

CENTER FOR ENVIRONMENTAL POLICY

Model Ordinance

Kentucky Model Solar Zoning Ordinance

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KENTUCKY MODEL SOLAR ZONING ORDINANCE 2.2

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In response to the increasing interest in the development of solar energy resources in Kentucky, the Kentucky Resources Council has developed this Model Solar Zoning Ordinance to assist localities in adopting provisions to regulate the siting of solar energy facilities in their communities. This Model Solar Zoning Ordinance is based upon a review of best practices from across the United States and is tailored to meet the unique needs of Kentucky, with the goals of encouraging appropriate siting of solar facilities and protection of the correlative rights of landowners to the use and enjoyment of their lands. All counties in Kentucky are unique, and planning and zoning should be tailored to meet and guide current development and future aspirations of the county residents. The ordinance offers a “menu” of options in certain areas, to allow local officials in conjunction with county residents, to select the options that best meet their needs. Explanatory text is provided in footnotes.

HOW TO USE THIS ORDINANCE

This Ordinance provides the framework for the regulation of land uses involving the construction and operation of solar facilities. It is intended to provide suggestions for consideration by communities, Planning and Zoning Commissions, and County governments as revisions are made to Comprehensive Plans and zoning ordinances, and may need to be modified or adapted to conform to the framework of local planning and zoning ordinances.

¹ This model ordinance is developed by the Kentucky Resources Council for general use and consideration by the public and by local planning and zoning agencies. It is not intended to provide legal advice.

MODEL SOLAR ZONING ORDINANCE

Section 1. Purpose

The purpose of this ordinance is to facilitate the siting, development, construction, installation, and decommissioning of solar energy systems (SESs) in [city/county] in a predictable manner that promotes and protects the safety, health, and welfare of the community. This ordinance encourages the appropriate siting of SESs to bolster local economic development and job creation, diversify the state's energy portfolio, strengthen energy and grid security, and reduce other environmental impacts. The appropriate siting of SESs considers, avoids to the extent possible, and mitigates any adverse impacts to wildlife, productive and nationally important agricultural lands, forests, endangered species habitat, and historic, natural, and other sensitive lands. The appropriate siting of SESs also establishes standards and requirements to assure that the use and enjoyment of lands located adjacent to and in the proximity of SESs are fully protected.²

The requirements of this Ordinance are intended to be supplemental to any safety, health, or environmental requirements of federal, state, or local laws, and regulations.

Section 2. Definitions

Solar Energy System (SES) means a device, including its components and subsystems, that collects solar energy for electricity generation, consumption, or transmission, or for thermal applications. SESs are in turn divided into three types depending on how the system is incorporated into the existing land use:

Integrated Solar Energy System means an SES where the solar materials are incorporated into the building materials, such that the building and solar system are reasonably indistinguishable, or where the solar materials are used in place of traditional building components, such that the SES is structurally an integral part of the house, building, or other structure. An Integrated SES may be incorporated into, among other things, a building façade, skylight, shingles, canopy, light, or parking meter.

Rooftop Solar Energy System means an SES that is structurally mounted to the roof of a house, building, or other structure and does not qualify as an Integrated SES.

² A community may wish to incorporate into the solar zoning ordinance, a preference for siting of large ground mounted solar arrays on brownfield properties. EPA's initiative *RE-Powering American's Land: Siting Renewable Energy on Potentially Contaminated Lands, Landfills, and Mine Sites*, has tools and resources to help: <https://www.epa.gov/re-powering>. Developing solar on brownfields may involve additional challenges in financing, permitting, and remediation, but may also offer incentives to assist in defraying those costs.

Ground Mounted Solar Energy System means an SES that is structurally mounted to the ground and does not qualify as an Integrated SES. Ground Mounted SESs are subcategorized as follows:

- *Small Scale Ground Mounted Energy System (Small Scale SES)* which is a Ground Mounted SES with a Footprint of less than 2,500 square feet
- *Intermediate Scale Ground Mounted Energy System (Intermediate Scale SES)* which is a Ground Mounted SES with a Footprint of between 2,501 square feet and ten (10) acres.
- *Large Scale Ground Mounted Solar Energy System (Large Scale SES)* means a Ground Mounted SES with a Footprint of more than ten (10) acres.

Exempt Solar Energy System (Exempt SES) means a SES that is a facility of a municipally owned electric system or public utility regulated by the Kentucky Public Service Commission or Federal Energy Regulatory Commission, which is exempt from planning and zoning requirements under KRS 100.324.

Farmland of Statewide Importance means a map unit identified by the Natural Resources Conservation Service as including soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods.

