

## **Solar Energy Systems Model Ordinance**

### ***INTRODUCTORY NOTES ON THIS MODEL***

This model ordinance was developed by the Cumberland County Planning Department using a variety of ordinances from municipalities in the county and around the state and from ordinances in surrounding states. The model is intended to provide a thorough review of all aspects of solar energy systems that could be regulated. Municipalities are not recommended to implement this entire ordinance without modification. Rather, municipalities should review this ordinance, examine their local situation, and adopt the regulations that make the most sense for their municipality.

Any text in the following model ordinance in *italics* is an option that a municipality may or may not choose to implement. In these cases, the ordinances that were reviewed and compiled for this model were inconsistent in how and if they regulated certain aspects of solar energy. Municipalities should choose if they want to adopt these regulations in their jurisdiction.

Ordinance language not in italics is recommended to be included in municipal ordinances, although some modification may be necessary. In some cases, there could be multiple ways to regulate a certain aspect of solar energy. In these cases the word “OR” has been placed in the text of the ordinance. Municipalities should choose the option that works best with their existing ordinances and regulatory framework. In some instances, a range of options may be provided. In these cases, the sample range is provided in brackets with the regulations commonly found in other ordinances and an “XX” (15’,20’, XX) to indicate that municipalities may want to adopt a different standard.

## SECTION 1 - INTRODUCTION

**WHEREAS**, the Pennsylvania Municipalities Planning Code, act of July 31, 1968, as amended, 53 P.S. §§ 10101 *et seq.*, enables a municipality through its zoning ordinance to regulate the use of property and to promote the conservation of energy through access to and use of renewable energy resources; and

**WHEREAS**, \_\_\_\_\_ Borough/Township seeks to promote the general health, safety and welfare of the community by adopting and implementing an amendment to the Zoning Ordinance providing for access to and use of solar energy systems; and

**WHEREAS**, the purpose of this Ordinance is to set forth requirements for solar energy systems;

**IT IS HEREBY ENACTED AND ORDAINED** by the Board of Supervisors of \_\_\_\_\_ Borough/Township, Cumberland County, Pennsylvania, as follows:

## SECTION 2 – DEFINITIONS

**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 free-standing 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.

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

**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.

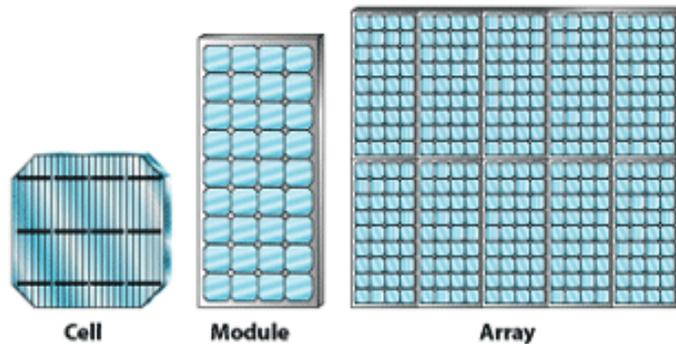
**SOLAR EASEMENT:** A solar easement means a right, expressed as an easement, restriction, covenant, or condition contained in any deed, contract, or other written instrument executed by or on behalf of any landowner for the purpose of assuring adequate access to direct sunlight for solar energy systems.

