

Solar Model Ordinance

Contents

Solar Model Ordinance	1
Purpose.....	1
Definitions	1
Permits required.	3
Permitted Accessory Use	3
Principal Uses.....	5

Purpose.

The purpose of this article is to incorporate requirements of Wis. Stats. § 66.0401 and any applicable amendments thereto, as a local ordinance and to establish local regulations on the installation and use of large and small solar systems that are authorized by, compliant with, and no more restrictive than the rules of the Wisconsin Public Service Commission and that serve to preserve or protect the public health or safety, do not significantly increase the cost of the system or significantly decrease energy system efficiency.

Definitions

Agrivoltaics – A solar energy system co-located on the same parcel of land as agricultural production, including crop production, grazing, apiaries, or other agricultural products or services.

Building-integrated Solar Energy Systems – A solar energy system that is an integral part of a principal or accessory building, rather than a separate mechanical device, replacing or substituting for an architectural or structural component of the building. Building-integrated systems include but are not limited to photovoltaic or hot water solar energy systems that are contained within roofing materials, windows, skylights, and awnings.

Community-Scale Solar Energy System – A commercial solar energy system that converts sunlight into electricity for the primary purpose of serving electric demands off-site from the facility, either retail or wholesale. Community-scale systems are principal uses and projects typically cover less than 1 acres.

Community Solar Garden – A solar energy system that provides retail electric power (or a financial proxy for retail power) to multiple community members or businesses residing or located off-site from the location of the solar energy system. Also referred to as shared solar.

Grid-intertie Solar Energy System — A photovoltaic solar energy system that is connected to an electric circuit served by an electric utility company.

Ground-mount – A solar energy system mounted on a rack or pole that rests or is attached to the ground. Ground-mount systems can be either accessory or principal uses.

Large-Scale Solar Energy System – A commercial solar energy system that converts sunlight into electricity for the primary purpose of wholesale sales of generated electricity. A large-scale solar energy system will have a project size greater than 1 acres and is the principal land use for the parcel(s) on which it is located.

Off-grid Solar Energy System — A photovoltaic solar energy system in which the circuits energized by the solar energy system are not electrically connected in any way to electric circuits that are served by an electric utility company.

Passive Solar Energy System — A solar energy system that captures solar light or heat without transforming it to another form of energy or transferring the energy via a heat exchanger.

Photovoltaic System – A solar energy system that converts solar energy directly into electricity.

Renewable Energy Easement, Solar Energy Easement — An easement that limits the height or location, or both, of permissible development on the burdened land in terms of a structure or vegetation, or both, for the purpose of providing access for the benefited land to wind or sunlight passing over the burdened land, consistent with Wis. Statutes 700.35.

Roof-mount – A solar energy system mounted on a rack that is fastened to or ballasted on a structure roof. Roof-mount systems are accessory to the principal use.

Roof Pitch — The final exterior slope of a roof calculated by the rise over the run, typically but not exclusively expressed in twelfths such as 3/12, 9/12, 12/12.

Solar Access — Unobstructed access to direct sunlight on a lot or building through the entire year, including access across adjacent parcel air rights, for the purpose of capturing direct sunlight to operate a solar energy system.

Solar Carport – A solar energy system of any size that is installed on a carport structure that is accessory to a parking area, and which may include electric vehicle supply equipment or energy storage facilities.

Solar Collector — A device, structure or a part of a device or structure for which the primary purpose is to transform solar radiant energy into thermal, mechanical, chemical, or electrical energy. The collector does not include frames, supports, or mounting hardware.

Solar Daylighting – Capturing and directing the visible light spectrum for use in illuminating interior building spaces in lieu of artificial lighting, usually by adding a device or design element to the building envelope.

Solar Energy — Radiant energy received from the sun that can be collected in the form of heat or light by a solar collector.

Solar Energy System — A device, array of devices, or structural design feature, the purpose of which is to provide for generation or storage of electricity from sunlight, or the collection, storage and distribution of solar energy for space heating or cooling, daylight for interior lighting, or water heating.

Solar Hot Air System — (also referred to as Solar Air Heat or Solar Furnace) – A solar energy system that includes a solar collector to provide direct supplemental space heating by heating and re-circulating conditioned building air. The most efficient performance includes a solar collector to preheat air or supplement building space heating, typically using a vertically mounted collector on a south-facing wall.