Footprint of the SES is calculated by drawing a perimeter around the outermost SES panels and any equipment necessary for the equipment to function, such as transformers and inverters. The footprint does not include perimeter fencing or visual buffers, nor transmission lines or portions thereof that are required to connect the SES to a utility or customer outside the SES perimeter.

Prime Farmland means a map unit identified by the Natural Resources Conservation Service of the United States Department of Agriculture as having the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses.

Siting Board Regulated SES means a SES that constitutes a “merchant electric siting facility” under KRS 278.700(2), the construction and siting of which is subject to review and approval of the Kentucky State Board on Electric Generation and Transmission Siting. A merchant electric siting facility is an electricity generating facility or facilities that, together with all associated structures and facilities are capable of operating at an aggregate capacity of ten megawatts (10 MW) or more and sell the electricity produced in the wholesale market, at rates and charges not regulated by the Kentucky Public Service Commission.

Section 3. Applicability

(a) This ordinance applies to the siting, construction, installation, and decommissioning of any new SES within the jurisdiction of [the city/county] after the effective date of this ordinance.

(b) An SES in operation, or which has begun physical construction prior to adoption of this ordinance, shall be considered to have legal nonconforming status in accordance with KRS 100.253.

(c) The following are not subject to this ordinance:

1. Modification to an existing SES that alone or in combination increases the total SES Footprint by no more than 5% of the original Footprint.

2. Routine maintenance and repair, including replacement of solar panels, not increasing the SES Footprint.

(d) Any Exempt SES shall provide the Planning Commission, Board of Adjustment or other authority having jurisdiction, and Fiscal Court with information concerning service facilities which have been located on and relocated on private property in accordance with KRS 100.324(3).³

(e) An SES shall comply with all applicable federal, state, and local laws, regulations, and permitting and other requirements, and applicable building, fire, electrical, and plumbing codes.

Section 4. Conditional Use Permit Requirements and Allowed Uses⁴

P: The SES is a use that is allowed in the district without the necessity of obtaining a zoning permit or prior planning approval, provided that the applicable requirements below are met. A variance from any of the standards applicable to a SES may be obtained through the Board of Adjustment or other authority having jurisdiction.

CUP: Conditional Use Permit required. The SES is allowed in the district subject to the requirements set forth below and only if the applicant first obtains a Conditional Use Permit in accordance with the [city/county] zoning code.

Accessory Use	Residential	Commercial	Industrial	Agricultural
<i>Integrated SES</i>	P	P	P	P
<i>Rooftop SES</i>	P	P	P	P
<i>Ground Mounted SES</i>				

³ The SES facilities of a municipally owned electric system or public utility regulated by the Kentucky Public Service Commission or Federal Energy Regulatory Commission, are exempt from planning and zoning requirements under KRS 100.324. The statute does allow planning units to request information on their facilities. This provision eliminates the need to ask on a case-by-case basis, making a standing request to such entities for that information.

⁴ Some communities may decide not to adopt any standards for rooftop or small ground mounted SESs, and to limit the focus of planning and zoning to larger ground mounted SESs. The standards are offered to provide guidance and to minimize conflict among neighbors, by prescribing some minimal standards for rooftop and small ground mounted SESs without requiring any zoning approval or prior authorization unless a variance is sought from the standards on a case-by-case basis.

<i>Small Scale*</i>	P	P	P	P
<i>Intermediate Scale</i>	CUP	P	P	CUP
<i>Large Scale</i>	CUP	CUP	CUP	CUP
Primary Use	Residential	Commercial	Industrial	Agricultural
<i>Integrated SES</i>	-	-	-	-
<i>Rooftop SES</i>	-	-	-	-
<i>Ground Mounted SES</i>				
<i>Small Scale</i>	P	P	P	P
<i>Intermediate Scale</i>	CUP	P	P	CUP
<i>Large Scale</i>	CUP	CUP	CUP	CUP

* A Small-Scale Ground Mounted SES qualifies as an accessory use only if its area is less than 50% of the footprint of the primary structure.

