

Of Commission as a Whole:

**Ordinance No: 2009-4**

**Be it Ordained by the City of Bay City:**

That the Code of Ordinances of the City of Bay City, Chapter 122, Zoning, Article XXVI, Wind Energy Conversion Systems, Sections 122-601 through 122-620 be added to read as follows:

**Sec. 122-601. Purpose.**

The regulation of wind energy conversion systems, including the height, minimum lot area and required setbacks for such systems, is intended to provide for an alternative source of power generation, while protecting the health, safety, or welfare of residents.

**Sec. 122-602. Scope of regulations.**

Wind energy conversion systems may be erected, relocated, enlarged, structurally changed, or altered in accordance with the provisions of this article.

**Sec. 122-603. Definitions.**

Certain words and phrases used in this article shall have the meanings set forth in this section. Words and phrases not defined in this section but defined in article II shall be given the meanings set forth in article II. All other words and phrases shall be given their common, ordinary meaning, unless the context clearly requires otherwise.

*Adjacent occupied structure* means a residence, school, hospital, church, public library, business or other buildings used for public gathering, excluding accessory structures, that is located on an adjoining property when the permit application is submitted.

*Applicant* means the person or entity filing an application under this article.

*Decibel* means the unit of measure used to express the magnitude of sound pressure and sound intensity.

*Height* means the height of a wind energy conversion system measured from natural grade to the tip of the rotor blade or assembly at its highest point or blade-tip height.

*Mechanical shadow* means the entire envelope that is occupied by the circle swept by the furthest extension of any blade or other exposed moving component of a wind energy conversion system.

*Non-participating landowner* means any landowner not under agreement with the system owner or operator, such as the adjacent property owner.

*Participating landowner* means a landowner under lease or other property agreements with the system owner or operator pertaining to the wind energy conversion system.

*Pedestal* means a maximum 12' tall structure that is designed and constructed primarily for the purpose of supporting one wind turbine.

*Roof-mounted* means any part of a wind energy conversion system that is located on the roof of a building, fire or parapet walls; stage lofts, chimneys, smokestacks, water tower, or roof structures for the housing of elevators, stairways, tanks, ventilating fans, or similar equipment required to operate and maintain the building.

*Shadow flicker* means the visible flicker effect when rotating turbine blades cast shadows on the ground and nearby structures causing the repeating pattern of light and shadow.

*System operator* means the entity responsible for the day-to-day operation and maintenance of the wind energy conversion system.

*System owner* means the entity or entities having controlling or majority equity interest in the wind energy conversion system, including their respective successors and assigns.

*Tower* means any structure, including its supports, that are ground-mounted, taller than 12', and designed and constructed primarily for the purpose of supporting one or more wind turbines. This includes self-supporting lattice towers, guyed lattice towers, or monopole towers.

*Wind energy conversion system* means an electric generating system, consisting of one or more wind turbines and other accessory structures and buildings, including substations, meteorological towers, electrical infrastructure, transmission lines and other appurtenant structures & facilities. Such systems are designed for large-scale energy generation, typically for electrical utilities, or to supplement other electricity sources as an accessory use for residential, commercial, waterfront, office, and industrial buildings or facilities, wherein the power generated is used primarily for onsite consumption

*Wind Turbine* means a wind energy conversion system that converts wind energy into electricity through the use of a wind turbine generator, and may include a nacelle, rotor, tower, blades, guy wires and pad transformer.

## **Sec. 122-604. Development Standards.**

All wind energy conversion systems shall conform to the following standards:

### (1) General Regulations.

- a. All structural, electrical and mechanical components of the wind energy conversion system shall conform to relevant and applicable local, state and national codes and all applicable industry standards.
- b. Wind energy conversion systems shall comply with applicable FAA regulations.
- c. Utility notification: No wind energy conversion system shall be installed until evidence has been given that the electrical utility

company has been informed of the customer's intent to install an interconnected customer-owned generator.

