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Abstract

Penn Future’s Western PA Rooftop Solar Challenge Final Solar Zoning Ordinance provides an example of solar energy systems defined based on type. The ordinance defines a “building-mounted system” as one “attached to any part or type of roof on a building or structure that has an occupancy permit... and that is either the principal structure or an accessory structure...” Additionally, the ordinance defines a “ground-mounted system” as one “mounted on a structure, pole or series of poles constructed specifically to support the photovoltaic system and not attached to any other structure” and defines a “building-integrated system,” in part, as one “constructed as an integral part of a principal or accessory building or structure and where the building-integrated system features maintain a uniform profile or surface of vertical walls, window openings, and roofing.”

Resource

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WESTERN PENNSYLVANIA ROOFTOP SOLAR CHALLENGE MODEL ORDINANCE FOR ON-SITE USAGE OF SOLAR PHOTOVOLTAIC SYSTEMS [Municipality/Township/Borough] of [Municipality name] [County], Pennsylvania Ordinance No. _____ [Effective Date/Date Enacted]_____

An Ordinance to amend the Zoning Ordinance of [Municipality name] by modifying [Article/Section], Definitions, by adding definitions for solar photovoltaic systems and by amending [Article/Section], by incorporating new sections to permit certain solar photovoltaic systems as accessory uses in any zoning district and by revising

[Article/Section], by adding provisions for the permitting of certain solar photovoltaic systems.

BE IT HEREBY ENACTED AND ORDAINED by the [Governing body] of [Municipality name], [County], Pennsylvania, that the [Municipal] Zoning Ordinance shall be amended in the following respects:

Section 1. Definitions.

Array: Any number of electrically connected photovoltaic (PV) modules providing a single electrical output.

Building-Integrated System: A solar photovoltaic system that is constructed as an integral part of a principal or accessory building or structure and where the building-integrated system features maintain a uniform profile or surface of vertical walls, window openings, and roofing. Such a system is used in lieu of a separate mechanical device, replacing or substituting for an architectural or structural component of the building or structure that appends or interrupts the uniform surfaces of walls, window openings and roofing. A building-integrated system may occur within vertical facades, replacing view glass, spandrel glass or other facade material; into semitransparent skylight systems; into roofing systems, replacing traditional roofing materials; or other building or structure envelope systems.

Building-Mounted System: A solar photovoltaic system attached to any part or type of roof on a building or structure that has an occupancy permit on file with the [Municipality/Township/Borough] and that is either the principal structure or an accessory structure on a recorded [lot/parcel/property]. This system also includes any solar-based architectural elements.

Cell: The smallest basic solar electric device which generates electricity when exposed to light.

Drip line: The outermost edge of a roof including eaves, overhangs and gutters.

Ground-Mounted System: A solar photovoltaic system mounted on a structure, pole or series of poles constructed specifically to support the photovoltaic system and not attached to any other structure.

HVAC: Equipment used to heat, cool or ventilate a structure.

[Optional add-on] Impervious Surface: A surface area that prevents or retards the infiltration of water into the soil and/or a hard surface area that causes water to run off the surface of the ground in greater quantities or at an increased rate of flow from the conditions prior to development, construction, building or installation.

Interconnection: The technical and practical link between the solar generator and the grid providing electricity to the greater community.

Kilowatt (kW): A unit of electrical power equal to 1,000 Watts, which constitutes the basic unit of electrical demand. A watt is a metric measurement of power (not energy) and is the rate (not the duration) at which electricity is used. 1,000 kW is equal to 1 megawatt (MW).

Module: A module is the smallest protected assembly of interconnected PV cells.

Net Metering Agreement: An agreement with a local electric utility that allows customers to receive a credit for surplus electricity generated by certain renewable energy systems.

Photovoltaic (PV): A semiconductor based device that converts light directly into electricity.

Solar-based Architectural Element: Structural/architectural element that provides protection from weather that includes awnings, canopies, porches or sunshades and that is constructed with the primary covering consisting of solar PV modules, and may or may not include additional solar PV related equipment.

Solar Photovoltaic (PV) Related Equipment: Items including a solar photovoltaic cell, panel or array, lines, mounting brackets, framing and foundations used for or intended to be used for collection of solar energy.