Section 5. General Requirements Applicable to Integrated and Rooftop Solar Energy Systems

- (a) Solar Access. Consistent with KRS 381.200(2), a property owner may obtain a solar easement from another property owner for the purpose of ensuring adequate exposure to sunlight for an Integrated or Rooftop SES. Such easement shall be recorded.
- (b) Tree Removal. The removal of trees or natural vegetation for an Integrated or Rooftop SES shall be limited to the extent practicable and shall comply with all the requirements of the [city/county] zoning code regarding tree removal, and any applicable state or federal requirements.
- (c) Height Restrictions. A rooftop SES shall conform to any height restrictions for roof-mounted mechanical devices or equipment for the applicable zoning district and may exceed the maximum permitted height for the structure type by no more than five (5) feet. A rooftop SES shall be positioned on the roof so as not to extend above or beyond the edge of any ridge, hip, valley, or eave, provided that where it is mounted on a sloped roof, the SES shall not vertically exceed the highest point of the roof to which it is attached by more than five (5) feet.
- (d) Lighting. Integrated and Rooftop SESs shall not be illuminated and shall be designed and installed to prevent off-site glare.
- (e) Historic Preservation. Where an integrated or rooftop SES is proposed to be installed on a property located within an historic district or which is listed on or eligible for listing on the National Register of Historic Places, the proposed installation shall be coordinated with any review required by the zoning ordinance for exterior renovations or additions to such structures.

Section 6. General Requirements Applicable to Ground Mounted SESs

- (a) **Solar Access.** Consistent with KRS 381.200(2), a property owner may obtain a solar easement from another property owner for the purpose of ensuring adequate exposure to sunlight for a Ground Mounted SES. Such easement shall be recorded.
- (b) **Tree Removal.** The removal of trees or natural vegetation for a Ground Mounted SES shall comply with all the requirements of the [city/county] zoning code regarding tree removal and mitigation, and any applicable state or federal requirements.
- (c) **Lighting.** Lighting of a Ground Mounted SES shall be limited to the minimum necessary for safe operation, and shall be directed downward, incorporate full cut-off features, and incorporate motion sensors where feasible. Lighting shall be designed to avoid light trespass. Nothing in this Ordinance is intended to preclude installation of lighting required by the Federal Aviation Administration.
- (d) **Height Requirements for Ground Mounted SES.** A Ground Mounted SES shall not exceed twenty (20) feet in height as measured from the highest natural grade below each solar panel without approval by the Board of Adjustment or other authority having jurisdiction. The height restriction excludes utility poles, storage batteries, substation structures, and antennas constructed for the project. A Ground Mounted SES may exceed twenty (20) feet in height upon a finding that the SES would be more productive, use less land, or provide other environmental, economic, or other benefits if the height limitation is increased.
- (e) **Siting Restrictions for Ground Mounted SES**
 - 1. An Intermediate or Large Scale Ground Mounted SES, measured from the closer of the outer edge of the nearest panel or perimeter fencing, shall be located at least fifty (50) feet from the property line of any property zoned for residential or agricultural use, at least thirty (30) feet from the property line of any property zoned for commercial, business, industrial, office, or institutional use, and at least fifty (50) feet from the centerline of any public road.
 - 2. An Intermediate or Large Scale Ground Mounted SES, measured from the closer of the outer edge of the nearest panel or perimeter fencing, shall be located no closer than one hundred (100) feet from a residence located on a property other than that on which the Ground Mounted SES is to be installed.
 - 3. These setback provisions above can be waived in writing by the adjacent property owner to whom the property line or residence setback is applicable.
 - 4. Setbacks are not required where the property line is shared by two or more participating landowners.

5. Setback requirements may be reduced by 25% where effective existing or proposed visual screening is determined to exist by the Board of Adjustment or other authority having jurisdiction.⁵⁶
6. Setback requirements may be expanded by a Board of Adjustment or other authority having jurisdiction, as a condition of approval of a Conditional Use Permit, where deemed necessary to assure effective screening.

(f) Screening. Ground Mounted SESs shall be effectively screened from properties zoned for residential use other than that on which the SES is to be constructed.

1. Ground Mounted SESs approved as a conditional use shall have or install a visual buffer of natural vegetation, plantings, earth berms, and/or fencing that will provide an effective visual and lighting screen between the SES and properties zoned for residential use, unless waived by the Board of Adjustment or other authority having jurisdiction. Existing buffers along an SES perimeter shall be preserved when reasonably practicable.

(g) Protection of Farmland And Revegetation Of Disturbed Areas

1. Compaction of soil associated with the location of roads and installation staging areas for Intermediate and Large Scale Ground Mounted SES on land zoned for agricultural use shall be minimized to the extent possible. Compaction of soil associated with the location of roads and installation staging areas for all Ground Mounted SES on land zoned for agricultural use that are classified either as prime farmland or farmland of statewide importance shall be avoided to the extent possible, and the soils shall be de-compacted as part of the decommissioning process.⁷
2. Upon completion of construction and installation of the Ground Mounted SES, all temporary roads constructed by the applicant shall be removed, and all disturbed

⁵ The phrase “or other authority having jurisdiction” is intended to cover those instances where an entity other than the Board of Adjustment or other authority having jurisdiction is empowered to grant waivers or CUPs.

