

# KOYLTON TOWNSHIP RENEWABLE ENERGY

## A. PURPOSE AND INTENT

The general purpose and intent of these regulations is to regulate the establishment of renewable energy systems, with regards to the development and siting requirements for on-site (generally small systems) and utility grid (generally large systems). On-site energy systems are sized primarily to serve the needs of a home, farm, or small business, which are typically served by one wind turbine or smaller solar panels. Utility grid energy systems are sized to provide power to wholesale or retail customers using the electric utility transmission and distribution grid system and may include a dozen to even hundreds of wind turbines or solar panels. It is the further purpose and intent of these regulations to:

1. Provide for the appropriate location and development criteria for energy systems within the Township, and
2. Allow and encourage the location of energy systems within certain zoning districts; and
3. Minimize the adverse effects of such facilities through careful design and siting criteria; and
4. Protect the character of individual properties throughout the Township from the effects of energy system facilities; and
5. Promote the public health, safety, and welfare.

## B. DEFINITIONS

**Anemometer Tower:** A freestanding tower containing instrumentation such as anemometers that are designed to provide present moment wind data (wind speeds and direction) for use by the supervisory control and data acquisition (SCADA) systems which is a temporary use to determine how much wind power a site can be expected to generate.

**Accessory Solar Energy System:** An area of land or other area used for a solar collection system used to capture solar energy, convert it to electrical energy or thermal power and supply electrical or thermal power primarily for on-site use. An accessory solar energy system consists of one (1) or more freestanding ground, or roof mounted solar arrays or modules, or solar related equipment and is intended to primarily reduce on-site consumption of utility power or fuels.

**ANSI;** ANSI means the American National Standards Institute.

**dB(A);** The sound pressure level in decibels. It refers to the "a" weighted scale defined by ANSI, A method for weighting the frequency spectrum to mimic the human ear.

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

**Glare:** The effect produced by light with an intensity sufficient to cause annoyance, discomfort, or loss in visual performance and visibility.

**Height (Tower):** The height of a wind turbine is measured from the natural grade to the tip of the rotor blade at its highest point.

**IEC;** The International Electrotechnical Commission.

**ISO:** The International Organization for Standardization.

**Unit Boundary:** The boundary around property used for the purposes of a Wind Energy System, including adjacent parcels to the parcel on which the Wind Energy System tower(s) and equipment is located. For purposes of required setbacks, the Unit boundary shall not cross public or private road rights-of-way.

**On-Site Wind energy System:** A wind project used for generating electric power from the wind which is intended to primarily serve the needs of the consumer at the site, i.e., agriculture, residential, commercial, industrial and public land uses.

**Principal Solar Energy System:** An area of land or other area used for a solar collection system principally used to capture solar energy, convert it to electrical energy or thermal power and supply electrical or thermal power primarily for off-site use. Principal solar energy systems consist of one (1) or more free standing ground, or roof mounted solar collector devices, solar related equipment and other accessory structures and buildings including light reflectors, concentrators, and heat exchangers, substations, electrical infrastructure, transmission lines and other appurtenant structures.

**Rotor:** An element of a wind energy system that acts as a multi-blade airfoil assemble, thereby extracting through rotation kinetic energy directly from the wind.

**Shadow Flicker:** The alternating changes in light caused by the moving blade of a wind energy system casting shadows on the ground and stationary objects, such as but not limited to a window at a dwelling.

**Solar Easement:** A solar easement means a right, expressed as an easement, restriction, covenant, or condition contained in any deed, contract, or other written instrument executed by or on behalf of any landowner for the purpose of assuring adequate access to direct sunlight for solar energy systems.

**Solar Energy:** Radiant energy (direct, diffuse and/or reflective) received from the sun.

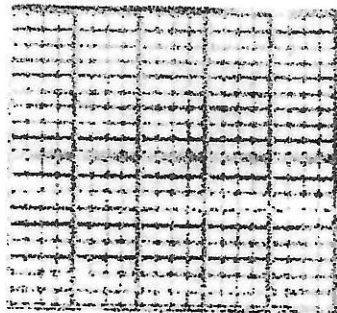
**Solar Panel:** That part or portion of a solar energy system containing one or more receptive cells or modules, the purpose of which is to convert solar energy for use in space heating or cooling, for water and/or for electricity.

