Draft Renewable and Alternative Energy Ordinance
Draft 5
January 8, 2014

Section 8207: Renewable and Alternative Energy

8207.01 Intent

The City of Frankfort encourages the use of local renewable/alternative resources, including appropriate applications for biomass conversion, solar, wind, and other energy capture technologies that reduce or eliminate the destruction or consumption of natural non-renewable energy sources. In conformity with the City Master Plan of 2010 objectives that begins with improved Energy Efficiency for commercial, industrial, civic, institutional buildings and residences the City creates this Section to provide regulations governing renewable energy systems. The locations for biomass, wind, solar and other energy systems, conversion, and storage locations are intended to ensure compatibility with surrounding uses; and they are intended to promote public health, safety and welfare through the effective and efficient use of renewable energy systems to increase opportunities for generation of renewable energy within the City of Frankfort.

8207.02 Definitions

Guy Wire means a cable, wire, or rope that is used to brace something.

Rotor Diameter means the cross-sectional dimension of the circle swept by the rotating blades of a wind energy turbine.

Solar energy system means any solar collection system device (i.e. solar photovoltaic cell, panel, or array, or solar hot air or water collection device) where the primary purpose is to provide for the collection, inversion, storage, and distribution of solar energy for electricity generation or transfer of stored heat.

Solar energy system, freestanding-Mount means any solar collection system device mounted on a pole.

Solar energy system, structure-Mount means any solar collection system device mounted on a structure or accessory building.

Wind energy system means any device that converts the kinetic energy of wind into mechanical or electrical energy. This device can be either pole-mounted, tower-mounted, or building-mounted through the use of equipment that may include any base, blade, foundation, generator, nacelle, rotor, tower, transformer, vane, wire, inverter, batteries or other components used in this system.

Wind energy system, height of, means the vertical distance to the uppermost vertical extension of any blade, or the maximum height reached by any part of the wind energy systems. For tower/pole-mounted wind energy system, height is measured from the ground level at the base of the tower/pole. For building-mounted wind energy systems, height is measured from the highest point of the roof or roof deck, excluding chimneys, antenna, and other similar protuberances. Wind energy system, building-mount, means a wind energy system mounted on a roof of a building or accessory building.

Wind energy system, Pole-Mount means a wind energy system mounted on a long, cylindrical, often, slender piece of wood, metal, etc. and does not include guy wires.

Wind energy system, Tower-Mount means a wind energy system ground-mounted on steel lattice or tubular steel and may include guy wires.

Energy Efficiency means any project that improve one or more of the following: Lighting replacement(s) (e.g. fluorescent T8s/T5s, occupancy/motion sensors, etc.), Mechanical systems (i.e. heating, cooling and ventilation equipment), Water heating and pumping systems, Advanced control systems (smart or computer controlled), Smart Metering systems, Insulation, Sealing, and other building envelope improvements, and boiler or furnace replacement with a more efficient unit.]

Renewable energy means any project that captures converts or reuses energy from Solar Electricity/Photovoltaic/Thermal, Wind Turbine (i.e. Wind Energy Conversion), Ground Source Heat Pump - horizontal/vertical, ground, closed-loop systems, Biomass Plasma or Thermal technology, Tide, Hydroelectric, or Wave Energy creation.

8207.03 Wind energy systems Permitted With Restrictions

General standards for all wind energy systems and operating equipment shall comply with general standards for approval contained in this zoning ordinance for site plan approval and land use permit, and with all county building department construction and electrical requirements. The ***Rotor Diameter*** shall be proportional to the mounting height with a minimum blade height above ground of ten (10) feet. Any installed wind energy collection or storage system that is not in operation for a continuous period of 12 months, or is damaged, or inoperable because of mounting or equipment failure, is considered abandoned, and the owner shall remove the same within 90 days of receipt of notice from the City. Failure to remove an abandoned wind energy system within said 90 days of notice from the City may be removed by the City at the owner's expense. All wind energy collection systems will meet the standards set in the City of Frankfort Municipal Code, Chapter 5, Noise Control, specifically section 5404 Maximum Permissible Sound Levels. A wind energy system, which emits a pure tone, would be subject to a reduction of five dBA from the stated maximum.

a. East, West and North City Residential Districts,

1. Wind energy systems mounted on a building or an accessory building may be erected to a height not exceeding 10 feet above the highest point of the roof of the principal residence, excluding chimneys, antennae and other similar protuberances. Wind energy systems must be spaced at least 10 feet apart and quantity is limited to two (2) per parcel. Guy wires are not allowed.

2. Wind energy systems mounted on a tower or pole is not allowed in these residential districts.

b. Institutional, Rural and Civic Districts, subject to the following:

1. Wind energy systems mounted on a building or an accessory building may be erected to a height not exceeding 20 feet above the highest point of the principal building roof deck, excluding chimneys, antennae, rooftop mechanical equipment and other similar protuberances. Wind energy systems must be spaced at least 20 feet apart and quantity is limited to three (3) per building. Guy wires are allowed.

2. Wind energy systems mounted on a pole or tower is allowed. Wind energy systems mounted on a pole or tower may be erected to a height not exceeding 20 feet above the height limit of the district and will only be permitted in the rear yard except can be located street ward on lots on navigable water.