⁶ A community may want to consider whether the screening requirement could be waived by the owner of the adjoining property, or whether such a waiver would be a factor but not *the* only factor in a Board of Adjustment or other authority having jurisdiction, deciding to waive some or all of the screening requirement.

⁷ Other alternatives may be employed to address siting on prime farmland or farmland with statewide importance, in order to avoid damage to productive farmland. Those include, at one end of the spectrum, a flat prohibition of compaction of such soils, which would cause the arrays to be located on less productive or more marginal agricultural land. Alternatively, “smart solar siting” such as that advocated by the American Farmland Trust (AFT), can be employed to guide solar development onto land where it has the least impact on agriculture and the environment, and to use innovative design and construction to make solar energy compatible with continued farming. AFT’s [Smart Solar Siting project](#) tackles these issues and provide new resources for communities, organizations, landowners, and farmers to achieve the dual goals of expanding solar energy generation and protecting farmland.

areas shall be graded and reseeded with native vegetation⁸ in order to establish an effective ground cover and to minimize erosion and sedimentation.

(h) Signage. A Ground Mounted SES may include such signage as is required by law to provide safety information, and other signage as may be allowed under this Ordinance.

(i) Decommissioning. Other than as specifically approved by the Board of Adjustment or other authority having jurisdiction upon application and notice, decommissioning shall begin no later than twelve (12) months after a Ground Mounted SES has ceased to generate electricity or thermal energy:

1. If the Ground Mounted SES was a permitted use without a conditional use permit, all structures and facilities associated with the SES shall be removed within six (6) months of the beginning of decommissioning. All materials shall be recycled or otherwise reused to the extent reasonably practicable and the disturbed areas shall be reclaimed, revegetated, and restored consistent with the zoning classification of the property.

2. If the Ground Mounted SES was allowed under a conditional use permit, the SES shall be decommissioned according to the decommissioning plan approved in the Conditional Use Permit.

Section 7. Conditional Use Permit Application Requirements

(a) Applications for an SES requiring a conditional use permit shall include the following information:

1. Name, address, telephone number, and email address (if available) of the applicant, the project owner, and the project operator.
2. The address of the property on which the SES will be located and the property owner's name, address, telephone number, and email address if available.
3. Documentation, such as a deed, lease, or other agreement with the landowner, demonstrating the applicant's right to use and control the property.

⁸ The use of the phrase "native vegetation" with respect to erosion and sediment control, is not intended to preclude the use of beneficial species incorporated into a project in order to create pollinator habitat. The use of invasive or nuisance species should be prohibited. Information on invasive species is available from the Office of Nature Preserves https://eec.ky.gov/Nature-Preserves/conserving_natural_areas/Pages/Habitat_Mgmt.aspx

Minimizing the time from site disturbance until establishment of an effective ground cover, is the essence of good reclamation. There are companies that have developed seed mixes of Kentucky-native species intended specifically to assist in erosion control and soil stabilization. Cf Roundstone Native Seed, LLC.

<https://roundstoneseed.com/17-erosion-control-mixes>. The Kentucky Native Plant Society maintains a list of Kentucky native plant nurseries. <https://www.knps.org/native-plant-nurseries/>

For communities, landowners, and project proponents seeking to incorporate the creation or enhancement of pollinator habitat into project buffer areas, refer to *Kentucky Pollinator Protection Plan*.

https://www.kyagr.com/statevet/documents/OSV_Bee_KY-Pollinator-Pro-Plan.pdf

4. A topographic map that depicts vegetative cover, watersheds, floodplains, and other geographic information about the property and surrounding area.
5. A conceptual description of the project, including the maximum number of modules, mounting type (fixed-tilt or tracking), system height, system capacity, total land area covered by the system, and information about all associated structures or facilities such as transformers, substations, feeder lines, and battery storage.
6. A conceptual site plan including property lines, zoning classification of the property and all adjacent properties, existing buildings and proposed structures, the proposed location of the solar equipment, transmission lines, any associated structures and facilities, and substations. The conceptual site plan shall also identify existing and proposed temporary or permanent roads, drives, and parking, fencing or other methods to ensure public safety, and a visual buffer plan demonstrating how proposed visual buffers will effectively screen the proposed SES from adjacent properties zoned for residential use.
7. A map from the Natural Resources Conservation Service identifying prime farmland and farmland of statewide importance (if in a district zoned as agricultural), documentation from the U.S. Fish and Wildlife Service regarding the presence any identified critical habitat for rare or endangered federal or state species. The application shall also contain a Federal Emergency Management Agency map delineating floodplains, shall include evidence of any water quality or stormwater permit needed for the project,⁹ and shall contain a letter from the State Historic Preservation Office regarding known archaeological or cultural resources listed or eligible for listing on the National Register.
8. Information demonstrating that approval of the SES will not result in any disproportionate individual or cumulative environmental burden on low-income communities or communities of color.
9. A decommissioning plan¹⁰ prepared by a registered professional engineer, and updated every seven (7) years, containing the following:
 - a. The anticipated life of the project and defined conditions upon which decommissioning will be initiated;