**Solar Related Equipment:** Items including a solar photovoltaic cell, module, panel, or array, or solar hot air or water collector device panels, lines, pumps, batteries, mounting brackets, framing and possibly foundations or other structures used for or intended to be used for collection of solar energy.

1. **Solar Array:** A grouping of multiple solar modules with purpose of harvesting solar energy.
2. **Solar Cell:** The smallest basic solar electric device which generates electricity when exposed to light.
3. **Solar Module:** A grouping of solar cells with the purpose of harvesting solar energy.



Cell



Array

**Sound Pressure:** The average rate at which sound energy is transmitted through a unit area in a specific direction. The pressure of sound measured at a receiver.

**Sound Pressure Level:** The sound pressure mapped to a logarithmic scale and reported in decibels (dB).

**Utility Grid Wind Energy System:** A commercial wind facility used for generating power by the use of wind at multiple tower locations in a community and includes accessory energy uses such as but not limited to electric substations and SCADA towers. A Utility Grid Wind Energy System is designed and built to provide electricity to the electric utility transmission and distribution grid.

**Wind Energy System:** A land use for generating electrical power by the use of the wind; utilizing use of a wind turbine **generator and includes the turbine, blades, and tower** as well as **related electrical equipment**. this does not include wiring to connect the wind energy system to the grid.

**Solar Panel:** That part or portion of a solar energy system containing one or more receptive cells or modules, the purpose of which is to convert solar energy for use in space heating or cooling, for water and/or for electricity.

**Solar Related Equipment:** Items including a solar photovoltaic cell, module, panel, or array, or solar hot air or water collector device panels, lines, pumps, batteries, mounting brackets, framing and possibly foundations or other structures used for or intended to be used for collection of solar energy.

1. Solar Array: A grouping of multiple solar modules with purpose of harvesting solar energy.
2. Solar Cell: The smallest basic solar electric device which generates electricity when exposed to light.
3. Solar Module: A grouping of solar cells with the purpose of harvesting solar energy.

**Sound Pressure:** The average rate at which sound energy is transmitted through a unit area in a specific direction. The pressure of sound measured at a receiver.

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**Utility Grid Wind Energy System:** A commercial wind facility used for generating power by the use of wind at multiple tower locations in a community and includes accessory energy uses such as but not limited to electric substations and SCADA towers. A Utility Grid Wind Energy System is designed and built to provide electricity to the electric utility transmission and distribution grid.

**Wind Energy System:** A land use for generating electrical power by the use of the wind; utilizing use of a wind turbine generator and includes the turbine, blades, and tower as well as related electrical equipment. This does not include wiring to connect the wind energy system to the grid.

**Wind Site Assessment:** An assessment to determine the wind speeds at a specific site and the feasibility of using the site for construction of a wind energy system.

**C. ON-SITE WIND ENERGY SYSTEMS AND ANEMOMETER TOWER.**

An On-Site Wind Energy System shall be subject to the review and approval of the Planning commission as specified in the requirements of the Koylton Township Zoning Ordinance, Section 8.10: Land Uses by Special Permit. In addition, On-Site Energy Systems shall be permitted, subject to the conditions hereinafter required and to any and all reasonable conditions which may be imposed in accordance with Section 504 (4) of the Michigan Zoning enabling Act, P.A. 110 of 2006, as amended:

1. On-Site Energy Systems: On-site energy systems are designed primarily to serve the needs of a home, farm, or small business.
2. Tower Height: The maximum tower height shall be governed by setback requirements as noted below, but in no case shall a tower exceed 120 feet above grade which is measured from grade to the tip of a blade in its vertical position.
3. TOWERS: Wind Energy System Towers may include mono-pole, lattice and guy tower designs
4. Location Requirements: Freestanding On-Site Energy Systems shall be expressly prohibited from locating in a front or side yard and are permitted only in a rear yard. Roof top and/or structure installations may be allowed providing the applicant can demonstrate that such an installation meets building code requirements for wind loads and weight. Furthermore, the integrity of the structure for such an installation need to be verified by having documentation from a licensed architect or engineer as to the suitability for a roof top and/or structure installation.
5. Property Setback: The distance between freestanding On-Site Wind energy System and the owner's property lines and the owner's residential dwelling shall be equal to twice the height of the wind energy system. Required setbacks are designed to insure safety to the on site dwelling and adjacent properties in case of a tower or rotor failure, and from preventing sound levels and shadow flicker from impacting adjacent properties. Roof top and/or structure locations for wind energy systems shall be setback from the owner's property lines by a distance equal to one and one-half (1 1/2) times its height with its height being the distance measured from grade to the tip of the rotor blade in its vertical position.
6. Sound Pressure Level: On-Site Wind Energy Systems shall not exceed 45 dB(A) at the property line closest to the wind energy system. This sound pressure level may be exceeded during short term events such as utility outages and/or severe wind storms
7. Construction Codes and Other Regulations: On-Site Energy Systems, including towers, shall comply with all applicable construction and electrical codes and building permit requirements. On-site wind energy systems shall comply with Federal Aviation