Solar Hot Water System — A system that includes a solar collector and a heat exchanger that heats or preheats water for building heating systems or other hot water needs, including residential domestic hot water and hot water for commercial processes.

Solar Mounting Devices — Racking, frames, or other devices that allow the mounting of a solar collector onto a roof surface or the ground.

Solar Resource — A view of the sun from a specific point on a lot or building that is not obscured by any vegetation, building, or object for a minimum of four hours between the hours of 9:00 AM and 3:00 PM Standard time on all days of the year, and can be measured in annual watts per square meter.

Viewshed – a natural or historic environment that is visible from more or more viewing point.

Permits required.

- A. A building and zoning permit is required for all solar energy systems. The owner must provide a site plan, fee, and information specified in the Town zoning ordinance.
- B. A conditional use permit is required for all large scale solar systems. A conditional use permit application must be on a form approved or provided by the Town and follow the regulations of the Town ordinance.

Permitted Accessory Use

Permitted Accessory Use — Solar energy systems are a permitted accessory use in all zoning districts where structures of any sort are allowed, subject to certain requirements as set forth below. Solar carports and associated electric vehicle charging equipment are a permitted accessory use on surface parking lots in all districts regardless of the existence of another

building. Solar energy systems that do not meet the following design standards will require a conditional use permit.

A. Height – Solar energy systems must meet the following height requirements;

1. Building or roof-mounted solar energy systems shall not exceed the maximum allowed height in any zoning district. For purposes of height measurement, solar energy systems other than building-integrated systems shall be given an equivalent exception to height standards as building-mounted mechanical devices or equipment.
2. Ground- or pole-mounted solar energy systems shall not exceed 15 feet in height when oriented at maximum tilt.

B. Setback — Solar energy systems must meet the accessory structure setback for the zoning district and primary land use associated with the lot on which the system is located, except as allowed below.

1. Roof or Building-mounted Solar Energy Systems — the collector surface and mounting devices for roof-mounted solar energy systems shall not extend beyond the exterior perimeter of the building on which the system is mounted or built, unless the collector and mounting system has been explicitly engineered to safely extend beyond the edge, and setback standards are not violated. Exterior piping for solar hot water systems shall be allowed to extend beyond the perimeter of the building on a side-yard exposure. Solar collectors mounted on the sides of buildings and serving as awnings are considered to be building-integrated systems and are regulated as awnings.
2. Ground-mounted Solar Energy Systems — Ground-mounted solar energy systems may not extend into the side-yard or rear setback when oriented at minimum design tilt, except as otherwise allowed for building mechanical systems.

C. Visibility – Solar energy systems in residential districts shall be designed to minimize visual impacts from the public right-of-way, to the extent that doing so does not affect the cost or efficacy of the system, consistent with Wis. Statute §66.0401.

1. Building Integrated Photovoltaic Systems — Building integrated photovoltaic solar energy systems shall be allowed regardless of whether the system is visible from the public right-of-way, provided the building component in which the system is integrated meets all required setbacks, land use, or performance standards for the district in which the building is located.
2. Aesthetic restrictions — Roof-mount or ground-mount solar energy systems shall not be restricted for aesthetic reasons if the system is not visible from the closest edge of any public right-of-way other than an alley, or if the system meets the following standards:
 - a. Roof-mounted systems on pitched roofs that are visible from the nearest edge of the front right-of-way shall have the same finished pitch as the roof and be no more than ten inches above the roof.
 - b. Roof-mount systems on flat roofs that are visible from the nearest edge of the front right-of-way shall not be more than five feet above the finished roof and are exempt from any rooftop equipment or mechanical system screening.

3. Reflectors — All solar energy systems using a reflector to enhance solar production shall minimize glare from the reflector affecting adjacent or nearby properties.

D. Lot Coverage – Ground-mount systems total collector area shall not exceed half the building footprint of the principal structure if applicable

1. Ground-mount systems shall be exempt from lot coverage or impervious surface standards if the soil under the collector is maintained in vegetation and not compacted and the system area is less than one acre in size. (NOTE: OTHERWISE WE LOOSE THE ABILITY TO REQUIRE A STORM WATER PERMIT, SEE BELOW)
2. Ground-mounted systems shall not count toward accessory structure limitations.
3. Solar carports in non-residential districts are exempt from lot coverage limitations.