**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 heating 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.



### SECTION 3 - ACCESSORY SOLAR ENERGY SYSTEMS (ASES)

#### A. Regulations Applicable to All Accessory Solar Energy Systems:

1. ASES shall be permitted as a use by right in all zoning districts.  
**OR**
2. ASES that have a maximum power rating of not more than (10kW, 15kW, XX) shall be permitted as a use by right in all zoning districts. ASES that have a power rating more than (10kW, 15kW, XX) shall comply with the requirements of Section 4 – Principal Solar Energy Systems.
3. Exemptions
  - a. ASES with an aggregate collection and/or focusing area of (10,100, XX) square feet or less are exempt from this ordinance.
  - b. ASES constructed prior to the effective date of this Section shall not be required to meet the terms and conditions of this Ordinance. Any physical modification to an existing ASES whether or not existing prior to the effective date of this Section that materially alters the ASES shall require approval under this Ordinance. Routine maintenance or like-kind replacements do not require a permit.
4. The ASES layout, design, installation, and ongoing maintenance shall conform to applicable industry standards, such as those of the American National Standards Institute (ANSI), Underwriters Laboratories (UL), the American Society for Testing and Materials (ASTM), Institute of Electrical and Electronics Engineers (IEEE), Solar Rating and Certification

Corporation (SRCC), Electrical Testing Laboratory (ETL), Florida Solar Energy Center (FSEC) or other similar certifying organizations, and shall comply with the PA Uniform Construction Code as enforced by \_\_\_\_\_ Township/Borough, and with all other applicable fire and life safety requirements. The manufacturer specifications for the key components of the system shall be submitted as part of the application.

Upon completion of installation, the ASES shall be maintained in good working order in accordance with standards of the \_\_\_\_\_ Township/Borough codes under which the ASES was constructed. Failure of the property owner to maintain the ASES in good working order is grounds for appropriate enforcement actions by \_\_\_\_\_ Township/Borough in accordance with applicable ordinances.

5. *ASES installers must certify they are listed as a certified installer on the PA Department of Environmental Protection's (DEP) approved solar installer list or that they meet the criteria to be a DEP approved installer by meeting or exceeding one of the following requirements:*
  - a. *Is certified by the North American Board of Certified Energy Practitioners (NABCEP).*
  - b. *Has completed an Interstate Renewable Energy Council (IREC) Institute for Sustainable Power Quality (ISPQ) accredited PV training program or a PV manufacturer's training program and successfully installed a minimum of three PV systems.*
  - c. *For residential applications, a registered home improvement contractor with the Attorney General's office.*
6. All on-site utility, transmission lines, and plumbing shall be placed underground to the extent feasible.
7. The owner of an ASES shall provide \_\_\_\_\_ Borough/Township written confirmation that the public utility company to which the ASES will be connected has been informed of the customer's intent to install a grid connected system and approved of such connection. Off-grid systems shall be exempt from this requirement.
8. The display of advertising is prohibited except for reasonable identification of the manufacturer of the system.
9. *Glare*
  - a. *All ASES shall be placed such that concentrated solar radiation or glare does not project onto nearby structures or roadways.*
  - b. *The applicant has the burden of proving that any glare produced does not have significant adverse impact on neighboring or adjacent uses either through siting or mitigation.*
10. *Solar Easements*
  - a. *Where a subdivision or land development involves the use of solar energy systems, solar easements may be provided. Said easements shall be in writing, and shall be subject to the same conveyance and instrument recording requirements as other easements.*
  - b. *Any such easements shall be appurtenant; shall run with the land benefited and burdened; and shall be defined and limited by conditions stated in the instrument of conveyance. Instruments creating solar easement shall include but not be limited to:*

- i. *A description of the dimensions of the easement including vertical and horizontal angles measured in the degrees or the hours of the day, on specified dates, during which direct sunlight to a specified surface or structural design feature may not be obstructed;*
  - ii. *Restrictions on the placement of vegetation, structures, and other objects which may impair or obstruct the passage of sunlight through the easement;*
  - iii. *Enumerate terms and conditions, if any, under which the easement may be revised or terminated;*
  - iv. *Explain the compensation for the owner of the real property subject to the solar easement for maintaining the easement and for the owner of the real property benefiting from the solar easement in the event of interference with the easement.*
- c. *If required, an ASES owner and/or operator must obtain any solar easements necessary to guarantee unobstructed solar access by separate civil agreement(s) with adjacent property owner(s).*

11. Prior to the issuance of a zoning permit, applicants must acknowledge in writing that the issuing of said permit for a solar energy system shall not and does not create in the property owner, its, his, her or their successors and assigns in title or, create in the property itself : (a) the right to remain free of shadows and/or obstructions to solar energy caused by development of adjoining or other property or the growth of any trees or vegetation on such property; or (b) the right to prohibit the development on or growth of any trees or vegetation on such property.