Administration requirements, the Michigan Tall Structures Act, and local jurisdiction airport overlay zone regulations. An interconnected on-site use wind energy system shall comply with Michigan Public Service Commission and Federal Energy Regulatory Commission standards.

8. Safety: An On-Site Wind energy System shall have automatic braking, governing, or a feathering system to prevent uncontrolled rotation or over speeding of the rotor blades. All wind towers shall have lightning protection. The minimum vertical blade tip clearance from grad shall be 20 feet for a wind energy system employing a horizontal axis rotor. Mono-pole tower on-site wind energy systems shall be designed and installed so as to not provide step bolts or a ladder readily accessible to the public for a minimum height of eight (8) feet above the ground. Lattice type towers, including guy towers, shall have the base of the tower enclosed by a six (6) foot high security fence. Guy wires for guy towers shall be well marked and provided with protective devices on the guy wires to a height of eight (8) feet above the ground.

9. System Maintenance: The applicant shall maintain the on-site energy system in good condition. Maintenance shall include, but not be limited to, painting, structural repairs, and security.

10. Abandonment/removal Requirements: Any on-site energy system which has reached the end of its useful life or has been abandoned shall be removed. An on-site energy system shall be considered abandoned when it fails to operate for a period of one (1) year. Upon a notice issued by the Zoning Administrator, the on-site energy system owner shall have thirty (30) days to provide sufficient evidence that the system has not been abandoned or the Township shall have the authority to enter the owner's property and remove the system at the owner's expense.

11. Permit Process and Requirements: Upon gaining Site Plan Approval, the owner shall obtain the applicable zoning, building and electrical permits which shall be required prior to the installation of an on-site energy system. The building permit application shall be accompanied by deliverables including the following:

- (a) An approved site plan showing location, dimensions, and types of existing structures on the property including any overhead utility lines.
- (b) Wind energy systems specifications, including manufacturer and model, rotor diameter, tower type, height and manufacturer.
- (c) Tower foundation blueprints or drawings prepared and signed by a professional engineer licensed to practice in the State of Michigan or by the manufacturer's foundation specifications for the tower being proposed for installation.

#### **D. UTILITY GRID WIND ENERGY SYSTEM AND ANEMOMETER TOWERS;**

A Utility Grid Energy System shall be subject to the review and approval of the Planning Commission as specified in the requirements of the Koylton Township Zoning Ordinance, Section 8.10: Land Uses by Special Permit. In addition, On-Site Energy Systems shall be permitted, subject to the conditions hereinafter required and to any and all reasonable

conditions which may be imposed in accordance with Section 504 (4) of the Michigan Zoning Enabling Act, P.A. 110 of 2006, as amended:

