

## ***SOLAR ENERGY SYSTEMS***

### **153.240 SOLAR ENERGY SYSTEMS**

- A. PURPOSE:** In order to accommodate the use of Photovoltaic solar energy as a means of an alternative energy source, and still protect the public health, safety and welfare of Township residences, the following regulations are necessary.
- B. DEFINITIONS:** For the purpose of this chapter, certain terms are herewith defined. When not inconsistent with the context, words used in the present tense include the future, words in the singular number include the plural number and words in the plural number include the singular number. The word is always mandatory and not merely directory. Terms not herein defined shall have the meanings customarily assigned to them.

**AC Power (Alternating Current):** An electrical current whose magnitude and direction stay constant. The photovoltaic cells on solar panels capture energy from sunlight in the form of DC and must be converted to AC by an inverter.

**Ancillary Solar Equipment:** Any accessory part or device of a solar energy system that does not require direct access to sunlight, such as batteries, electric meters, converters, or water heater tanks.

**Attached Systems:** A solar system that is attached directly to a building.

**Detached Systems:** Also known as Ground Mounted Systems or Freestanding, a solar system that is not attached directly to a building, but is supported by a structure that is built on the ground.

**Distributed Generation:** As opposed to centralized generation, distributed generation refers to a number of small power-generating modules located at or near the point of energy consumption.

**Gigawatt:** A unit of power equal to one billion watts.

**Grid:** The infrastructure of power lines, transformers and substations that delivers electric power to buildings. The utility grid is owned and managed by electric utility companies.

**Installer:** A contractor that installs solar systems.

**Interconnection:** A link between utility company power distribution and local power generation that enables power to move in either direction.

**Inverter:** A device that converts DC power captured by photovoltaic cells on solar panels into AC power.

**Kilowatt:** A unit of power equal to one thousand watts.

**Megawatt:** A unit of power equal to one million watts.

**Net Metering:** A policy whereby utility companies with small-scale renewable power sources, including solar, receive credit from their utility provider for electricity generated in excess of their needs (also known as “net excess generation.”)

**On/Off Grid System:** A solar energy system that is interconnected with the utility grid is an on-grid or grid-tied system, while a system not interconnected is an off-grid system.

**Permitting:** The process by which a local unit of government allows for certain development, changes, and activities in their jurisdiction.

**Photovoltaic (PV):** A method of generating electrical power by converting solar radiation (sunlight) into direct current electricity using semiconductors.

**Solar Collection Devices – General:** Solar collection devices are designed to capture and utilize the energy of the sun to generate electrical power. A solar collection device is the actual material(s) used to collect solar rays and all associated ancillary and structural devices needed to support and convert/transmit the energy collected. These devices may be either freestanding or attached to a structure and are sized to meet the various user needs and/or utility requirements.

**Solar Collection Devices – Small Freestanding Systems:** An array of freestanding (not attached to a principal or accessory structure) solar collection materials that have a manufacturer’s rating of 500W to 10kW.

**Solar Collection Devices – Medium Freestanding Systems:** An array of freestanding (not attached to a principal or accessory structure) solar collection materials that have a manufacturer’s rating of greater than 10kW.

**Solar Collection Devices – Large Freestanding Systems (Solar Farms):** A utility scale commercial facility that converts sunlight into electricity, whether by photovoltaics, or any other various solar technologies for the primary purpose of wholesale or retail sales of generated electricity off-site. Solar farms do not include small scale solar panels or technologies installed at individual residential or commercial locations (e.g., roof or ground mounted panels) that are used exclusively for the sale of surplus electrical energy back to the electrical grid. These installations are permitted as Accessory Structures or Uses.

**Solar Photovoltaic System:** The total components and subsystems that, in combination, convert solar energy suitable for connection to utilization load.

**Time -of-Use (TOU) Rates:** A utility billing system in which the price of electricity depends upon the hour of day at which it is used. Rates are higher during the afternoon when electric demand is at its peak. Rates are lower during the night when electric demand is off peak.

**C. ATTACHED SOLAR SYSTEMS: 500W or more**

- a. Attached solar systems must have a building application with site plan. This plan may be approved by the zoning administrator, or, at his/her option taken to the Planning Commission for future review.
- b. Building permit application must show the method by which the solar collection devices are attached to the building.
- c. An Electrical permit will be required for all attached systems.

**D. SMALL FREESTANDING SOLAR SYSTEMS: 500W to 10KW**

- a. Small freestanding solar systems will require an electrical permit and a building permit with a site plan. This plan may be approved by the zoning administrator, or, at his/her option taken to the Planning Commission for future review.
- b. Freestanding solar systems must not block the view from neighboring homes or drives.
- c. Small freestanding solar systems must meet the same setbacks as an accessory building in that zone.
- d. All supports must extend below frost level and set on concrete pads capable of supporting the weight of the system.
- e. An inspection of the pads before covering will be required as well as a final inspection.
- f. Energy collected by small freestanding systems will be for use only by buildings on the same parcel.

**E. MEDIUM FREESTANDING SYSTEMS: 10KW or more, but not for resale.**

- a. Medium freestanding solar systems will require an electrical permit and a building permit with a site plan. The site plan must be approved by the Planning Commission before any work commences.
- b. Medium freestanding solar systems will be allowed only on parcels of two acres or more. Setbacks will be the same as structures in that zone.
- c. Energy collected by medium freestanding solar systems will be used only by the buildings on the property with the option of additional energy generated being sold back to the utility company.
- d. In-ground supports must extend below frost level and be supported by concrete pads.
- e. Inspections by the Township building official will be required before covering pads and after construction is final.
- f. Bottom of solar panels will have a maximum of 8' and top of panels a maximum of 14' above ground level.
- g. The Planning Commission may require fences or barriers as they deem necessary to provide screening for adjacent properties.