- d. Approval of wind energy conversion systems located in regulated historic districts.
  1. Design review required. Wind energy conversion systems located in regulated historic districts shall obtain approval from the Architectural Review Committee or Historic District Commission, where applicable, before applying to the Planning Commission for special use approval.
  2. Procedures for design review shall be in accordance with articles XII and XIII. In addition to the applicable standards and regulations found therein, the following design standards apply for wind energy conversion systems:
    - a. Wind energy conversion systems shall be installed in a manner which does not damage or obscure character-defining features of an historic resource.
    - b. Towers shall be installed in locations that are not clearly visible from public streets.
    - c. Roof-mounted wind energy conversion systems.
      1. Wind energy conversion systems on pitched roofs may only be attached to the side or peak of a roof that is clearly visible from public streets when such systems could not otherwise be located on sides and peaks of the roof that are not clearly visible from public streets.
      2. Wind energy conversion systems on flat roofs shall not be attached to:
        - a. Parapet walls that are clearly visible from public streets.
        - b. Any extension of a front wall of a building that is clearly visible from public streets.
- d. The Architectural Review Committee or Historic District Commission, where applicable, may require that wind energy conversion systems be painted, so as to be architecturally compatible with the building on which it is located or to blend in with the surrounding area.

(2) *Construction and Design.*

a. Exterior Finish.

1. Tower and pedestal-mounted wind energy conversion systems shall typically maintain a neutral, non-reflective exterior color, or a galvanized steel finish, unless Federal Aviation Administration (FAA) or other applicable authority require otherwise. In addition, the Planning Commission may require that such wind energy conversion systems be painted in such a way as to reduce visual obtrusiveness, in order to conform to the surrounding environment and/or architecture.
2. Roof-mounted wind energy conversion systems and associated wires and equipment shall be painted so as to be architecturally compatible with the building to which they are attached.

b. Wind energy conversion systems may not be artificially lighted unless otherwise required by the FAA or approved authority or authorized by the Planning Commission.

c. Wind energy conversion systems may include one or more small signs, emblems, or decals to identify the following:

1. The name or logo of the manufacturer and/or installer.
2. The make, serial number, and other pertinent information about the wind energy conversion system
3. Such signs shall not contain advertising copy.

d. Minimum clearances.

1. The minimum distance between the ground and mechanical shadow shall be 15 feet.
2. The minimum distance between the mechanical shadow and structures shall be 10 feet, excluding roof-mounted wind energy conversion systems.

e. Provisions for safety.

1. Towers that are not roof-mounted shall be enclosed with a 6-foot tall fence or the base of the tower shall not be climbable for a distance of 12 feet.

2. When roof-mounted wind energy conversion systems can be accessed by the public, such systems shall provide adequate guards and warnings to ensure safety.

3. When towers are supported by guy wires, the wires shall be clearly visible to a height of at least six feet above the guy wire anchors.

4. Wind energy conversion systems shall have automatic braking, governing or a feathering system to prevent uncontrolled rotation or over speeding.

f. Noise.

Wind energy conversion systems shall not exceed 60 decibels, as measured from the closest lot line. This level may be exceeded during short-term events, such as severe wind storms.

g. Unsafe or inoperative systems.

1. Any wind energy conversion system found to be unsafe by the building official shall be repaired by the owner to meet all code requirements, or removed as directed.

2. If any wind energy conversion system is not used for a period of 12 months, the owner will be notified by certified mail to set forth reasons for the operational difficulty and provide a reasonable timetable for corrective action. If one is not provided to the satisfaction of the City, the landowner shall remove the wind energy conversion system within 60 days of receipt of the notice to remove.

h. Signal Interference.

Wind energy conversion systems shall not interfere with communication systems such as, but not limited to, radio, telephone, television, satellite, or emergency communication.

