

## Solar Energy Systems Ordinance

Draft – December 4, 2024

### 1. Purpose and Scope.

- a. The purpose of this section is to adopt and incorporate the requirements of Wis. Stats. § 66.0401 and § 66.0403 as a local ordinance, to regulate Solar Energy Systems (“SES”) for the production of electricity and/or conversion of energy for uses on site as well as those systems which produce electricity for off-site use and distribution. The regulations of this section have been established to ensure SES are sited, constructed, maintained, operated and decommissioned in a manner that maximizes utilization of Jefferson County’s solar energy resources, while also protecting the health, safety and welfare of the community. The provisions listed under this section are not intended to be a duplication of any federal or state requirement or to exceed that authority granted to Wisconsin counties.
- b. All applications regulated by this section may be subject to additional conditions and restrictions consistent with those conditions set forth in Wis. Stat. §66.0401, where such conditions are considered and applied on a case-by-case basis, as well as satisfy one of the following:
  - i. Serves to preserve or protect the public health or safety.
  - ii. Does not significantly increase the cost of the system or significantly decrease its efficiency.
  - iii. Allows for an alternative system of comparable cost and efficiency.
- c. No Solar Energy System shall be erected, enlarged or extended without conformance to the provisions of this section and other applicable restrictions, as evidenced by the issuance of a zoning permit by the Zoning Administrator and/or where required, conditional use permit approval by the Planning & Zoning Committee.

### 2. Definitions

- a. “Accessory Solar Energy System” means, but is not limited to, a photovoltaic energy system that converts solar energy to usable thermal, mechanical, chemical, or electrical energy, where such solar energy system is accessory to the principal use of the land and serve the land or structures on the same parcel (e.g., solar panels providing energy for a dwelling on the same lot). Accessory Solar Energy Systems are not intended for use as a public utility or to provide energy into the grid and generate less than 1,000 kilowatts (1 megawatt).
- b. "Battery Energy Storage System" (BESS) means electrochemical devices that charge, or collect, energy from the grid or a generation facility, store that energy, and then discharge that energy at a later time to provide electricity or other grid services.
- a. “Energy Storage” means any technology that is capable of absorbing electricity, storing the electricity for a period of time, and redelivering the electricity.
- b. “Kilowatt” means a unit of power equal to one thousand watts.

- c. "Large Solar Energy Systems" means, but is not limited to, connected arrays of photovoltaic panels, their supporting structures and/or mounting systems, the network of necessary electrical wires and conduit (above and below ground), power poles, inverters, transformers, and supporting substations, or a concentrated mirror thermal energy generating facility and its respective components. These facilities are designed for nominal operation at a nameplate capacity of 100 megawatts or more. A Certificate of Public Convenience and Necessity issued by the Wisconsin Public Service Commission (PSC) is typically associated with these facilities. This includes facilities which directly convert and transfer or store solar energy into thermal or electrical energy.
  - d. "Megawatt" means a unit of power equal to one million watts, especially as a measure of the output of a power station.
  - e. "Owner" means the owner of the property, applicant or developer
  - f. "Small Solar Energy System" means but is not limited to, connected arrays of photovoltaic panels, their supporting structures and/or mounting systems, the network of necessary electrical wires and conduit (above and below ground), power poles, inverters, transformers, and supporting substations. These facilities are designed for nominal operation at a nameplate capacity of less than 100 megawatts and do not meet the definition of an "accessory solar energy generating system." This includes facilities which directly convert and transfer or store solar energy into thermal or electrical energy.
  - g. "Solar Energy Systems" means equipment which directly converts and then transfers or stores solar energy into usable forms of thermal or electrical energy.
3. General Requirements. The following are requirements of all solar energy systems (SES):
- a. Small and Large SES shall be designed to limit grading, soil compaction and native vegetation removal.
  - b. No SES or related structure shall be located in the regulated floodplain.
  - c. No SES or related structure shall be located in a designated wetland.
  - d. Setbacks: Setbacks are measured from the closest point of an array, transformer, converter, battery, etc., excluding perimeter fences. All equipment shall meet the underlying zoning district setbacks, highway setbacks and shoreland setbacks.
    - i. Small and Large SES shall meet the following setbacks:
      - 1. 500 feet from non-participating residential homes
      - 2. Non-participating residential homes with an SES on three sides, the setback shall be 700 feet with additional screening approved by the Planning and Zoning Committee
      - 3. 250 feet to participating landowner's residential home, the setback requirement may be reduced pursuant to mutual agreement between Solar Farm Owner and participating property owners
  - e. Height: The maximum height for solar collectors or arrays is 18 feet, measured to the highest point.
  - f. Code Compliance: A SES shall comply with all applicable building codes and HVAC-related requirements of the Energy Code.