F. Plan Approval Required — All solar energy systems requiring a building permit or other permits shall provide a site plan for review.

1. Plan Applications — Plan applications for solar energy systems shall be accompanied by to-scale horizontal and vertical (elevation) drawings. The drawings must show the location of the system on the building or on the property for a ground-mount system, including the property lines.
2. Plan Approvals — Applications that meet the design requirements of this ordinance shall be granted administrative approval by the zoning official and shall not require Planning Commission review. Plan approval does not indicate compliance with Building Code or Electric Code.

G. Approved Solar Components — Electric solar energy system components must have a UL or equivalent listing and solar hot water systems must have an SRCC rating.

H. Compliance with Building Code — All solar energy systems shall meet approval of local building code officials, consistent with the State of Wisconsin Building Code or the Building Code adopted by the local jurisdiction, and solar thermal systems shall comply with HVAC-related requirements of the Energy Code.

I. Compliance with State Electric Code — All photovoltaic systems shall comply with the Wisconsin State Electric Code.

J. Compliance with State Plumbing Code — Solar thermal systems shall comply with applicable Wisconsin State Plumbing Code requirements.

K. Utility Notification — All grid-intertie solar energy systems shall comply with the interconnection requirements of the electric utility. Off-grid systems are exempt from this requirement.

Principal Uses

Principal Uses — (Community) encourages the development of commercial or utility scale solar energy systems where such systems present few land use conflicts with current and future development patterns. Ground-mounted solar energy systems that are the principal use on the development lot or lots are conditional uses in selected districts.

A. Principal Use General Standards

1. Site Design

- a. **Setbacks:** Community and large-scale solar arrays must meet the following setbacks;
 1. Property line setback for buildings or structures in the district in which the system is located.
 2. Roadway setback of 150 feet from the Right-Of-Way centerline of State and County Highways, 100 feet for other roads
 3. Housing unit setback of 150 feet from any existing dwelling unit or more if set forth in the individual zoning ordinances.
 4. Setback distance should be measured from the edge of the solar energy system array, excluding security fencing, screening, or berm.
- b. **Screening:** Community and large-scale solar shall be screened from existing residential dwellings.
 1. A Screening Plan shall be submitted that identifies the type and extent of screening.
 2. Screening shall not be required along property lines within the same zoning district, except where the adjoining lot has an existing residential uses.
 3. The town may require screening where it determines there is a clear community interest in maintaining a viewshed.
- c. **Ground cover and buffer areas:** the following provisions shall apply to the clearing of existing vegetation and establishment of vegetated ground cover; Additional site-specific conditions may apply as required by Town.
 1. Large-scale removal of mature trees on the site is discouraged.
 2. The applicant shall submit a vegetative management plan prepared by a qualified professional or reviewed and approved by a natural resource agency or authority, such as the Wisconsin Department of Natural Resources, County Land Conservation Department, or Natural Resource Conservation Service. The plan shall identify:
 - a. The natural resource professionals consulted or responsible for the plan
 - b. The conservation, habitat, eco-system, or agricultural goals, which may include: providing habitat for pollinators such as bees and monarch butterflies, providing habitat for wildlife such as upland nesting birds and other wildlife, establishing vegetation for livestock grazing, reducing on-site soil erosion, and improving or protecting surface or ground-water quality.
 - c. The intended mix of vegetation upon establishment.
 - d. The management methods and schedules for how the vegetation will be managed on an annual basis, with particular attention given to the establishment period of approximately three years.