## **Sec. 122-605. Specific Standards for Wind Energy Conversion Systems.**

(a) Wind energy conversion systems in the R-1, Single Family Residential, R-2, Single and Two-Family Residential, and RM-1, Medium Density Residential Districts are a permitted accessory use subject to the following standards:

(1) *Height.* Wind energy conversion systems shall meet the following height standards:

- a. Height of wind energy conversion systems mounted on towers shall not exceed 60 feet.
- b. Height of wind energy conversion systems that are roof-mounted may exceed the height of the tallest part of the roof to which it is attached by no more than 20 feet.
- c. Applicants may request special use approval from the Planning Commission to waive height restrictions for towers located at school, institutional, or governmental properties.

(2) *Setback requirements.* Wind energy conversion systems shall meet the following setback requirements:

- a. General rules for location on lot.
  1. Wind energy conversion systems, including mechanical shadow, may not encroach into setback requirements for uses for the zoning district in which they are to be located; nor shall they be located between the front lot line and the front wall of dwellings.

b. Wind energy conversion systems on towers.

Wind energy conversion systems shall be set back a distance equal to the mechanical shadow from all adjacent occupied structures.

c. Wind energy conversion systems that are roof-mounted.

1. Wind energy conversion systems shall be set back a distance equal to the mechanical shadow from all adjacent occupied structures, or other wind energy conversion systems.

2. Setbacks provisions for wind energy conversion systems may be waived if the following conditions are met:

- a. When the mechanical shadow encroaches onto an adjacent property, the Planning Commission may waive the setback

requirements on the participating landowner property and/or non-participating landowner property provided that the affected property owners sign a waiver that sets forth the applicable setback provision(s) and the proposed changes:

1. The written waiver shall notify all applicable property owner(s) of the setback required by this article, describe how the wind energy conversion system is not in compliance, and state that consent is granted to waive the setback as required by this article for the wind energy conversion system.
2. Any such waiver shall be in recordable form, signed by the participating land owner(s) and non-participating landowner(s), recorded in the office of the Bay County Register of Deeds with a copy of the recorded original returned to the Planning Department.

c. When the mechanical shadow encroaches upon an adjacent public property or public right-of-way the Planning Commission may waive the setback requirements on the participating landowner property and/or City property or public right-of-way provided that the participating landowner receive an encroachment permit from the Engineering Department.

(3) *Number.* Wind energy conversion systems may consist of one to five wind turbines, towers, or pedestals and associated control or conversion electronics

(4) *Installation.* Wind energy conversion systems may be mounted on towers, pedestals, or roof-mounted.

(5) *Guy Wires.* Tower structures requiring guy wires are not permitted.

(6) *Rotor Diameter.* Rotor diameter shall not exceed 24'(12' blades).

(7) *Minimum lot size.* None.

(b) Wind energy conversion systems in RM-2, High Rise Residential, WF, Waterfront, O-1, Office, all commercial, and industrial districts are a permitted accessory use after special use approval subject to the following standards:

(1) *Height.* Wind energy conversion systems shall meet the following height standards:

a. Height of wind energy conversion systems mounted on towers shall not exceed to 80 ft.

b. Height of wind energy conversion systems that are roof-mounted may exceed the height of the tallest part of the roof to which it is attached by no more than 20 feet.

(2) *Setback requirements.* Wind energy conversion systems shall meet the following setback requirements:

a. General rules for location on lot.

Wind energy conversion systems, including mechanical shadow, may not encroach into setback requirements for principal uses for the zoning district in which they are to be located; nor shall they be located between the front lot line and the front wall of dwellings.

b. Wind energy conversion systems on towers.

Wind energy conversion systems, including mechanical shadow, shall be set back a distance equal to 110 percent of the system height from all property boundaries, public rights-of-way, utility lines, the Saginaw River or other wind energy conversion systems.

c. Wind energy conversion systems that are roof-mounted.