**Commented [MZ1]:** If we include "store" does that imply that battery storage is allowed with a Large SES?

**Commented [MZ2]:** Columbia County - 50' from nonparticipating property line and 500 from residential structure  
 Great Plains Institute Model Ordinance - 150 from dwelling. Setbacks can be reduced by 50% with full screening  
 Kenosha County - no setback

- g. Agricultural Protection: Small and Large SES located in the A-1 or A-2 zoning district must provide a site and soil assessment that identifies the soil type and classification (prime or non-prime for agricultural purposes) for the project area. The SES shall be designed to protect and preserve prime agricultural soils and utilize a maximum of 25% prime soil of the entire project area,. Prime agricultural soil may be used as part of a Small or Large SES if mitigation measures are implemented to preserve the prime soil, which may include the following:
    - i. Co-location of agricultural uses (agrivoltaics or other agricultural uses) on the project site.
    - ii. Placing agricultural conservation easements on an equivalent number of prime soil acres adjacent to or surrounding the project site.
    - iii. Other mitigation measures approved by the Planning and Zoning Committee.
  - h. All access locations must obtain a fire number, unless waived by the Director
  - i. Decommissioning: A Decommissioning Plan shall be required to ensure that small and large SES are properly removed after their useful life. A decommissioning plan shall include how the project area will be decommissioned and returned to its pre-solar development state. The plan shall include how decommissioning will occur, timeline and method for financial compensation or assurance and how materials will be recycled or disposed of. 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.
  - j. Reporting Requirements:
    - i. Small and Large SES shall provide a yearly report by March 1st of each year to the Planning and Zoning Committee. The report, at minimum, shall include the following for the previous year:
      - 1. Report on power generation
      - 2. Estimated timeline for the SES including, but not limited to, construction commencement dates, operational date and life expectancy dates and any upcoming key dates
      - 3. Planned, proposed or completed construction projects or updates to the SES
      - 4. Report and update to the Decommissioning Plan including justification for updating the plan and financial assurance. Yearly, the Decommission Plan shall be reviewed and updated based on current conditions including any financial assurances.
      - 5. Any other information requested by the Planning and Zoning Committee or Department
4. Small Solar Energy Systems (Small SES)
- a. Permitting Requirements: Small SES shall obtain a conditional use permit and obtain a Zoning and Land Use Permit prior to the start of construction.
  - b. Permitted Zoning Districts: Small SES may be permitted within the A-1 Exclusive Agricultural and A-2 Agricultural and Rural Business zoning district. In addition, a

small SES may be permitted within the A-T zoning district with written approval from the closest municipality.

c. Conditional Use Permit

- i. Application Process. The application for a Conditional Use Permit shall be processed in accordance with the procedures set forth in Section 11.05 of this ordinance.
- ii. Application Requirements. The application for a Conditional Use Permit for a small SES shall include the following items as applicable to the project:
  1. Site Plan: A site plan shall be submitted including, but not limited to, the following:
    - a. Existing and proposed improvements
    - b. Existing and proposed structures
    - c. Existing and proposed topography
    - d. Existing and proposed fencing
    - e. Utilities
    - f. All above ground and underground components
    - g. Wetlands as determined by a wetland delineation
    - h. Waterways (navigable and non-navigable), drainage ditches, underground drain tiles, etc.
    - i. Drainage District ditches
    - j. Floodplain
    - k. Public roads, access roads and internal roadways
    - l. Access locations and driveways
    - m. Setbacks shall be shown on the site plan
    - n. Any other information required by the department
  2. Proposed Transportation Routes: A plan identifying the proposed construction transportation routes including the type and quantity of equipment being transported.
  3. Drainage Plan: A plan identifying the existing drainage features and proposed drainage features including the drainage patterns, drain tiles, ditches and any proposed modifications.
    - a. The plan should include how drainage will be maintained and how damage, problems or complaints will be resolved.
  4. Construction Schedule: A plan documenting the major milestones throughout the construction process including the start and end of construction.
  5. Vegetation Management Plan: A plan documenting the following shall be submitted:
    - a. Existing conditions
    - b. Proposed planting map with species and densities
    - c. Proposed management of vegetation
  6. Grading Plan: A plan identifying the existing grading, topography and percent slope and the proposed grading. No grading shall occur

slopes greater than 20% and all slopes greater than 20% shall be protect from development and erosion. A plan identifying the slopes greater than 20% and their protection measures shall be included.