12. Decommissioning

- a. Each ASES and all solar related equipment shall be removed within twelve (12) months of the date when the use has been discontinued or abandoned by system owner and/or operator, or upon termination of the useful life of same.
- b. The ASES shall be presumed to be discontinued or abandoned if no electricity is generated by such solar collector for a period of twelve (12) continuous months.
- c. *The ASES owner shall, at the request of the township/borough, provide information concerning the amount of energy generated by the ASES in the last 12 months.*

13. Permit Requirements

- a. Zoning /building permit applications shall document compliance with this Section and shall be accompanied by drawings showing the location of the system on the building or property, including property lines. Permits must be kept on the premises where the ASES is constructed.
- b. The zoning/building permit shall be revoked if the ASES, whether new or pre-existing, is moved or otherwise altered, either intentionally or by natural forces, in a manner which causes the ASES not to be in conformity with this Ordinance.
- c. The ASES must be properly maintained and be kept free from all hazards, including but not limited to, faulty wiring, loose fastenings, being in an unsafe condition or detrimental to public health, safety or general welfare. In the event of a violation of any of the foregoing provisions, the Zoning Officer shall give written notice specifying the violation to the owner of the ASES to conform or to remove the ASES.

B. Roof Mounted and Wall Mounted Accessory Solar Energy Systems:

1. A roof mounted or wall mounted ASES may be located on a principal or accessory building.
2. ASES mounted on roofs or walls of any building shall be subject to the maximum height regulations specified for principal and accessory buildings within each of the underlying Zoning Districts.

**OR**

3. The total height of a building with an ASES shall not exceed by more than (1 foot, 3 feet, XX)above the maximum building height specified for principal or accessory buildings within the applicable zoning district.
4. Wall mounted ASES shall comply with the setbacks for principal and accessory structures in the underlying zoning districts.
5. Solar panels shall not extend beyond any portion of the roof edge.
6. *Roof mounted solar panels shall be located only on rear or side-facing roofs as viewed from any adjacent street unless the applicant demonstrates that, due to solar access limitations, no location exists other than the street-facing roof, where the solar energy system can perform effectively.*

**OR**

7. *Roof mounted solar panels may be located on front-facing roofs as viewed from any adjacent street when approved as a conditional use. The applicant shall demonstrate that, due to solar access limitations, no location exists other than the street-facing roof, where the solar energy system can perform effectively.*
8. For roof and wall mounted systems, the applicant shall provide evidence that the plans comply with the Uniform Construction Code and adopted building code of the township/borough that the roof or wall is capable of holding the load imposed on the structure.

C. Ground Mounted Accessory Solar Energy Systems:

1. Setbacks

- a. The minimum yard setbacks from side and rear property lines shall be equivalent to the accessory structure setback in the zoning district.

**OR**

- b. The minimum yard setbacks from side and rear property lines shall be equivalent to the principal structure setback in the zoning district.
- c. *A ground mounted ASES shall not be located in the required front yard.*

**OR**

- d. *Ground mounted ASES are prohibited in front yards, between the principal building and the public street.*
- e. *A ground mounted ASES may be located in the portion of the yard in front of the principal building and outside of the required front yard provided that vegetative screening is provided.*
- f. *The Borough/Township may authorize the installation of a groundmounted ASES in front of the principal building, outside the required front yard, if the applicant demonstrates that, due*

*to solar access limitations, no location exists on the property other than the front yard where the solar panel can perform effectively.*

2. Height

- a. Freestanding ground mounted ASES shall not exceed the maximum accessory structure height in the underlying zoning district.