1. Utility Grid Energy Systems: Utility Grid Energy Systems are designed primarily to provide power to wholesale or retail customers using the electric utility transmission and distribution grid to transport and deliver the wind generated electricity.
2. Tower Height: The maximum tower height shall not exceed 300 feet above grade which is measured from grade to the tip of a blade in its vertical position.
3. Towers: Wind Energy System Towers shall be limited to a mono-pole design with lattice and guy towers being expressly prohibited.
4. Location Requirements: Utility Grid Energy Systems shall be located on parcels of land (owned or leased) that at a minimum, meets the required setbacks for all towers on the site, which also includes any other structures located on the site, i.e. operations and/or maintenance building, substations, etc. Said locations shall be limited to the dimensional area required per tower specification.
5. Property Setback: The distance between a Utility Grid Wind Energy System tower and the owner's property lines, including leased land boundaries, shall be equal to one and one-half (1 1/2 ) times the height of the wind energy system tower. Operations and maintenance office building, substations, or ancillary equipment shall comply with property setback requirements of the respective zoning district in which they are located. Overhead transmission lines and power poles shall comply with the setback and placement requirements applicable to public utility providers.
6. Sound Pressure Level: Utility Grid Wind Energy Systems shall not exceed 45 dB(A) at the property line or leased boundary line closest to the wind energy system. This sound pressure level shall not be exceeded for more than three (3) minutes in any hour of the day.
7. Construction Codes and Other Regulations: Utility Grid Energy system, including towers, shall comply with all applicable construction and electrical codes and building permit requirements. Utility grid wind energy systems shall comply with Federal Aviation Administration requirements, the Michigan Tall Structures Act, and local jurisdiction airport overlay zone regulations. An interconnected on-site use wind energy system shall comply with Michigan Public Service commission and Federal energy Regulatory Commission standards. Utility Grid wind Energy Systems shall comply with applicable utility, Michigan Public Service, and Federal Energy Regulatory Commission interconnection standards
8. Safety: A utility Grid Wind energy System shall have an automatic braking, governing, or feathering system to prevent uncontrolled rotation or over speeding of the rotor blades. All wind towers shall have lightning protection. The minimum vertical blade tip clearance from grade shall be 20 feet for a wind energy system employing a

horizontal axis rotor. Utility grid wind energy systems (towers) shall be designed to prevent unauthorized access to electrical and mechanical components by fully enclosing and securing the subject site by a six (6) foot high chain link fence with lockable gates that are to be kept locked at all times when service personnel are not present. All buildings on the site are to be kept secured and locked at all times when service personnel are not present. All spent lubricants and cooling fluids shall be properly and safely removed in a timely manner from the site. A sign(s) shall be posted near the tower (s) or operations and/or maintenance building that will contain emergency contact information. Signage placed at the road access shall be used to warn visitors about potential danger from electrical equipment and falling ice.

9. System Maintenance: The applicant shall maintain the Utility Grid Energy System in good condition. Maintenance shall include, but not be limited to, painting, structural repairs, and security.

10. Abandonment/Removal Requirements: Any Utility Grid Wind Energy System which has reached the end of its useful life or has been abandoned shall be removed. An on-site energy system shall be considered abandoned when it fails to operate for a period of one (1) year. Upon a notice issued by the Zoning Administrator, the utility grid system owner/operator shall have thirty (30) days to provide evidence that the system has not been abandoned or the Township shall have the authority to enter the owner's/operators site and remove the system at the owner's/operators expense. At the time of removal, the wind facility site shall be restored to the state it was in before the facility was constructed. More specifically, decommissioning shall consist of:

- (a) Physical removal of all wind turbines, structures, equipment, security barriers and transmission lines from the site.
- (b) Disposal of all solid and hazardous waste in accordance with local and state waste disposal regulations.
- (c) Stabilization or re-vegetation of the site necessary to minimize erosion.

11. Permit Process and Requirements: Upon gaining Site Plan Approval (pursuant to Section 8.10) and Special Use Approval, the owner/operator shall obtain the applicable zoning, building and electrical permits which shall be required for the installation of a utility grid energy system. The building permit application shall be accompanied by deliverables including the following;

- (a) An approved site plan prepared and signed by a professional engineer licensed to practice in the State of Michigan showing location, dimensions, and types of existing structures on the property including any overhead utility lines.
- (b) Wind energy systems specifications, including manufacturer and model, rotor diameter, tower type, height and manufacturer.
- (c) Tower foundation blueprints or drawings prepared and signed by a professional engineer licensed to practice in the State of Michigan.



12. Decommissioning: The applicant shall submit a plan describing the intended disposition of the Wind Energy System at the end of their useful life, and shall describe any agreement with the landowner regarding equipment removal upon termination of the lease. A performance bond or equivalent financial instrument shall be posted in an amount determined by the Township to be utilized in the event the decommissioning plan needs to be enforced with respect to tower removal, site restoration, etc. The bond shall be in favor of Koylton Township provided that any such instrument shall be in an amount of at least \$1 million and shall contain a replenishment obligation.

## **E. SOLAR ENERGY SYSTEMS**

1. General Requirements: All solar energy systems, whether ground mounted or roof mounted, are subject to the following requirements.