7. Decommissioning Plan:
  8. Lighting Plan: A plan documenting the proposed lighting at the project site.
  9. Erosion Control Plan – including all erosion control measures, timing of placement, maintenance and removal
  10. Storm Water Management Plan
  11. Screening plan that identifies the type and extent of screening from roadways and residences. Section 11.07(c) of this ordinance shall set the minimum requirements and the Committee may require addition screening or conditions.
  12. Airport Notification: SES located within 5 miles of an airport shall provide notice of the proposed SES to the airport operator and owner. The applicant shall provide an affidavit stating which airports were provided notice and documentation of such notice. If no airports are within 5 miles, the owner shall provide documentation that no airports are within 5 miles.
  13. Fencing Plan: A plan shall be submitted identifying the type of fencing utilized for the project and the proposed setbacks. Perimeter fencing for the site shall use wildlife-friendly fencing standards that include clearance at the bottom.
  14. Agreements, leases or other documentation with affected landowners and/or communities outlining any site-specific terms or conditions of development and assuring maintenance of land to be owned or used for common purposes, including, but not limited to joint development agreements, road maintenance agreements and agreements with the Drainage Board.
  15. Any other documentation as identified by the Director or the Planning and Zoning Committee.
- iii. Conditional Use Permit Review Criteria: In addition to the criteria set forth in Section 11.05 of the Jefferson County Zoning Ordinance, the review for a Conditional Use Permit shall address and consider the following:
1. To the extent feasible and practical, plans to use the land for both agriculture and electricity generation, possibly including but not limited to:
    - a. Planting and maintaining pollinator-friendly native plant species and reduced herbicide applications.
    - b. Grazing of livestock
    - c. Planting of crops
    - d. Other agricultural uses

**Commented [MZ3]:** Is this language correct? Should the Committee be reviewing for these factors or should the applicant show they meet these requirements?

2. The preservation of prime agricultural soils and the use of non-prime agricultural soils
  3. Reasonable construction standards, including phasing to limit the area of disturbance; hours of construction to limit disruption to residents; and light pollution mitigation.
  4. Maintenance and repair of damage to local roads due to project construction, possibly in the form of a Road Maintenance Agreement
  5. Maintenance and repair to local drainage systems
  6. Financial assurance during the construction phase in the form of a surety bond, letter of credit, escrow account, reserve fund, parent guarantee or other suitable financial mechanism.
  7. Decommissioning plan which includes provisions for removal of all structures and foundations, restoration of soil and vegetation and financial assurance that funds will be available for project decommissioning costs.
- d. Zoning and Land Use Permit Requirements
- i. Permit Requirement. The owner must apply for and receive a Zoning Permit from the Department before installing, constructing, or expanding any Small SES.
  - ii. Application Process. The application for a Zoning Permit shall be processed in accordance with the procedures set forth in Section 11.03 of this ordinance.
  - iii. Permit Fee. The owner shall pay an application fee at the time the application is filed with the Department.
  - iv. Application Requirement. The application for a zoning permit shall include the following items as applicable to the project:
    1. A narrative of the proposed project, including a description of the subject property, address(es), parcel numbers, and any unique circumstances within the project area.
    2. Final design and site plans, which shall include a scalable drawing showing the location of all drives, entrances, easement labels and locations, trails, and signs; panels, inverters, energy storage systems, and any other planned infrastructure; vision clearance triangles; floodplain(s); wetland(s); and shoreland zone boundaries, and setbacks.
    3. Documentation of all other permits and approvals.
    4. Other documentation as determined by the Department.
    5. A Point of Contact throughout the construction process shall be identified
- e. Additional Permitting Requirements. Additional permits and processes may be required under the Jefferson County Zoning Ordinance.

