# Contents



## A. Solar Energy System Facilities

A solar energy system may be permitted in All Districts upon approval of a conditional use permit, provided the individual criteria and submittal requirements are met. Mercer County finds that it is in the public interest to encourage the use and development of renewable energy systems (including solar energy systems) that have a positive impact on energy conservation with limited adverse impact on nearby properties. Consistent with the Mercer County Comprehensive Use Plan, it is the intent of this Section to create standards for the reasonable capture and use, by households, businesses and property owners, of their solar energy resource and encourage the development and use of solar energy.

## B. Definitions.

The following words, terms and phrases, when used in this Article and Section, shall have the meaning provided herein, except where the context clearly indicates otherwise:

1. Accessory Solar Energy System. A solar energy system that is located on the same lot or parcel as the principal use it serves and is intended primarily to generate electricity for on-site consumption.

2. Agrivoltaics. The dual use of land for combining agriculture with solar energy production, typically, with raised co-located solar arrays above agricultural activity.

3. Building-Integrated Solar System. An active solar 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 thermal

solar systems that are contained within roofing materials, windows, skylights and awnings.

4. Community Solar Energy System. A solar-electric (photovoltaic) array that provides retail electric power, in accordance with definitions of electric public utilities and rural electric cooperatives per North Dakota Century Code 49-03-01, between 100kW and 10 MW (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.

5. Ground Mounted Panels. Freestanding solar panels mounted to the ground by use of stabilizers or similar apparatus.

6. Lot. The word "lot" when used alone shall mean, unless the context of the Article clearly indicates otherwise, a "zoning lot" as defined in this Ordinance.

7. Photovoltaic System. An active solar energy system that converts solar energy directly into electricity.

8. Roof or Building Mounted SES. Solar Energy System (panels) that are mounted to the roof or building using brackets, stands or other apparatus.

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

10. Solar Access. A view of the sun, from any point on the collector surface that is not obscured by any vegetation, building, or object located on parcels of land other than the parcel upon which the solar collector is located, between the hours of 9:00 AM and 3:00 PM Standard time on any day of the year.

11. Photovoltaic Panel System. A system that incorporates discrete photovoltaic panels that convert solar radiation into electricity, including rack support systems.

12. Solar Collector. A device, structure or a part of a device or structure whose primary purpose is to transform solar radiant energy into thermal, mechanical, chemical or electrical energy.

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

14. Solar Energy System (SES). A system that converts solar radiation to usable energy, including photovoltaic panel systems and solar thermal systems. An active solar energy system that collects or stores solar energy and transforms solar energy into

another form of energy or transfers heat from a collector to another medium using mechanical, electrical, thermal or chemical means.

15. Solar Farm. An active solar energy system that collects or stores solar energy and transforms solar energy into another form of energy or transfers heat from a collector to another medium using mechanical, electrical, thermal or chemical means.

16. Solar Thermal System. A system that converts solar radiation to thermal energy for use in heating or cooling.

## C. Applicability

These regulations are for all solar energy systems and solar farms on properties and structures under the jurisdiction of the Mercer County Zoning Ordinance except that Mercer County requires the owner or operator of solar farms that would generate electricity greater than 50 MW of power to have approval for such a system from the North Dakota Public Service Commission, according to State requirements.

## D. Types of Solar Energy Systems

1. Rooftop solar energy systems. Accessory to the primary land use, designed to supply energy for the primary use. These systems are permitted accessory uses in all districts in which buildings are permitted. The owner or contractor shall receive an electrical, building and or a mechanical permit before installing a rooftop solar energy system.

2. Ground-mount solar energy systems. Accessory to the primary land use, designed to supply energy for the primary use.
    a. Ground-mount systems are permitted accessory uses in all districts in which buildings are permitted.
    b. Ground-mount systems require a Mercer County development permit and are subject to the accessory use standards for the district in which it is located, including setback. The height of a ground-mounted shall not exceed 10 feet and shall not cover or encompass more than 10 percent of the total property area or lot size.

3. Community solar energy systems
    a. Roof or ground-mount solar energy systems, may be either accessory or primary use, designed to supply energy for off-site uses on the distribution grid, but not for export to the wholesale market or connection to the electric transmission grid. These systems shall be subject to the following conditions:

i. Rooftop community solar energy systems are permitted in AG districts in which buildings are permitted.

ii. Ground-mount community solar energy systems are an accessory use in all districts.

iii. All structures must meet the setback, height and coverage limitations for the district in which the system is located.

iv. Ground-mount systems must meet all required standards for structures in the district in which the system is located.

v. Site Plan Required: The owner or operator shall submit to the County a detailed site plan for both existing and proposed conditions. These plans shall show north compass direction and the location of all areas where solar arrays would be placed, the existing and proposed structures, property lines, access points, fencing, landscaping, surface water drainage patterns, floodplains, wetlands, the ordinary high-water mark for all water bodies, any other protected resources, topography, electric equipment and all other characteristics requested by the County.

vi. Power and communication lines. Power and communication lines running between banks of solar panels and to electric substations or interconnections with buildings shall be buried underground. The Building Official or their designee may grant exemptions to this requirement in instances where shallow bedrock, water courses or other elements of the natural landscape interfere with the ability to bury lines.

