

## **SEC. 154.390 ALTERNATIVE ENERGY SYSTEMS.**

### **154.391 PURPOSE.**

The purpose of this chapter is to:

(A) Accommodate alternative energy sources by removing regulatory barriers and creating a clear regulatory path for approving alternative energy systems.

(B) Create a livable community where development incorporates sustainable design elements such as resource and energy conservation and use of renewable energy.

(C) Protect and enhance air quality and decrease use of fossil fuels.

(D) Accommodate alternative energy development in locations where the technology is viable and environmental, economic and social impacts can be mitigated.

### **154.392 GROUND SOURCE HEAT PUMP SYSTEMS.**

(A) Zoning District Allowance. Ground source heat pump systems in accordance with the standards in this chapter are allowed as a permitted accessory use in all zoning districts.

(B) Standards.

(1) System Requirements.

(a) Only closed loop ground source heat pump systems utilizing heat transfer fluids as defined in this Section are permitted. Open loop ground source heat pump systems are not permitted.

(b) Ground source heat pump systems in public waters may be permitted as a conditional use in accordance with this Section and subject to the following:

(i) Approval from the Minnesota Department of Natural Resources.

(ii) Written consent of all property owners and/or approval by an association in accordance with its adopted bylaws.

(iii) Demonstrated compliance with applicable City permit requirements.

(c) Ground source heat pump systems in water bodies owned or managed by the City of Jordan are not permitted.

(2) Setbacks.

(a) All components of ground source heat pump systems including pumps, borings and loops shall be set back at least five feet (5') from interior side lot lines and at least ten feet (10') from rear lot lines.

(b) Above ground equipment associated with ground source heat pumps shall not be installed in the front yard of any lot or the side yard of a corner lot adjacent to a

public right of way and shall meet all required setbacks for the applicable zoning district.

- (3) Easements. Ground source heat pump systems shall not encroach on public drainage, utility roadway, or trail easements.
- (4) Noise. Ground source heat pump systems shall comply with Minnesota pollution control agency standards outlined in Minnesota Rules Ch. 7030.
- (5) Screening. Ground source heat pumps are considered mechanical equipment and shall be screened from view to the extent possible without impacting their function.
- (6) Safety. Ground source heat pumps shall be certified by Underwriters Laboratories, Inc., and meet the requirements of the State Building Code.

(C) Abandonment. If a ground source heat pump system remains nonfunctional or inoperative for a continuous period of one year, the system shall be deemed to be abandoned and shall constitute a public nuisance. The owner shall remove the abandoned system at their expense after a demolition permit has been obtained in accordance with the following:

- (1) The heat pump and any external mechanical equipment shall be removed.
- (2) Pipes or coils below the land surface shall be filled with grout to displace the heat transfer fluid. The heat transfer fluid shall be captured and disposed of in accordance with applicable regulations. The top of the pipe, coil or boring shall be uncovered and grouted.
- (3) Lake ground source heat pump systems shall be completely removed from the bottom of the body of water.

(D) Permits. A building permit shall be obtained for any ground source heat pump system prior to installation. Borings for vertical systems are subject to approval by the Minnesota department of public health.

### **154.393 WIND ENERGY SYSTEMS.**

(A) Zoning District Allowance. Small wind turbine systems in accordance with the standards in this chapter are allowed as a permitted accessory use in all zoning districts.

(B) General Standards. The following standards shall be applicable to small wind turbine systems in all zoning districts:

- (1) Number. No more than one wind energy system is permitted per parcel.
- (2) Setbacks. The base of the wind turbine tower shall be set back from all property lines a distance equal to the highest possible extension of the system apparatus.
- (3) Roof Mounting. Roof mounted wind turbines shall be permitted only when a determination is made by the City Building Official that the underlying roof structure will support such system and all applicable building standards are satisfied.
- (4) Rotor Clearance. No part of a rotor blade shall be located within thirty feet (30') of the ground and within twenty feet (20') of the nearest tree, structure or aboveground utility facility.
- (5) Noise. Wind energy systems shall comply with Minnesota pollution control agency noise standards outlined in Minnesota Rules Ch. 7030 at all property lines.

- (6) Screening. Wind energy systems shall be screened from view to the extent possible without impacting their function.
- (7) Aesthetics. All portions of the wind energy system shall be a nonreflective, nonobtrusive color, subject to the approval of the zoning administrator. The appearance of the turbine, tower and any other related components shall be maintained throughout the life of the wind energy system pursuant to industry standards. Systems shall not be used for displaying any advertising. Systems shall not be illuminated.
- (8) Feeder Lines. The electrical collection system shall be placed underground within the interior of each parcel. The collection system may be placed overhead near substations or points of interconnection to the electric grid.
- (9) Safety.
  - (a) Wind energy systems shall meet minimum standards such as International Electrotechnical Commission (IEC) 61400-2 or the American Wind Energy Association's (AWEA) small wind turbine performance and safety standard or other standards as determined by the City Building Official.
  - (b) Wind energy systems shall be certified by Underwriters Laboratories, Inc., and the National Renewable Energy Laboratory, the Small Wind Certification Council or other body as determined by the City. The City reserves the right to deny a building permit for proposed wind energy systems deemed to have inadequate certification or testing for operation in a severe winter climate.
  - (c) Wind energy systems shall be maintained under an agreement or contract by the manufacturer or other qualified entity.
  - (d) All grid connected systems shall have an agreement with the local utility prior to the issuance of a building permit. A visible external disconnect shall be provided if required by the utility.
- (10) Abandonment. If a wind energy system remains nonfunctional or inoperative for a continuous period of one year, the system shall be deemed to be abandoned and shall constitute a public nuisance. The owner shall remove the abandoned system at their expense after a demolition permit has been obtained. Removal includes the entire structure including foundations to below natural grade and transmission equipment.
- (11) Permits. A building permit, and Conditional Use Permit if required, shall be obtained for any wind energy system prior to installation.