**OR**

- b. Ground mounted ASES shall not exceed (15, 20, XX) feet in height above the ground elevation surrounding the systems.

3. Coverage

- a. The area beneath the ground mounted ASES is considered pervious cover. However, use of impervious construction materials under the system could cause the area to be considered impervious and subject to the impervious surfaces limitations for the applicable Zoning District.

**OR**

- b. The following components of a ground mounted ASES shall be considered impervious coverage and calculated as part of the impervious coverage limitations for the underlying zoning district:

- i. Foundation systems, typically consisting of driven piles or monopoles or helical screws with or without small concrete collars.
- ii. All mechanical equipment of the system including any structure for batteries or storage cells.

**OR**

- c. The surface area of the arrays of a ground mounted ASES, regardless of the mounted angle of any solar panels, shall be considered impervious and calculated in the lot coverage of the lot on which the system is located.
- d. *The total surface area of the arrays of ground mounted ASES on the property shall not exceed more than (XX) percent of the lot area. (some models suggest not greater than 15%)*
- e. *The applicant shall submit a Stormwater Management Plan that demonstrates compliance with the municipal stormwater management regulations.*

4. Screening

- a. *Ground mounted ASES shall be screened from adjoining residential uses or zones according to the standards found in \_\_\_\_\_ of this ordinance.*

**OR**

- b. *Ground mounted ASES shall be screened from any adjacent property that is residentially zoned or used for residential purposes. The screen shall consist of plant materials which provide a visual screen. In lieu of a planting screen, a decorative fence meeting requirements of the zoning ordinance may be used.*

5. Appropriate safety/warning signage concerning voltage shall be placed at ground mounted electrical devices, equipment, and structures. All electrical control devices associated with the ASES shall be locked to prevent unauthorized access or entry.
6. Ground-mounted ASES shall not be placed within any legal easement or right-of-way location, or be placed within any storm water conveyance system or in any other manner that would alter or impede storm water runoff from collecting in a constructed storm water conveyance system.

## SECTION 4 - PRINCIPAL SOLAR ENERGY SYSTEMS (PSES)

### A. Regulations Applicable to All Principal Solar Energy Systems:

1. PSES shall be permitted by right/special exception/conditional use in the XXXX Zoning District(s)
2. Exemptions
  - a. PSES constructed prior to the effective date of this Section shall not be required to meet the terms and conditions of this Ordinance. Any physical modification to an existing PSES, whether or not existing prior to the effective date of this Section that materially alters the PSES shall require approval under this Ordinance. Routine maintenance or like-kind replacements do not require a permit.
3. The PSES layout, design and installation shall conform to applicable industry standards, such as those of the American National Standards Institute (ANSI), Underwriters Laboratories (UL), the American Society for Testing and Materials (ASTM), , Institute of Electrical and Electronics Engineers (IEEE), Solar Rating and Certification Corporation (SRCC), Electrical Testing Laboratory (ETL), Florida Solar Energy Center (FSEC) or other similar certifying organizations, and shall comply with the PA Uniform Construction Code as enforced by \_\_\_\_\_ Township/Borough and with all other applicable fire and life safety requirements. The manufacturer specifications for the key components of the system shall be submitted as part of the application.
4. *PSES installers must demonstrate they are listed as a certified installer on the PA Department of Environmental Protection's (DEP) approved solar installer list or that they meet the criteria to be a DEP approved installer by meeting or exceeding one of the following requirements:*
  - a. *Is certified by the North American Board of Certified Energy Practitioners (NABCEP).*
  - b. *Has completed an Interstate Renewable Energy Council (IREC) Institute for Sustainable Power Quality (ISPQ) accredited PV training program or a PV manufacturer's training program and successfully installed a minimum of three PV systems.*
5. All on-site transmission and plumbing lines shall be placed underground to the extent feasible.
6. The owner of a PSES shall provide the Borough/Township written confirmation that the public utility company to which the PSES will be connected has been informed of the customer's intent to install a grid connected system and approved of such connection.
7. No portion of the PSES shall contain or be used to display advertising. The manufacturer's name and equipment information or indication of ownership shall be allowed on any equipment of the PSES provided they comply with the prevailing sign regulations.
8. *Glare*
  - a. *All PSES shall be placed such that concentrated solar radiation or glare does not project onto nearby structures or roadways.*
  - b. *The applicant has the burden of proving that any glare produced does not have significant adverse impact on neighboring or adjacent uses either through siting or mitigation.*