- f. Operator Ownership Change. Notice shall be provided to the County for any change in ownership of the Small Solar Energy System on or before the effective date of the change.
  - g. Other Approvals. A copy of all necessary state and federal permits and approvals shall be submitted to the Department within 30 days of receiving said authorizations.
  - h. Postconstruction Filing Requirement. Within 90 days of the date a Small SES commencing operation, the owner shall file with the Department an as-built description of the facility, an accurate map of the facility showing the location of all infrastructure, geographic information system (GIS) information showing the location of said infrastructure, and current information identifying the owner(s) and operator(s), including designated contact(s), of the Small SES.
  - i. Construction Meetings: As a condition of approval, the developer shall hold a preconstruction meeting, post construction meeting and monthly update meetings with the local Town and County Officials.
5. Large Solar Energy Systems (Large SES)
- a. Zoning and Land Use Permit Requirements
    - i. Permit Requirement. The owner must apply for and receive a Zoning Permit from the Department before installing, constructing, or expanding any Large SES.
    - ii. Application Process. The application for a Zoning Permit shall be processed in accordance with the procedures set forth in Section 11.03 of this ordinance.
    - iii. Permit Fee. The owner shall pay an application fee at the time the application is filed with the Department.
    - iv. Standards for Review. The standards for reviewing a permit application for a Large SES are consistent with Wis. Stat. 66.0401 and 66.0403 as well as Wis. Stat. 59.69 and are not more restrictive than the PSC-approved site plan as part of the Certificate of Public Convenience and Necessity.
    - v. Application Requirement. The application for a Zoning Permit shall include the following items, as may be applicable:
      - 1. A copy of the PSC authorization and a copy of the final application packet and documentation submitted to the PSC for approval;
      - 2. A narrative of the proposed project, including a description of the subject property, address(es), parcel numbers, and any unique circumstances within the project area, as may have been identified during the PSC review;
      - 3. Site Plan: A site plan shall be submitted including, but not limited to, the following:
        - a. Existing and proposed improvements
        - b. Existing and proposed structures
        - c. Existing and proposed topography

- d. Existing and proposed fencing
  - e. Existing and proposed utilities
  - f. All above ground and underground components
  - g. Wetlands, waterways, ditches, underground drainage systems, etc.
  - h. Floodplain
  - i. Public roads, access roads and internal roadways
  - j. Access locations and driveways
  - k. Setbacks shall be identified in the site plan
  - l. A point of contact throughout the construction process shall be identified
- vi. Additional Permitting Requirements. Additional permits and processes may be required under the Jefferson County Zoning Ordinance.
  - vii. Operator Ownership Change. Notice shall be provided to the County for any change in ownership of the Large SES 10 days prior to the effective date of the change and contact information of the new owner shall be included with the notice.
  - viii. Other Approvals. A copy of all necessary state and federal permits and approvals shall be submitted to the Department within 30 days of receiving said authorizations.
  - ix. Postconstruction Filing Requirement. Within 90 days of the date a Large SES commences operation, the owner shall file with the Department an as-built description of the facility, an accurate map of the facility showing the location of all infrastructure, geographic information system information (GIS) showing the location of said infrastructure, and current information identifying the owner(s) and operator(s), including designated contact(s), of the Large SES
  - x. Construction Meetings: As a condition of approval, the developer shall hold a preconstruction meeting, post construction meeting and monthly update meetings with the local Town and County Officials.
  - xi.
6. Accessory Solar Energy System (ASES)
- a. Permit Requirement. The owner must apply for and receive a Zoning Permit from the Department before installing, constructing, or expanding any ASES.
  - b. Ground-mounted systems shall not count toward accessory structure limitations in the underlying zoning district.
  - c. Height: An ASES must meet the following height requirements:
    - i. Roof mounted ASES shall not exceed the maximum allowed height in the underlying zoning district and shall not extend more than five feet above the surface of the roof.
    - ii. Ground or pole mounted ASES shall not exceed 18 feet in height when oriented at its maximum tilt.