**F. LARGE FREESTANDING SYSTEMS: Solar Farms to be used for resale.**

- a. Large freestanding solar farms are allowed in the industrial zone as a permitted use and would require approval by the Planning Commission for special use in commercial or agricultural zones.
- b. Large freestanding solar farms will require an electrical permit and a building permit with a site plan prepared and stamped by an engineer. The site plan will require approval by the Planning Commission.
- c. A minimum of 20 acres will be required for a large freestanding solar farm system.
- d. The Planning Commission may require fences or barriers as they deem necessary to provide screening for adjacent properties.

- e. Height Restrictions: All photovoltaic panels located in a solar farm shall be restricted to a height of fourteen (14) feet above ground level.
- f. Setbacks: All photovoltaic solar panels and support structures associated with such facilities (excluding perimeter security fencing) shall be a minimum of fifteen (15) feet from a side or rear property line and a minimum of thirty (30) feet from any road or highway right-of-way.
- g. Maximum Lot Coverage: Maximum lot coverage restrictions shall not apply to photovoltaic solar panels. Any other regulated structures on the panel are subject to maximum lot coverage restrictions.
- h. Safety/Access: A security fence (height and material to be established through the special land use permit process) shall be placed around the perimeter of the solar power plant and electrical equipment shall be locked. Knox boxes and keys shall be provided at locked entrances for emergency personnel access. Electric fencing is not permitted.
- i. Sound Pressure Level: No large photovoltaic solar farm facilities shall exceed sixty-five (65) dBA as measured at the property line.
- j. Local, State and Federal Permits: Large photovoltaic solar farm facilities shall be required to obtain all necessary permits from the U.S. Government, State of Michigan, and Big Rapids Charter Township, and comply with standards of the State of Michigan adopted codes.
- k. Electrical Interconnections: All electrical interconnection or distribution lines shall comply with all applicable codes and standard commercial large-scale utility requirements.
- l. Signage: No advertising or non-project related graphics shall be on any part of the solar arrays or other components of the large photovoltaic solar farm facilities. This exclusion does not apply to entrance gate signage or notifications containing points of contact or any and all other information that may be required by authorities having jurisdiction for electrical operations and the safety and welfare of the public.
- m. Abandonment and Decommissioning: Following the operational life of the project, the applicant shall perform decommissioning and removal of the large photovoltaic solar farm facilities and all its components. The applicant shall prepare a decommissioning plan and submit it to the Planning Commission for review and approval prior to issuance of the Special Land Use Permit.
- n. Inspection: The Township shall have the right at any reasonable time, to provide notice to the applicant to inspect the premises on which any large photovoltaic solar farm facilities is located. The Township may hire one or more consultants, with approval from the applicant (which shall not be unreasonably withheld), to assist with inspections at the applicant's or project owner's expense. Inspections must be coordinated with, and escorted by, the applicant's operations staff at the large photovoltaic solar farm facilities to ensure compliance with the Occupational Safety and Health Administration (OSHA), NESC and all other applicable safety guidelines.
- o. Maintenance and Repair: Each large photovoltaic solar farm facility must be kept and maintained in good repair and condition at all times. If the Township Building Official determines that a large photovoltaic solar farm facility fails to meet the requirements of this ordinance and the Special Land Use Permit, or that it poses a safety hazard, the Building Official, or his or her designee, shall provide notice to the applicant of the safety hazard. If, after a reasonable cure period (not to exceed seven (7) days), the safety hazards are not corrected, the applicant shall immediately shut down the large photovoltaic solar facility and not operate, start or restart the large photovoltaic solar facility until the issues have been resolved. Applicant shall keep a maintenance log on the solar array(s), which shall be available for the Township's review within 48 hours of such request. Applicant shall keep all sites within the large photovoltaic solar farm facility neat, clean and free of refuse, waste or unsightly, hazardous or unsanitary conditions.
- p. Road Repair: Any material damages to a public road located within the Township resulting from the construction, maintenance or operation of a large photovoltaic solar farm facility shall be repaired at the applicant's expense. In addition, the applicant shall submit to the appropriate

State or County agency a description of the routes used by construction and delivery vehicles; and road improvements that shall be necessary to accommodate construction vehicles, equipment or other deliveries. The applicant shall abide by all State or County requirements regarding the use and/or repair of the roads.

- q. Landscape Screening: Upon approval of the Planning Commission, the applicant may be required to install landscaping to screen surrounding properties. The amount and extent of required screening shall be reasonable and practical for the site and adjoining land uses as determined by the Planning Commission
- r. Equipment Location: All Ancillary Solar Equipment will be located in a separate permitted building, existing or new.
- s. Wiring Placement: All wiring used in a photovoltaic solar system is required to be placed underground to the extent possible.

**G. SEVERABILITY:**

The provisions of this Ordinance are hereby declared to be severable and if any provision, section or part of this Ordinance is declared invalid or unconstitutional by a court of competent jurisdiction, such decision shall only affect the particular provisions, section or part involved in such decision and shall not affect or invalidate the remainder of such Ordinance, which shall continue in full force and effect.

**H. EFFECTIVE DATE:**

This Ordinance shall become effective fifteen (15) days after its publication following final adoption or as required by law.

**I. REPEAL:**

All Ordinances or parts of Ordinances in conflict with this Ordinance are hereby repealed.