1. Wind energy conversion systems shall be set back a distance equal to the mechanical shadow from all adjacent occupied structures, or other wind energy conversion systems.

2. Setbacks provisions may be waived if the following conditions are met:

a. When the mechanical shadow encroaches onto an adjacent property, the Planning Commission may waive the setback requirements on the participating landowner property and/or non-participating landowner property provided that the affected property owners sign a waiver that sets forth the applicable setback provision(s) and the proposed changes:

1. The written waiver shall notify all applicable property owner(s) of the setback required by this article, describe how the wind energy conversion system is not in compliance, and state that consent is granted to waive the setback as required by this article for the wind energy conversion system.

2. Any such waiver shall be in recordable form, signed by the participating land owner(s) and non-participating landowner(s), recorded in the office of the Bay County Register of Deeds with a copy of the recorded original returned to the Planning Department.

b. When the mechanical shadow encroaches upon an adjacent public property or public right-of-way the Planning Commission may waive the setback requirements on the participating landowner property and/or City property or public right-of-way provided that the participating landowner receive an encroachment permit from the Engineering Department.

(3) *Number.* Wind energy conversion systems may consist of one or more wind turbines, towers, or pedestals and associated control or conversion electronics.

(4) *Installation.* Wind energy conversion systems may be mounted on towers, pedestals or roof-mounted.

(5) *Rotor Diameter.* Rotor diameter is not limited.

(6) *Minimum lot size.* None.

(c) *Wind energy conversion systems are a permitted use after special use approval in the M-2, General Industrial District subject to the following standards:*

(1) *Height.* Height of wind energy conversion systems mounted on towers shall not exceed 150 ft.

(2) *Setback requirements.* Wind energy conversion systems shall meet the following setback requirements:

a. Wind energy conversion systems may not encroach into setback requirements for principal uses for the zoning district in which they are to be located.

b. No part of wind energy conversion system structures, including guy wire anchors, may extend closer than ten (10) feet to the property boundaries of the site.

c. Wind energy conversion systems, including mechanical shadow, shall be set back a distance equal to 150 percent of the system height from all adjacent occupied structures and 110 percent of the system

height from all property boundaries, public rights-of-way, utility lines, the Saginaw River or other wind energy conversion systems.

(3) *Number.* Wind energy conversion systems may consist of one or more wind turbines, towers, or pedestals and associated control or conversion electronics.

(4) *Installation.* Wind energy conversion systems are mounted on towers.

(5) *Rotor Diameter.* Rotor diameter is not limited.

(6) *Minimum lot size.* 2.5 acres.

(7) *Shadow Flicker.* The Planning Commission may require that the applicant conduct an analysis on potential shadow flicker at adjacent occupied structures. The analysis shall identify the locations of shadow flicker that may be caused by the project and the expected durations of the flicker at these locations from sunrise to sunset over the course of a year. The analysis shall identify problem areas where shadow flicker may affect residents and describe measures that shall be taken to eliminate or mitigate the problems.

(8) *Decommissioning.* The applicant shall submit a decommissioning plan. The plan shall include the anticipated life of the project, the estimated decommissioning costs, net of salvage value in current dollars, the method of ensuring that funds will be available for decommissioning and restoration and the anticipated manner in which the project will be decommissioned and the site restored.

(9) The Planning Commission may require that applicants provide a form of surety, either through escrow account, bond or otherwise, to cover the cost of removal in the event the City must remove the wind energy conversion system, of an amount and form determined to be reasonable by the Planning Commission, but in no event to exceed more than 125 percent of the cost of removal and compliance with the additional requirements set forth herein, as determined by the applicant. Such surety will not be required for municipally or state-owned wind energy conversion systems. If required, the applicant shall submit a fully inclusive estimate of the costs associated with removal, prepared by a qualified engineer. The amount shall include a mechanism for Cost of Living Adjustment.

**Secs. 122-606—122-620. Reserved.**