- d. Setback(s):
    - i. Roof mounted ASES: In addition to the structure setback from the underlying zoning district, the ASES, including the collector surface and mounting devices, shall not extend more than three feet beyond the exterior perimeter of the building on which the structure is mounted or built.
    - ii. Ground or pole mounted ASES: Ground or pole mounted ASES may not extend into the required yard setbacks for the underlying zoning district at any point.
  - e. Lot Coverage:
    - i. Ground-mount systems total collector area shall not exceed the building footprint of the principal structure.
  - f. Grades: The ASES shall utilize existing grades and the area of the ASES shall not be artificially elevated higher than the existing grades of the property.
  - g. Reflectors and Glare: Any owner or installer of an ASES shall reduce the amount of glare directed towards surrounding properties and residential homes. The use of reflectors or solar enhancer shall be limited. In cases where reflectors or solar enhancers are required to enhance solar production, the owner shall minimize reflected light from affecting adjacent or nearby properties. Measures to minimize reflected light include selective placement of the system, screening the solar collector, modifying the orientation of the system, reducing use of the reflector system, or other remedies that limit reflected light.
  - h. Good Repair: An owner shall construct, operate, repair, maintain and replace solar energy system facilities as needed to keep the solar energy system in good repair and operating condition in a manner that protects the public health, safety, and welfare of the community.
7. Battery Energy Storage Systems (BESS)
- a. Applicability: The requirements of this section apply to all battery storage system with a rated nameplate capacity of equal to or greater than 1 megawatt.
  - b. Permitting Requirements:
    - i. BESS are subject to the requirements under section 4. above, as well as the standards listed in 6.a. In addition, BESS are required to obtain a Zoning and Land Use Permit prior to the start of construction.
    - ii. BESS associated with a Large ASES are subject to the requirements of Section 5., above.
    - iii. All other BESS are subject to a Conditional Use Permit in the **A-1 Exclusive Agricultural and A-2 Agricultural and Rural Business** zoning districts, as well as a zoning and land use permit.
  - c. General Requirements:
    - i. Setbacks:
      - 1. 1,500 feet from residential, business, municipal, school, or town structures

**Commented [MZ4]:** Or - not exceed lot coverage of 15%?

**Commented [MZ5]:** Michigan Guidance:  
 300 feet from any community buildings and occupied dwellings on a non-participating property measured from the nearest point on the outer wall;  
 50 feet from the nearest edge of a public road right-of-way;  
 50 feet from the property line of a non-participating property.

2. 1,000 feet from a drinking water system or source
  3. 500 feet from waterways or waterbody
  4. Other setbacks as required by the underlying zoning district and Planning and Zoning Committee
- ii. All BESS shall be designed to follow all building and electrical codes.
  - iii. BESS shall be designed in accordance with National Fire Protection Association (NFPA) 855 Standard for the Installation of Stationary Energy Storage Systems, except where this section is more restrictive.
    1. An application shall provide documentation that the proposed design meets NFPA 855 requirements.
  - ~~iv. Separate containment enclosures that include the following goals:
 
    1. Enclosure size capacity containment of 150% of the battery energy storage system.~~
  - v. Sufficient fireproofing for connecting electronic wires, protecting from one structure to the next and from the battery energy storage system to the substation.
  - ~~vi. BESS containers and structures shall be labeled with a date of first usage by a stamped metal nameplate including a serial number. Containers shall be clearly labeled and marked to identify its contents and contact information in case of emergency. Upon the end of its serviceable life or no more than seven consecutive years, whichever comes first, the battery energy storage system container shall be removed from the site and recycled at owner/operator's expense. The owner/operator shall give an annual report to the Department documenting which batteries are near the end of their lifecycle, including the current physical location of the battery and its serial number and a disposal or decommissioning plan, including financial assurance if required.~~
  - vii. Decommissioning: A decommissioning plan that is consistent with agreements reached between the applicant and other landowners of participating properties and that ensures the return of all participating properties to a useful condition, including removal of above-surface facilities and infrastructure that have no ongoing purpose, shall be provided by the applicant. The plan shall include a timeline including when the decommissioning will begin, how long it is anticipated to complete and when it will be completed.
    - i. The decommissioning plan shall include, but is not limited to, financial assurance in the form of a bond, a parent company guarantee, or an irrevocable letter of credit, to be determined by applicant. The amount of the financial assurance shall not be less than the estimated cost of decommissioning the energy facility, after deducting salvage or recycling value, as calculated by a third party with expertise in decommissioning, hired by the applicant.

Sources:

- Columbia, Calumet, Walworth, Marathon and Kenosha County
- WI Solar Model Ordinance – Great Plains Institute
- American Farmland Trust

Issues to Discuss

Fence setbacks

Drainage Plan – pre and post construction. How are complaints handled?

Screening – reference zoning ordinance section and include language for Committee to require more. Protect native screening

Inspection language to allow department onto property to inspect

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