4. Solar farms:

a. Ground-mount solar energy arrays that are the primary use on the lot or of a property, designed for providing energy to off-site uses or export to the wholesale market. If a proposed solar farm generates electricity greater than 50 MW, it shall require siting review and approval by the North Dakota Public Service Commission, according to State requirements.

b. Solar farms are allowed under a conditional use permit in Agricultural (AG) or Industrial (I) zoning.

c. Shall be on properties of at least 10 acres in size.

d. From occupied dwelling, commercial building or publicly used structure or facility, the horizontal distance from the outermost edge of solar panel, structure, or other accessory shall not be less than 2,500 feet, unless otherwise negotiated with the landowner. A variance may be granted if all legal owners of the structure or facility agree, in writing, that the setback distance may be waived.

e. If a solar farm is proposed within 3 miles of an airport runway, within a mapped runway approach or departure path, or is in an area where the solar farm would be visible from an air traffic control tower, a glare analysis must be provided.

   i. The applicant shall conduct a solar glare analysis using the Solar Glare Hazard Analysis Tool, or an equivalent methodology acceptable to the Federal Aviation Administration (FAA).

   ii. The solar facility shall be designed, located, and operated so that: (1) No glare results in potential for after-image or greater visual impact to pilots operating aircraft on approach or departure paths; and (2) No glare is visible from any air traffic control tower cab that would interfere with air traffic control operations.

   iii. The applicant shall submit FAA Form 7460-1 (Notice of Proposed Construction or Alteration), or equivalent documentation, and provide evidence of a "Determination of No Hazard" or equivalent FAA acknowledgement.

   iv. If any glare impacts are identified after construction that are determined to affect aviation operations, the owner/operator shall be responsible for promptly mitigating such impacts at their expense.

f. Heat island mitigation. Solar farms must include grasses or pollinator habitat as recommended by the USDA Natural Resource Conservation Service or NDSU Extension office. Project design must include adequate spacing and room for airflow between panels to allow for ground cover growth and maintenance (mechanical or animal-based). Projects over 500 acres shall include a microclimate assessment to assess heat island impacts from the project and any cumulative impacts from multiple projects in the immediate vicinity.

g. Dual-use agricultural compatibility (agrivoltaics). Ground-mounted solar farm arrays shall be designed, engineered, and constructed to support continued agricultural use within the project area, including livestock grazing (including, but not limited to, cattle, sheep, or goats) and/or specialty crop production beneath and between panel rows, unless a written waiver is provided by the landowner and approved by the County. At a minimum, the applicant shall demonstrate:

   i. Minimum structural clearance. Panel support structures shall provide minimum ground clearance sufficient to allow the intended agricultural activity beneath and between panel rows. Such clearance shall not conflict with the maximum panel height established elsewhere in this Ordinance.

ii. Agricultural access between rows. Panel row spacing shall allow for safe movement of livestock and agricultural equipment necessary for the intended dual-use activity. Site plans and engineering drawings shall identify row spacing and access routes.

iii. Vegetation and ground cover. Ground cover within the improved area shall consist of vegetation compatible with grazing and/or specialty crop production and consistent with soil health and erosion control objectives. Species selection and management practices shall be coordinated with the landowner and the Mercer County Soil Conservation District.

iv. Prohibition on designs that preclude agricultural use. No design shall obstruct, eliminate, or materially impair the ability to conduct agricultural activities beneath or between panel rows, except where an approved waiver is granted as described above.

v. Documentation required. The conditional use permit application shall include: (1) dual-use agricultural plan describing the intended grazing and/or crop production activities; (2) structural drawings showing minimum clearances; (3) a vegetation management plan consistent with agricultural use; and (4) a statement of landowner concurrence.

h. Stormwater management and erosion and sediment control, if required, shall meet the design restrictions of the County.

i. Foundations. If required, the manufacturer's engineer or a North Dakota registered design professional shall certify that the foundation and design of the solar panels meet the accepted professional standards, given local soil and climate conditions.

j. Other standards and codes. All solar farms shall meet all applicable local, state and federal regulatory standards, including the State of North Dakota Building Code and the National Electric Code.

k. Power and communication lines. Power and communication lines running between banks of solar panels and to electric substations or interconnections with buildings shall be buried underground. The Building Official or their designee may grant exemptions to this requirement in instances where shallow bedrock, water courses or other elements of the natural landscape interfere with the ability to bury lines as reviewed by the manufacturer's engineer or a ND registered design professional.