- a. A solar energy system must conform to all County, State, and Federal regulations and safety requirements as well as applicable industry standards.
- b. Solar panels shall be placed such that concentrated solar glare shall not be directed onto nearby properties or roadways.

2. Roof Mounted Solar Energy Systems: Category I of Category II roof mounted solar energy systems shall be considered an accessory use in all zoning districts, subject to the following requirements:

- a. Solar panels erected on a building shall not extend beyond the peak of the roof.
- b. Roof mounted panels must be installed with a minimum of a three (3) foot setback from the edges of the roof, the peak, or eave or valley to maintain pathways of accessibility.

3. Ground Mounted Solar Energy Systems: Ground mounted solar energy systems (other than those defined as solar farms) shall be considered an accessory use in all zoning districts, subject to the following requirements:

- a. Prior to the installation of a ground mounted solar energy system, the property owner shall submit a descriptive site drawing to the Code Compliance Officer. This drawing shall include setbacks, panel size, and the location of property lines, building, fences, greenbelts, and road right of ways. This site drawing must be drawn to scale.
- b. A ground mounted solar energy system shall not exceed the maximum building height for adjacent accessory buildings, but in any case the top of the system shall not be more than twenty-five (25) feet above the ground.
- c. A ground mounted or free-standing solar energy system shall not be installed in the front yard.

- d. All power transmission lines from a ground mounted solar energy system to any building or other structure shall be located underground.
  - e. There shall be a greenbelt screening any ground mounted solar energy systems and equipment associated with the system from any adjacent residences. The greenbelt shall consist of shrubbery, trees, or other non-invasive plant species that provide a visual screen. In lieu of a planting greenbelt, a decorative fence may be used.
  - f. In the event that a ground mounted solar energy system has been abandoned (meaning not having been in operation for a period of one (1) year. The system shall be removed by the property owner within six (6) months from the date of abandonment.
4. **Solar Farms:** Solar farms shall only be allowed in the AR Agricultural-Residential District or the I Industrial district as special uses approved by the Planning Commission. Solar farms shall be subject to the following requirement:
- a. The owner of a solar farm must provide the Planning Commission with an operations agreement, which shall set forth the operations parameters, the name and contact information of the certified operator, inspection protocol, emergency procedures and general safety documentation.
  - b. Prior to the installation, the property owner shall submit a descriptive site plan to the Planning Commission which includes where and how the solar farm will connect to the power grid.
  - c. No solar farm shall be installed until evidence has been given to the Planning Commission that the electric utility company has agreed to allow the property owner to install a interconnected customer-owned generator to the grid.
  - d. To ensure proper removal of a solar farm energy system when it is abandoned, any application for approval of a new solar farm energy system shall include a description of the financial security guaranteeing removal of the system which must be posted at the time of receiving a construction permit for the facility. The security shall be: 1) a cash bond; 2) an irrevocable bank letter of credit; or 3) a performance bond in a form approved by the township. The amount of such guarantee shall be no less than the estimated cost of removal and may include a provision for inflationary cost adjustment. The estimate shall be prepared by the engineer for the developer and shall be subject to approval by the Township.
  - e. If the property owner fails to remove or repair the defective or abandoned system, the township may find the owner in violation of the Koylton Township Blight Ordinance and subject to action in accordance with the Koylton Township Blight Ordinance.

#### **F. Fees**

Any persons and/or entities must apply for and receive a renewable energy permit from the Koylton Township Code Compliance Officer. When seeking to install any form of renewable energy. There will be a permit fee of \$35.00

#### **G. Penalties**

The person or persons who violates any provision of this Ordinance shall be deemed guilty of a misdemeanor and upon conviction thereof shall be fined not exceeding \$250.00 first offense, \$500.00 second offense including court costs, or imprisonment.

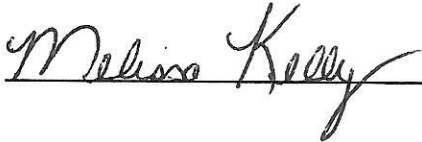
#### **H. Effective Date**

This Ordinance will become effective immediately after publication in a newspaper of general circulation within Koylton Township.

We, the undersigned, do hereby certify that the above Koylton Township Renewable Energy Ordinance was duly adopted by the Koylton Township Board, at which meeting a quorum was present.



Doug Kramer, Township Supervisor



Melissa Kelly, Township Clerk