Solar Photovoltaic (PV) System: A solar collection system consisting of one or more building- and/or ground-mounted systems, solar photovoltaic cells, panels or arrays and solar related equipment that rely upon solar radiation as an energy source for collection, inversion, storage and distribution of solar energy for electricity generation. A solar PV system is a generation system with a nameplate capacity of not greater than 50 kilowatts if installed at a residential service or not larger than 3,000 kilowatts at other customer service locations and do not produce excess onsite energy greater than currently permitted by Pennsylvania Public Utility Commission guidelines.

Tracking System: A number of photovoltaic modules mounted such that they track the movement of the sun across the sky to maximize energy production, either with a single-axis or dual-axis mechanism.

Unregulated Yard Area: Area not within a building and not in a defined setback or yard area.

Section 2. Purpose.

It is the purpose of this regulation to promote the safe, effective and efficient use of installed solar energy systems that reduce on-site consumption of utility-supplied energy while protecting the health, safety and welfare of adjacent and surrounding land uses and [lots/parcels/properties]. This Ordinance seeks to:

1. Provide [lot/parcel/property] owners and business owners/operators with flexibility in satisfying their on-site energy needs.
2. Reduce overall energy demands within the [Municipality/Township/Borough/community] and to promote energy efficiency.
3. Integrate alternative energy systems seamlessly into the [Municipality/Township/Borough/community]'s neighborhoods and landscapes without diminishing quality of life in the neighborhoods.

Section 3. Applicability.

1. This Ordinance applies to building-mounted and ground-mounted systems installed and constructed after the effective date of the Ordinance.
2. Solar PV systems constructed prior to the effective date of this Ordinance are not required to meet the requirements of this Ordinance.
3. Any upgrade, modification or structural change that materially alters the size or placement of an existing solar PV system shall comply with the provisions of [Section/Article].

Section 4. Permitted Zoning Districts.

1. Building-mounted and ground-mounted systems are permitted in all zoning districts as an accessory use to any lawfully permitted principal use on the same [lot/parcel/property] upon issuance of the proper permit pursuant to [Section/Article] and upon compliance with all requirements of this section and as elsewhere specified in this Ordinance.
2. Building-integrated systems, as defined by this Ordinance, are not considered an accessory use and are not subject to the requirements of this Ordinance.

Section 5. Location Within a [Lot/Parcel/Property].

1. Building-mounted systems are permitted to face any rear, side and front yard or any unregulated yard area as defined in [Section/Article] of this Ordinance. Building-mounted systems may only be mounted on lawfully permitted principal or accessory structures.
2. Ground-mounted systems are permitted based on the requirements for accessory uses or structures in the property's zoning district.

Section 6. Design and Installation Standards.

1. The solar PV system must be constructed to comply with the Pennsylvania Uniform Construction Code (UCC), Act 45 of 1999, as amended, and any regulations adopted by the

Pennsylvania Department of Labor and Industry as they relate to the UCC, except where an applicable industry standard has been approved by the Pennsylvania Department of Labor and Industry under its regulatory authority.

2. All wiring must comply with the National Electrical Code, most recent edition, as amended and adopted by the Commonwealth of Pennsylvania. a. [Optional add-on] For ground-mounted systems, all exterior electrical lines must be buried below the surface of the ground where possible or be placed in conduit.

3. The solar PV system must be constructed to comply with the most recent fire code as amended and adopted by the Commonwealth of Pennsylvania.

Section 7. Setback Requirements.

1. Ground-mounted systems. Ground-mounted systems are subject to the accessory use or structure setback requirements in the zoning district in which the system is to be constructed. The required setbacks are measured from the [lot/parcel/property] line to the nearest part of the system. No part of the ground-mounted system shall extend into the required setbacks due to a tracking system or other adjustment of solar PV related equipment or parts.

Section 8. Height Restrictions.

1. Notwithstanding the height limitations of the zoning district: a. For a building-mounted system installed on a sloped roof that faces the front yard of a [lot/parcel/property], the system must be installed at the same angle as the roof on which it is installed with a maximum distance, measured perpendicular to the roof, of eighteen (18) inches between the roof and highest edge or surface of the system. b. For a building-mounted system installed on a sloped roof, the highest point of the system shall not exceed the highest point of the roof to which it is attached.

2. Notwithstanding the height limitations of the zoning district: a. For a building-mounted system installed on a flat roof, the highest point of the system shall be permitted to extend up to six (6) feet above the roof to which it is attached.

3. Ground-mounted systems may not exceed the permitted height of accessory structures in the zoning district where the solar PV system is to be installed.

Section 9. Screening and Visibility.