l. Site Plan Required. The owner or operator of the solar farm must submit to the County a digital copy of the site plan (pdf format, full size) at 1" = 20' or larger scale, if necessary for review, for both existing and proposed conditions. These plans shall show the location of all areas where solar arrays would be placed, proposed location and distances from the existing and

proposed structures, property lines, access points to the site, fencing, landscaping, surface water drainage patterns, floodplains, wetlands, the ordinary high- water mark for all water bodies, any other protected resources, topography, electric equipment and all other characteristics requested by the County, including:

i. Date the site plan was prepared,

ii. North point indication,

iii. Section, township and range numbers,

iv. Topographic contours with a minimum contour interval of ten (10) feet, with indication of datum used,

v. A location map inset showing the township(s) in which the project is located and the boundary of the proposed project,

vi. Location of all existing public roads, dimensions and location of any utility easements and rights-of-way within five hundred (500) feet of proposed solar farm,

vii. The County allows the installation of small operations, security and equipment buildings on the site of solar farms as permitted accessory uses to the solar farm,

viii. The owner or operator shall contain all unenclosed electrical conductors located above ground within structures that control access or they must be protected from entry by a six-foot-tall fence,

5. Accessory Solar Energy Systems:

a. Solar Access: an applicant may obtain solar easements from the adjoining property owners to preserve direct access to sunlight, as authorized by Section 47-05-01.2 of the North Dakota Century Code. A permit granted by Mercer County to install a solar energy system does not guarantee solar access.

b. Accessory Use: Solar energy systems are permitted as an accessory use, subject to all requirements of this chapter.

i. An accessory solar energy system must be located on the same lot or parcel of land as the primary use it is intended to serve.

ii. An accessory solar energy system is intended to produce energy primarily for on-site consumption but excess electrical power may be transferred to a power supply grid pursuant to utility company interconnection agreements.

## E. Project-related Damages

1. The permittee is responsible for damage caused by the facility or its components.
2. The permittee must repair, restore, or compensate for verified off-site damage within 120 days of the date the damage is verified by the County.
3. The permittee must maintain insurance sufficient to cover damage claims.
4. The County shall be indemnified from damage claims tied to the project.

## F. Decommissioning Plan

1. The County requires the owner or operator to submit a decommissioning plan for ground-mounted systems to ensure that the owner or operator properly removes the equipment and facilities at the end of project life or after their useful life. The owner or operator shall decommission the solar panels in the event they are not in use for 12 consecutive months. The plan shall include provisions for the removal of all structures that are above ground and below ground foundations and other onsite infrastructure, the restoration of soil and vegetation and a plan ensuring financial resources will be available to fully decommission the site. The disposal of structures and/or foundations shall meet all County requirements and the requirements of the County Solid Waste Ordinance. The County also may require the owner or operator to post a bond, letter of credit or establish an escrow account to ensure property decommissioning.
2. Prohibitions. The County prohibits community solar farms located within all Floodplain Districts and Designated Special Flood Hazard Areas.
3. Additional standards. In addition to the requirements listed above, all solar energy systems shall meet the following standards.
    a. The owners or operators of electric solar energy systems that are connected to the electric distribution or transmission system, either directly or through the existing service of the primary use on the site, shall obtain an interconnection agreement with the electric utility in whose service territory the system is located. Off-grid systems are exempt from this requirement.
    b. Electric solar system components that are connected to a building electric system must have an Underwriters Laboratory (UL) listing.
    c. All solar energy systems shall meet the current standards of the North Dakota State Electrical Board, North Dakota State Building Code, National Electric Safety Code and National Electric Code.

d. Solar farms shall control all Noxious Weeds according to NDCC Chapter 4.1-47.

e. All electrical lines serving a freestanding accessory solar energy system shall be buried.

f. Installation of all rooftop solar systems shall meet the standards of the North Dakota Building Code.

g. All solar energy systems using a reflector to enhance solar production shall minimize glare from the reflector that affects adjacent or nearby properties. Steps to minimize glare nuisance may include selective placement of the system, screening on the north side of the solar array, reducing use of the reflector system or other remedies that limit glare.

h. Roof-mounted solar systems shall not exceed the maximum allowed height in any zoning district.

i. All exterior electrical and plumbing lines, batteries, and other appurtenant features serving a building-mounted accessory solar energy system shall be buried, screened or landscape buffered. This provision does not apply to a solar collector.

j. The non-collecting side of a solar collector and other appurtenant features of any freestanding accessory solar energy system shall be screened from view of said public right-of-way with landscape buffer and/or fencing.

k. Commercial rooftop systems shall be placed on the roof to limit visibility from the public right-of-way or to blend into the roof design, provided that minimizing visibility still allows the property owner to reasonably capture solar energy.

l. Setbacks. All equipment and structures shall meet the setback and coverage limitations for the zoning district in which the system is located. No freestanding accessory solar energy system may extend into or over a legally recorded easement

## G. Fees

Payment of a nonrefundable fee shall be provided in an amount as established by resolution of the Board of County Commissioners.