9. *A noise study will be performed and included in the application. The noise study will be performed by an independent noise study expert and paid for by the applicant. Noise from a PSES shall not exceed (45, 50, XX) dBA, as measured at the property line.*
10. *No trees or other landscaping otherwise required by the municipal ordinances or attached as a condition of approval of any plan, application, or permit may be removed for the installation or operation of a PSES.*
11. The PSES owner and/or operator shall maintain a phone number and identify a person responsible for the public to contact with inquiries and complaints throughout the life of the project and provide this number and name to the Borough/Township. The PSES owner and/or operator shall make reasonable efforts to respond to the public's inquiries and complaints.
12. **Decommissioning**
  - a. The PSES owner is required to notify the Borough/Township immediately upon cessation or abandonment of the operation. The PSES shall be presumed to be discontinued or abandoned if no electricity is generated by such system for a period of twelve (12) continuous months.
  - b. The PSES owner shall then have twelve (12) months in which to dismantle and remove the PSES including all solar related equipment or appurtenances related thereto, including but not limited to buildings, cabling, electrical components, roads, foundations and other associated facilities from the property. If the owner fails to dismantle and/or remove the PSES within the established timeframes, the municipality may complete the decommissioning at the owners expense.
  - c. *At the time of issuance of the permit for the construction of the PSES, the owner shall provide financial security in the form and amount acceptable to the Borough/Township to secure the expense of dismantling and removing said PSES and restoration of the land to its original condition, including forestry plantings of the same type/variety and density as the original.*
13. Prior to the issuance of a zoning permit, PSES applicants must acknowledge in writing that the issuing of said permit shall not and does not create in the property owner, its, his, her or their successors and assigns in title or, create in the property itself : (a) the right to remain free of shadows and/or obstructions to solar energy caused by development of adjoining or other property or the growth of any trees or vegetation on such property; or (b) the right to prohibit the development on or growth of any trees or vegetation on such property.

#### 14. *Solar Easements*

- a. *Where a subdivision or land development proposes a PSES, solar easements may be provided. Said easements shall be in writing, and shall be subject to the same conveyance and instrument recording requirements as other easements.*
- b. *Any such easements shall be appurtenant; shall run with the land benefited and burdened; and shall be defined and limited by conditions stated in the instrument of conveyance. Instruments creating solar easement shall include but not be limited to:*
  - i. *A description of the dimensions of the easement including vertical and horizontal angles measured in the degrees or the hours of the day, on specified dates, during which direct sunlight to a specified surface or structural design feature may not be obstructed;*
  - ii. *Restrictions on the placement of vegetation, structures, and other objects which may impair or obstruct the passage of sunlight through the easement;*

- iii. *Enumerate terms and conditions, if any, under which the easement may be revised or terminated;*
- iv. *Explain the compensation for the owner of the real property subject to the solar easement for maintaining the easement and for the owner of the real property benefiting from the solar easement in the event of interference with the easement.*
- c. *If necessary, aPSES owner and/or operator must obtain any solar easements necessary to guarantee unobstructed solar access by separate civil agreement(s) with adjacent property owner(s).*

15. Permit Requirements

- a. PSES shall comply with the Borough/Township subdivision and land development requirements. The installation of PSES shall be in compliance with all applicable permit requirements, codes, and regulations.
- b. The PSES owner and/or operator shall repair, maintain and replace the PSES and related solar equipment during the term of the permit in a manner consistent with industry standards as needed to keep the PSES in good repair and operating condition.