1. Building-mounted systems on a sloped roof shall not be required to be screened.

2. [Optional add-on] Building-mounted systems mounted on a flat roof shall not be visible from the public right-of-way within a [# (number) foot] radius of the property, exclusive of an alley as defined by this Ordinance, at a level of 5 (five) feet from the ground in a similar manner as to any other rooftop HVAC or mechanical equipment. This can be accomplished

with architectural screening such as a building parapet or by setting the system back from the roof edge in such a manner that the solar PV system is not visible from the public right-of-way within a [# (number) foot] radius when measured at a distance of 5 (five) feet from the ground.

Section 10. Impervious [Lot/Parcel/Property] Coverage Restrictions.

1. The surface area of any ground-mounted system, regardless of the mounted angle of any portion of the system, is considered impervious surface and shall be calculated as part of the [parcel/property] lot coverage limitations for the zoning district. If the ground-mounted system is mounted above existing impervious surface, it shall not be calculated as part of the [parcel/property] lot coverage limitations for the zoning district.

Section 11. Non-conformance.

1. Building-mounted systems:

a. If a building-mounted system is to be installed on any building or structure that is non-conforming because its height violates the height restrictions of the zoning district in which it is located, the building-mounted system shall be permitted so long as the building-mounted system does not extend above the peak or highest point of the roof to which it is mounted and so long as it complies with the other provisions of this Ordinance.

b. If a building-mounted system is to be installed on a building or structure on a non-conforming [lot/parcel/property] that does not meet the minimum setbacks required and/or exceeds the lot coverage limits for the zoning district in which it is located, a building-mounted system shall be permitted so long as there is no expansion of any setback or lot coverage non-conformity and so long as it complies with the other provisions of this Ordinance.

2. Ground-mounted systems: If a ground-mounted system is to be installed on a [lot/parcel/property] containing a structure that is non-conforming because the required minimum setbacks are exceeded, the proposed system shall be permitted so long as the system does not encroach into the established setback for the [lot/parcel/property]. If a ground-mounted system is to be installed on a [lot/parcel/property] that is non-conforming because it violates zoning district requirements other than setbacks, then a variance must be obtained for the proposed installation.

Section 12. Signage and/or Graphic Content.

1. No signage or graphic content may be displayed on the solar PV system except the manufacturer's badge, safety information and equipment specification information. Said information shall be depicted within an area no more than thirty-six (36) square inches in size.

Section 13. Performance Requirements.

1. All solar PV systems are subject to compliance with applicable performance standards detailed elsewhere in the Zoning Ordinance

Section 14. Inspection, Safety and Removal.

1. The [Municipality/Township/Borough] reserves the right to inspect a solar PV system for building or fire code compliance and safety.

2. If upon inspection the [Municipality/Township/Borough] determines that a fire code or building code violation exists, or that the system otherwise poses a safety hazard to persons or property, the [Municipality/Township/Borough] may order the [owner/property owner/land owner/facility owner/operator] to repair or remove the system within a reasonable time. Such an order shall be in writing, shall offer the option to repair, shall specify the code violation or safety hazard found and shall notify the [owner/property owner/land owner/facility owner/operator] of his or her right to appeal such determination.

3. If a [owner/property owner/land owner/facility owner/operator] fails to repair or remove a solar PV system as ordered, and any appeal rights have been exhausted, the [Municipality/Township/Borough] may enter the [lot/parcel property], remove the system and charge the [owner/property owner/land owner/facility owner/operator] for all costs and expenses of removal, including reasonable attorney's fees or pursue other legal action to have the system removed at the [owner/property owner/land owner/facility owner/operator]'s expense.

4. In addition to any other available remedies, any unpaid costs resulting from the [Municipality/Township/Borough]'s removal of a vacated abandoned or de-commissioned solar PV system shall constitute a lien upon the [lot/parcel/property] against which the costs were charged. Legal counsel of the [Municipality/Township/Borough] shall institute appropriate action for the recovery of such cost, plus attorney's fees, including, but not limited to filing of municipal claims pursuant to 53 P.S. § 7107, et seq., for the cost of such work, 6% interest per annum, plus a penalty of 5% of the amount due plus attorney's fees and costs incurred by the [Municipality/Township/Borough] in connection with the removal work and the filing of the [Municipality/Township/Borough]'s claim.

Section 15. Permit Requirements.

1. Before any construction or installation on any solar PV system shall commence, a permit issued by [Municipality name] shall be obtained to document compliance with this Ordinance