3. Soils shall be planted and maintained in perennial vegetation for the full operational life of the project, to prevent erosion, manage run off and build soil.
 4. Vegetative cover should include a mix of perennial grasses and wildflowers that will preferably result in a short stature prairie with a diversity of forbs or flowering plants that bloom throughout the growing season. Blooming shrubs may be used in buffer areas as appropriate for visual screening. Perennial vegetation (grasses and forbs) are preferably native to Wisconsin, but where appropriate to the vegetative management plan goals, may also include other naturalized and non-invasive species which provide habitat for pollinators and wildlife and/or other ecosystem services (i.e. clovers).
 5. Plant material must not have been treated with systemic insecticides, particularly neonicotinoids.
- d. **Foundations:** A qualified engineer shall certify that the foundation and design of the solar panel racking and support is within accepted professional standards, given local soil and climate conditions.
 - e. **Power and communication lines:** Power and communication lines running between banks of solar panels and to nearby electric substations or interconnections with buildings shall be buried underground. Exemptions may be granted by the town in instances where shallow bedrock, water courses, or other elements of the natural landscape interfere with the ability to bury lines, or distance makes undergrounding infeasible, at the discretion of the zoning administrator.
 - f. **Fencing** — Perimeter fencing for the site shall not include barbed wire or woven wire designs, and shall preferably use wildlife-friendly fencing standards that include clearance at the bottom. The applicant may request an exception to this standard if information is provided that confirms another regulator entity requires barbed or woven wire fence. Alternative fencing can be used if the site is incorporating agrivoltaics.
2. **Stormwater and NPDES:** Solar farms are subject to the Rock County Stormwater Management and Erosion Control Ordinance and NPDES permit requirements. (SHOULD BE JUSTIFIED IN THE STORM WATER PERMIT APPLICATION, NOT SIMPLE ALLOWED. THERE ARE EXCEPTIONS OTHERIZED IN THE ORDAINCE IF PROVEN BY THE APPLICANT)
 3. All solar farms shall be in compliance with all applicable local, state and federal regulatory codes, including the State of Wisconsin Uniform Building Code, as amended; and the National Electric Code, as amended.
 4. **Site Plan Required:** The applicant shall submit a detailed site plan for both existing and proposed conditions, showing locations of all solar arrays, other structures, property lines, rights-of-way, service roads, floodplains, wetlands and other protected natural resources, topography, electric equipment, and all other characteristics requested by the Town. The site plan should show all zoning districts and overlay districts.

5. **Aviation Protection:** For solar farms located within 500 feet of an airport or within approach zones of an airport, the applicant must complete and provide the results of a glare analysis through a qualitative analysis of potential impact, field test demonstration, or geometric analysis of ocular impact in consultation with the Federal Aviation Administration (FAA) Office of Airports, consistent with the Interim Policy, FAA Review of Solar Energy Projects on Federally Obligated Airports, or most recent version adopted by the FAA.
6. **Agricultural Protection:** Solar farms must comply with site assessment or soil identification standards that are intended to identify agricultural soils. The Town may require mitigation for use of prime soils for solar array placement, including the following:
 - a. Demonstrating co-location of agricultural uses (agrivoltaics) on the project site.
 - b. The site shall be restored to agriculture at the end of life of the solar installation.
 - c. Placing agricultural conservation easements on an equivalent number of prime soil acres adjacent to or surrounding the project site.
 - d. Locating the project in a wellhead protection area for the purpose or removing agricultural uses from high risk recharge areas.
7. **Decommissioning:** A decommissioning plan shall be required to ensure that facilities are properly removed after their useful life.
 - a. Decommissioning of the system must occur in the event the project is not in use for 12 consecutive months.
 - b. The plan shall include provisions for removal of all structures and foundations, restoration of soil and vegetation and assurances that financial resources will be available to fully decommission the site.
 - c. The Town may require the posting of a bond, letter of credit or the establishment of an escrow account to ensure proper decommissioning.

B. Community-Scale Solar: Model Community permits the development of community-scale solar, subject to the following standards and requirements:

1. Rooftop gardens permitted — Rooftop community systems are permitted in all districts where buildings are permitted.
2. Community-scale uses — Ground-mount community solar energy systems must cover no more than 1 acres (project boundaries), and are a permitted use in industrial and agricultural districts, and permitted with standards or conditional in all other non-residential districts. Ground-mount solar developments covering more than 1 acres shall be considered large-scale solar.
3. Dimensional standards — All structures must comply with setback and height, standards for the district in which the system is located.
4. Other standards — Ground-mount systems must comply with all required standards for structures in the district in which the system is located.

C. Large-Scale Solar: Ground-mount solar energy arrays that are the primary use on the lot, designed for providing energy to off-site uses or export to the wholesale market, are permitted under the following standards:

1. Conditional use permit — Solar farms are conditional uses in agricultural districts, industrial districts, shoreland and floodplain overlay districts, airport safety zones subject to this ordinance, and in the landfill/brownfield overlay district for sites that have completed remediation.

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