3. Pole/Tower-mounted wind energy systems shall be setback a distance equal to the height of the wind energy system from any adjoining lot line.

4. The Pole/Tower setback from side or rear yard may be reduced by up to 50%, or to a minimum of 20 feet from the lot line if it can be demonstrated through a registered architect or professional engineer's statement that the tower is designed to collapse fall, curl or bend within a distance or zone shorter than the height of the wind energy system. Pole/Tower-mount wind energy systems must be spaced one (1) per parcel if less than one (1) acre and (1) per acre on parcels larger than one (1) acre. Guy wires are not allowed.

5. Wind energy systems mounted on a building will not be considered rooftop equipment

c. Industrial-Entrepreneurial District (I-E) subject to the following:

1. Wind energy systems mounted on a building or an accessory building may be erected to a height not exceeding 20 feet above the highest point of the principal building roof deck, excluding chimneys, antennae and other similar protuberances. Wind energy systems must be spaced at least 20 feet apart. Guy wires are allowed.

2. Wind energy systems mounted on a pole or tower may be erected to a height not exceeding 120 feet, subject to FAA/ Michigan Department of Transportation (Aviation) review and permit. The permit from FAA/ Michigan Department of Transportation (Aviation) must be

received in advance of site plan approval or issuance of a land use permit; and will only be permitted in the rear yard except can be located streetward on lots on navigable water. Pole/Tower-mount wind energy systems must be spaced no less than one (1) per 120 ft. radius. Guy wires are allowed.

3. Pole/Tower-mounted wind energy systems shall be setback a distance equal to the height of the wind energy system from any adjoining lot line.

4. The Pole/Tower setback from side or rear yard may be reduced by up to 50%, or to a minimum of 20 feet from the lot line if it can be demonstrated through a registered architect or professional engineer's statement that the tower is designed to collapse, fall, curl or bend within a distance or zone shorter than the height of the wind energy system.

5. Wind energy systems mounted on a building will not be considered rooftop equipment

d. Parks District subject to the following:

1. Wind energy systems shall be subject to review from the Parks and Recreation Commission with final approval from the City Commission.

8207.04 Solar Energy Systems Permitted With Restrictions

General standards for all solar energy systems and operating equipment subject to the total lot coverage percentage requirements of the district in which it is installed. The solar collection system and operating equipment shall comply with the general standards for approval contained in this zoning ordinance for site plan approval and land use permit and with all county building department construction and electrical requirements. Any solar energy system that is not in operation or is damaged or inoperable because of tower or equipment failure is considered abandoned for a continuous period of 12 months is considered abandoned, and the owner shall remove the same within 90 days of receipt of notice from the City. Failure to remove an abandoned wind energy system within said 90 days after notice may be removed by the City at the owner's expense.

a. East, West and North Residential and Waterfront Districts subject to the following:

1. Solar energy systems-structure-mounted on a building or an accessory building are allowed by right subject to the following:

a) With a flat or mansard style roof may be erected to a height not exceeding 10 feet above the highest point of the roof, excluding chimneys, antennae and other similar protuberances.

b) With a pitched roof style shall not exceed the peak height of the roof.

c) Square footage of the equipment is no greater than 80% of the available roof area.

d) Will not be considered rooftop equipment.

e) No Free-standing, tower or pole mounted systems in these districts.

b. Industrial-Entrepreneurial District (I-E), Institutional, Rural, and Civic Districts subject to the following:

1. Solar energy systems-structure-mounted on a building or an accessory building are allowed by right subject to the following:

a) Square footage no greater than 80% of the available roof area.

b) With a flat or mansard style roof may be erected to a height not exceeding 10 feet above the highest point of the roof, excluding chimneys, antennae and other similar protuberances.

c) With a pitched roof style shall not exceed the peak height of the roof.

d) Will not be considered rooftop equipment.

2. Solar energy systems-freestanding-mount is allowed by right subject to the following:

a) Towers may be erected to a height not exceeding 50 feet and area not greater than 325 square feet per unit. One tower mount per 7,500 square feet of land area. Ground mounted units may not exceed the maximum coverage density for all buildings in the district, including all primary and accessory buildings in the calculation.

b) Must be setback 25 feet from side and rear property lines. Guy wires are not allowed.

c. East and West Main Street Districts subject to the following:

1. Solar energy systems-structure-mounted on a building or an accessory building are allowed by right subject to the following:

a) Square footage no greater than 80% of the available roof area.

b) With a flat or mansard style roof may be erected to a height not exceeding 10 feet above the highest point of the roof, excluding chimneys, antennae and other similar protuberances.

c) With a pitched roof style shall not exceed the peak height of the roof.

d) Will not be considered rooftop equipment.

8207.05 Exceptions

a. For wind energy systems that exceed what is allowed by right. The Planning Commission Special Land Use Permit requirements of **section 8108: special Uses and Variances** will apply.

b. For Solar energy systems that exceed what is allowed by right. The Planning Commission Special Land Use Permit requirements of **section 8108: special Uses and Variances** will apply.

c. For all other renewable energy systems not addressed specifically in this ordinance, the Special Land Use Permit requirements of **section 8108: special Uses and Variances** will apply.