBC and this Chapter, the more restrictive shall apply.

J. Compliance with FAA regulations. Wind energy facilities must comply with applicable FAA regulations, including any necessary approvals for installations close to airports.

Section 19.080 Small Wind Energy Facility.

(Amended 07/28/09)

A. Allowed Areas. Small Wind energy systems may be allowed as an accessory use upon compliance with this section and issuance of a Conditional Use Permit as per Chapter 9 of this Code.

B. Applications. In conjunction with the application requirements for a Conditional Use Permit and Site Plan, an application for a Small Wind Energy Conversion System shall include the following:

1. Evidence that the proposed tower height does not exceed the height recommended by the manufacture or distributor of the system.
2. A line drawing of the electrical components of the system in sufficient detail to allow for a determination that the manner of installation conforms to the Electric Code.
3. Sufficient information demonstrating that the system will be used primarily to reduce on-site consumption of electricity.
4. Written evidence that the electric utility service provider that serves the proposed site has been informed of the applicant's intent to install an interconnected customer-owned electricity generator, unless the applicant does not plan, and so states in the application, to connect the system to the electricity grid.
5. A visual analysis of the Small Wind Energy Facility as installed, which may include a computerized photographic simulation, demonstrating the visual impacts from nearby strategic vantage points. The visual analysis shall also indicate the color treatment of the system's components and any visual screening incorporated into the project that is intended to lessen the system's visual prominence.
6. A decommissioning plan that includes the anticipated life of the Small Wind Energy Facility; the estimated decommissioning costs in current dollars; how said estimate was determined; the method of ensuring that funds will be available for decommissioning and restoration; the manner in which the Wind Energy Facility will be decommissioned and the site restored, which shall include removal of all structures and debris to a depth of 3 feet, restoration of the soil, and restoration of vegetation (consistent and compatible with surrounding vegetation).

C. Design Standards. All small wind energy systems shall comply with the following standards.

1. A system shall not be located on any front or side yard. All facilities must be located completely within the rear yard, unless otherwise approved by the Planning Commission.

1. Only one small wind energy system tower per legal lot shall be allowed, unless there are multiple applicants, in which their joint lots shall be treated as one lot for purposes of this Section.

2. The allowed height of the facility shall be determined as part of the conditional use. Total maximum tower heights are measured as follows:

- (a) 45 feet or less on parcels less than five acres.
- (b) 65 feet or less on parcels of five or more acres.
- (c) The allowed height shall be reduced if necessary to comply with all applicable Federal Aviation Requirements.

3. A Small Wind Energy Facility shall be set back at a distance equal to 110% (one hundred ten percent) of the total height of the facility from all inhabited structures on adjacent lots, overhead utility lines, property lines, public roads, and public rights-of ways.

4. The maximum turbine power output is limited to 100 kW.

5. The system's tower and blades shall be painted or treated a non-reflective, unobtrusive color that blends the system and its components into the surrounding landscape to the greatest extent possible and incorporate non-reflective surfaces to minimize any visual disruption.

6. The system shall be designed and located in such a manner to minimize adverse visual impacts from public viewing areas (e.g., public parks, roads, trails). To the greatest extent feasible a small wind energy system:

- (a) Shall not project above the top of ridgelines.
- (b) If visible from public viewing areas, shall be screened to the maximum extent feasible by vegetation or other means to minimize potentially significant adverse

visual impacts on neighboring residential areas.

7. Exterior lighting on any structure associated with the system shall not be allowed except that which is specifically required by the Federal Aviation Administration.

8. All on-site electrical wires associated with the system shall be installed underground except for "tie-ins" to a public utility company and public utility company transmission poles, towers and lines. This standard may be modified by the Planning Commission if the project terrain is determined to be unsuitable due to reasons of excessive grading, biological impacts, or similar factors.

9. The system shall be operated such that no disruptive electromagnetic interference is caused. If it has been demonstrated that a system is causing harmful interference, the system operator shall promptly mitigate the harmful interference or cease operation of the system.

10. At least one sign shall be posted on the tower at a height of five feet warning of electrical shock or high voltage and harm from revolving machinery.

11. No brand names, logo or advertising shall be placed or painted on the tower, rotor, generator or tail vane where it would be visible from the ground, except that a system or tower's manufacturer's logo may be displayed on a system generator housing in an unobtrusive manner.

12. Towers shall be constructed to provide one of the following means of access control, or other appropriate method of access:

- (a) Tower-climbing apparatus located no closer than 12 feet from the ground.
- (b) A locked anti-climb device installed on the tower.
- (c) A locked, protective fence at least six feet in height that encloses the tower.

13. Anchor points for any guy wires for a system tower shall be located within the property that the system is located on and not on or across any aboveground electric transmission or distribution lines. The point of attachment for the guy wires shall be enclosed by a fence six feet high or

sheathed in bright orange or yellow covering from three to eight feet above the ground.

15. The facility shall be designed with an automatic shut-off mechanism, so that in the event of a power outage, the facility will not back-feed into the power grid.

14. All small wind energy system tower structures shall be designed and constructed to be in compliance with pertinent provisions of the International Building Code, National Electric Code, and any other applicable codes.

15. All small wind energy systems shall be equipped with manual and automatic over-speed controls. The conformance of rotor and over-speed control design and fabrication with good engineering practices shall be certified by the manufacture.

16. Except during short-term events including utility outages and severe wind storms, a Small Wind Energy Facility shall be designed, installed, and operated so that noise generated by the system shall not exceed 50 decibels (dBA), as measured at the closest neighboring dwelling.

D. Maintenance. All Small Wind Energy Facility shall be maintained in good condition and in accordance with all requirements of this section.

E. Abandonment of Use. A Small Wind Energy Facility which is not used for twelve (12) successive months shall be deemed abandoned and shall be dismantled and removed from the property at the expense of the property owner in accordance with a decommissioning plan approved as part of the Conditional Use Permit. Failure to abide by and faithfully comply with this section or with any and all conditions that may be attached to the granting of any Conditional Use Permit shall constitute grounds for the revocation of the permit by the City.

F. No small wind energy system shall be connected to the power grid until Lehi City Power has inspected the system

G. The owner of the facility must sign a Net Metering Pilot Program interconnection and service agreement with Lehi Power.