B. Ground Mounted Principal Solar Energy Systems:

1. Minimum lot size

- a. The PSES shall meet the lot size requirements of the underlying zoning district.

**OR**

- b. (XX) acres (some models suggest 1 acre)

2. Setbacks

- a. PSES shall comply with the setbacks of the underlying zoning districts for principal structures.
- b. (XX feet) from adjacent residential districts or structures (some models propose a 20' minimum).

3. Height

- a. Ground mounted PSES shall comply with the building height restrictions for principal structures of the underlying zoning district.

**OR**

- b. Ground mounted PSES shall comply with the accessory building height restrictions for the underlying zoning district.

**OR**

- c. Ground mounted PSES shall not exceed (XX) feet in height (Some models propose 15' or 20').

4. Impervious Coverage

- a. The area beneath the ground mounted PSES is considered pervious cover. However, use of impervious construction materials under the system could cause the area to be considered impervious and subject to the impervious surfaces limitations for the applicable Zoning District.

**OR**

- b. The following components of a PSES shall be considered impervious coverage and calculated as part of the impervious coverage limitations for the underlying zoning district:
  - i. Foundation systems, typically consisting of driven piles or monopoles or helical screws with or without small concrete collars.
  - ii. All mechanical equipment of PSES including any structure for batteries or storage cells.
  - iii. Gravel or paved access roads servicing the PSES.

**OR**

- c. The surface area of the arrays of a ground mounted PSES, regardless of the mounted angle of any solar panels, shall be considered impervious calculated in the lot coverage of the lot on which the system is located.
  - d. *The applicant shall submit a Stormwater Management Plan that demonstrates compliance with the municipal stormwater management regulations.*
  - e. *PSES owners are encouraged to use low maintenance and low growing vegetative surfaces under the system as a best management practice for storm water management.*
5. Ground mounted PSES shall be screened from adjoining residential uses or zones according to the standards found in \_\_\_\_\_ of this ordinance.
  6. *In Agricultural Zoning Districts, no more than 50 percent of the entire area for development shall consist of Class I and Class II prime agricultural soils.*
  7. Ground-mounted PSES shall not be placed within any legal easement or right-of-way location, or be placed within any storm water conveyance system or in any other manner that would alter or impede storm water runoff from collecting in a constructed storm water conveyance system.
  8. Security
    - a. All ground-mounted PSES shall be completely enclosed by a minimum eight (8) foot high fence with a self-locking gate.
    - b. A clearly visible warning sign shall be placed at the base of all pad-mounted transformers and substations and on the fence on the surrounding the PSES informing individuals of potential voltage hazards.
  9. Access
    - a. *At a minimum, a 25' wide access road must be provided from a state or township roadway into the site.*
    - b. *At a minimum, a 20' wide cartway shall be provided between the solar arrays to allow access for maintenance vehicles and emergency management vehicles including fire apparatus and emergency vehicles. Cartway width is the distance between the bottom edge of a solar panel to the top edge of the solar panel directly across from it.*

*c. Access to the PSES shall comply with the municipal access requirements in the Subdivision and Land Development Ordinance.*

10. The ground mounted PSES shall not be artificially lighted except to the extent required for safety or applicable federal, state, or local authority.
11. If a ground mounted PSES is removed, any earth disturbance resulting from the removal must be graded and reseeded.

C. Roof and Wall Mounted Principal Solar Energy Systems:

1. For roof and wall mounted systems, the applicant shall provide evidence that the plans comply with the Uniform Construction Code and adopted building code of the township/borough that the roof or wall is capable of holding the load imposed on the structure.
2. PSES mounted on the roof or wall of any building shall be subject to the maximum height regulations of the underlying zoning district.