⁹ The “evidence” contemplated by the ordinance could be a copy of the water quality or stormwater permit obtained from the appropriate state agency, or documentation that the agency has indicated that such a permit is not required; or could be a notation that such a permit is required and will be applied for prior to any disturbance of the land associated with the project. Depending on several factors, the developer of a Ground Mounted SES may apply for such environmental permits before or after the zoning process.

¹⁰ Pre-funding the decommissioning of solar arrays is intended to avoid future problems with solar arrays that have exceeded their useful life and need to be decommissioned. The prospect of significant volumes of e-waste is a legitimate matter of concern that is avoided with proper planning during the permitting process.

<https://grist.org/energy/solar-panels-are-starting-to-die-what-will-we-do-with-the-megatons-of-toxic-trash/>

- b. The estimated decommissioning cost, including removal of the SES and related foundations, pads, underground collector lines and roads, and the salvage value of any equipment in current dollars and the calculations supporting the decommissioning estimate. The estimated salvage value of the material using current, publicly available material indices and/or firm quotes from a decommissioning or recycling company experienced in the decommissioning of SES, shall be provided. The Board of Adjustment or other authority having jurisdiction shall consider the salvage value identified in computing the amount, if any, of financial assurance required under subsection e.
- c. The manner in which the project will be decommissioned, including provision and a timetable for the removal of all structures and foundations, and for the revegetation and restoration of the property to its original condition or a condition compatible with the zoning of the parcel(s);
- d. The party responsible for decommissioning;
- e. A performance bond, letter of credit, or other financial assurance payable to [Board of Adjustment or applicable governmental unit], sufficient to cover the net costs identified in subsection 9b and to assure that decommissioning of the site can be achieved by a third party in the event that a permittee defaults in that obligation, which financial assurance shall be provided prior to commencement of construction;
- f. A copy of any lease containing specific agreements regarding decommissioning with the landowner;

10. Proof of adequate casualty and liability insurance covering installation and operation of the SES;

11. A description of the measures that will be taken to minimize erosion and sedimentation, and to promptly stabilize and revegetate disturbed areas with native vegetation.¹¹

12. Where the applicant for a Conditional Use Permit is also seeking a construction certification pursuant to KRS 278.700 – 278.716, the applicant may submit a copy of a complete state siting board application and site assessment

¹¹ The use of the phrase “native vegetation” with respect to erosion and sediment control, is not intended to preclude the use of beneficial species incorporated into a project in order to create pollinator habitat. The use of invasive or nuisance species should be prohibited. The Kentucky Department of Fish and Wildlife Resources maintains lists of such species.

Minimizing the time from initial site disturbance until establishment of an effective ground cover, is the essence of good reclamation. There are companies that have developed seed mixes of Kentucky-native species intended specifically to assist in erosion control and soil stabilization. Cf Roundstone Native Seed, LLC, Upton, Kentucky <https://roundstoneseed.com/17-erosion-control-mixes>. The Kentucky Native Plant Society maintains a list of Kentucky native plant nurseries. <https://www.knps.org/native-plant-nurseries/>

For communities, landowners, and project proponents seeking to incorporate the creation or enhancement of pollinator habitat into project buffer areas, refer to *Kentucky Pollinator Protection Plan*. https://www.kyagr.com/statevet/documents/OSV_Bee_KY-Pollinator-Pro-Plan.pdf

report meeting the requirements of KRS 278.706 and 278.7008 in lieu of the above requirements of Section 7(a)1-7.

(b) A conditional use permit issued by a Board of Adjustment or other authority having jurisdiction shall include, at a minimum, all applicable requirements of Sections 6 and 7 of this Ordinance, and any additional conditions deemed by the Board necessary or appropriate pursuant to KRS 100.237 to allow the proper integration of the proposed SES into the zone and location in which it is proposed.

Section 8. Public Notice and Public Comment

Public notice of an application for a Conditional Use Permit for a Ground-Mounted SES shall conform to the public notice requirements generally applicable to conditional use permit applications. The public notice and hearing requirements of this Chapter shall be in addition to and independent of any local hearing conducted pursuant to KRS 278.712.