(C) Residential District Standards.

- (1) Mounting. All wind turbine systems shall be roof mounted. Ground mounted systems are not permitted.
- (2) Height. Wind energy systems shall not extend more than six feet (6') above the highest point of the roof.

(D) Commercial, Industrial, and Institutional District Standards.

- (1) Mounting. Subject to the requirements of this chapter, wind energy systems may either be roof mounted or ground mounted.
- (2) Height.

- (a) Except as may otherwise be allowed by Conditional Use Permit, wind turbine systems shall conform to the maximum height requirements of the applicable commercial, industrial or institutional zoning district.
- (b) Wind turbine system heights in excess of the maximum height requirement of the applicable zoning district may be permitted by Conditional Use Permit provided that:
  - (i) The system height, as measured from the base of the tower for ground mounted systems, or base of the building for roof mounted systems, to the highest possible extension of the system apparatus shall not exceed 75 feet.
  - (ii) The additional system height is required to allow for the improved operation of the wind energy system.
  - (iii) The additional wind energy system height results in a net energy gain.
  - (iv) The wind energy system does not adversely affect solar access to adjacent properties.
  - (v) The wind energy system complies with all other engineering, building, safety, and fire regulations.
  - (vi) The wind energy system is found to not have any adverse impacts on the area, including the health, safety, and general welfare of occupants of neighboring properties and users of public rights of way.
  - (vii) The criteria and applicable standards of this Section are considered and determined to be satisfied.
- (3) Ground Mounted Systems.
  - (a) Ground mounted wind energy systems shall not be installed in the front yard of any lot or in the side yard of a corner lot adjacent to a public right of way.
  - (b) Only monopole towers are permitted.
  - (c) System height shall be measured from the base of the tower to the highest possible extension of the system apparatus.
  - (d) Ground located wind energy systems shall not encroach on public drainage, utility roadway or trail easements.
- (4) Blade Length. A maximum blade length of 15 feet is permitted.

**154.394 SOLAR ENERGY SYSTEMS.**

(A) Zoning District Allowance. Solar energy systems in accordance with the standards in this chapter are allowed as a permitted accessory use in all zoning districts.

(B) Standards.

- (1) Exemption. Passive or building integrated solar energy systems are exempt from the requirements of this chapter and shall be regulated as any other building element.

- (2) Height. Roof mounted solar energy systems shall comply with the maximum height requirements in the applicable zoning district. Ground mounted solar energy systems shall not exceed 15 feet in height.
- (3) Location. In urban reserve and residential zoning districts, ground mounted solar energy systems shall be limited to the rear yard. In commercial, industrial and institutional districts, ground mounted solar energy systems may be permitted in front yards, side yards adjacent to public rights of way and rear yards.
- (4) Setbacks. Ground mounted solar energy systems shall comply with all accessory structure setbacks in the applicable zoning district. Roof mounted systems shall comply with all building setbacks in the applicable zoning district and shall not extend beyond the exterior perimeter of the building on which the system is mounted.
- (5) Roof Mounting. Roof mounted solar collectors may be flush mounted or bracket mounted. Bracket mounted collectors shall be permitted only when a determination is made by the City Building Official that the underlying roof structure will support apparatus, wind, and snow loads and all applicable building standards are satisfied.
- (6) Easements. Solar energy systems shall not encroach on public drainage, utility roadway or trail easements.
- (7) Screening. Solar energy systems shall be screened from view to the extent possible without impacting their function.
- (8) Maximum Area. Ground mounted solar energy systems shall be limited in size to the maximum area requirement allowed for accessory structures or no more than 25 percent of the rear yard, whichever is less.
- (9) Aesthetics. All solar energy systems shall minimize glare toward vehicular traffic and adjacent properties.
- (10) Feeder Lines. The electrical collection system shall be placed underground within the interior of each parcel. The collection system may be placed overhead near substations or points of interconnection to the electric grid.

(C) Safety.

- (1) Standards. Solar energy systems shall meet the minimum standards outlined by the International Electrotechnical Commission (IEC), the American Society Of Heating, Refrigerating, And Air-Conditioning Engineers (ASHRAE), ASTM International, British Standards Institution (BSI), International Organization For Standardization (ISO), Underwriter's Laboratory (UL), the Solar Rating And Certification Corporation (SRCC) or other standards as determined by the City Building Official.
- (2) Certification. Solar energy systems shall be certified by Underwriters Laboratories, Inc., and the National Renewable Energy Laboratory, the Solar Rating And Certification Corporation or other body as determined by the community development director. The City reserves the right to deny a building permit for proposed solar energy systems deemed to have inadequate certification.
- (3) Utility Connection. All grid connected systems shall have an agreement with the local utility prior to the issuance of a building permit. A visible external disconnect shall be provided if required by the utility.

(D) Abandonment.

- (1) If a solar energy system remains nonfunctional or inoperative for a continuous period of one year, the system shall be deemed to be abandoned and shall constitute a public nuisance. The owner shall remove the abandoned system at their expense after a demolition permit has been obtained. Removal includes the entire structure including transmission equipment.

(E) Permit.

- (1) A building permit shall be obtained for any solar energy system prior to installation.