Section 900.4 Solar Conversion Systems

Section 900.4.100 Applicability

No solar panel, neighborhood solar or Commercial Solar shall be installed or constructed within the zoning jurisdiction of Dakota County unless a Conditional Use Permit, if applicable, and a Zoning Permit have been issued. All solar units shall be constructed in conformance with all state and national building and fire codes. For those devices that include electrical, plumbing and/or heating constructions, the applicable permits shall also be obtained. Solar panels shall meet the requirements found in this section.

Section 900.4.101 General Solar Definitions

ACCESSORY SOLAR ENERGY SYSTEMS: include any photovoltaic, concentrated solar thermal, or solar hot water devices that are accessory to, and incorporated into the development of an authorized use of the property, and which are designed for the purpose of reducing or meeting on-site energy needs.

CONCENTRATED SOLAR POWER: A solar conversion system (SCS) that generates power by using mirrors or lenses to concentrate a large area of sunlight, or solar thermal energy, unto a small area. These include but are not limited to the following technologies: Parabolic trough, Solar power tower, enclosed trough, Fresnel reflectors and Dish Stirling.

DEVELOPMENT: Any plat, subdivision, or planned unit development created under the Dakota County subdivision and zoning regulations.

ELECTRIC UTILITY: The public electric utility providing retail service to a given area.

NET EXCESS GENERATION: On an ISCS, net excess generation means the net amount of energy, if any, by which the output of a qualified facility exceeds a customer-generator's total electricity requirements during a billing period;

NET METERING: Net metering means a system of metering electricity in which a local distribution utility:

1. Credits a customer-generator at the applicable retail rate for each kilowatt-hour produced by a qualified facility during a billing period up to the total of the customer-generator's electricity requirements during that billing period. A customer-generator may be charged a minimum monthly fee that is the same as other noncustomer-generators in the same rate class but shall not be charged any additional standby, capacity, demand, interconnection, or other fee or charge; and
2. Compensates the customer-generator for Net Excess Generation during the billing period at a rate equal to the electric utility avoided cost of electric supply over the billing period. The monetary credits shall be applied to the bills of the customer-generator for the preceding billing period and shall offset the cost of energy owed by the customer-generator. If the energy portion of the customer-generator's bill is less than zero in any month, monetary credits shall be carried over to future bills of the customer generator until the balance is zero. At the end of each annualized period, any excess monetary credits shall be paid out to coincide with the final bill of that period;

SOLAR ACCESS: the ability to receive sunlight across real property for any solar energy device.

SOLAR ACCESS EASEMENT: A right, expressed as an easement, covenant, condition, restriction or other property interest in any deed, will or other instrument executed by or on behalf of any landowner or in any order of taking, appropriate to protect the solar skyspace of a solar collector at a particularly described location to forbid or limit any or all of the following where detrimental to access to solar energy: structures on or above ground; vegetation on or above ground; or other activities. Such right shall specifically describe a solar skyspace in three-

dimensional terms in which the activity, structures or vegetation are forbidden or limited or in which such an easement shall set performance criteria for adequate collections of solar energy at a particular location.
SOLAR CONVERSION SYSTEM (SCS): An assembly, structure, or design, including passive elements, used for gathering, concentrating or absorbing direct or indirect solar energy, specifically designed for holding a substantial amount of useful thermal energy and to transfer that energy to a gas, solid or liquid or to use that energy directly; this may include, but is not limited to, a mechanism or process used for gathering solar energy through thermal gradients, or a component used to transfer thermal energy to a gas, solid or liquid or to convert into electricity.

SOLAR CONVERSION SYSTEM, COMMERCIAL: A commercial solar conversion system (CSCS) is a series of solar panels and equipment connected together in order to commercially supply the converted energy to a community and/or power grid. A CSCS shall have a one-way connection to the power grid.

SOLAR CONVERSION SYSTEM, GROUND-MOUNTED: Any SCS which is directly supported and attached to the ground.

SOLAR CONVERSION SYSTEM, INDIVIDUAL: An individual solar conversion system (ISCS) shall be for the specific use of an individual residential, commercial, public or industrial use.

SOLAR CONVERSION SYSTEM, NEIGHBORHOOD: A neighborhood solar conversion system (NSCS) is a series of solar panels and equipment connected together in order to supply converted energy to a specific neighborhood and its uses.

SOLAR CONVERSION SYSTEM, STRUCTURE-MOUNTED: Any SCS which is directly connected to and supported by a building.

SOLAR SKYSPACE: The maximum three-dimensional space extending from a solar collector to all positions of the sun necessary for efficient use of the collector.

1. Where a solar energy system is used for heating purposes only, solar skyspace shall mean the maximum three-dimensional space extending from a solar energy collector to all positions of the sun between nine o'clock (9:00) A.M. and three o'clock (3:00) P.M. local apparent time from September 22 through March 22 of each year.
2. Where a solar energy system is used for cooling purposes only, solar skyspace shall mean the maximum three-dimensional space extending from a solar collector to all positions of the sun between eight o'clock **(8:00) A.M. and four o'clock (4:00) P.M. local** apparent time from March 23 through September 21 of each year.

SOLAR ORIENTED SUBDIVISION: A subdivision in which a minimum of 65 percent of the lots are solar-oriented lots.

SOUTH OR SOUTH-FACING: True south, or 20 degrees east of magnetic south.

Section 900.4.102 General Provisions Applying to ISCS, NSCS, and/or CSCS
The following provisions shall apply, typically, to two or more of the different solar conversion systems in this Section

1. For commercial and neighborhood SCS: Applicant shall provide evidence that the project meets commonly accepted management practices for avian, wildlife, and environmental protections in place at the time of application.
2. For commercial and neighborhood SCS: Applicant shall comply with specific requirements of the appropriate Rural Fire District.
3. Maintenance: All system and components shall be kept in operational condition, including appearance of all components; plus, the ground beneath the SCS shall be kept in a presentable manner based upon the ground cover decided.

4. Decommissioning: All systems when they are no longer generating power and will no longer be used

   shall follow a decommissioning plan that has been agreed to upfront by Dakota County, the electric utility, and the owner/developer.
5. Repowering: If any SCS is no longer operating for purposes of Repowering, replacement, or maintenance, Decommissioning provisions will not apply for up to six months. However, an SCS that is not operating or is operating at a substantially reduced capacity for more than six months will be considered abandoned and Decommissioning provisions will apply.
6. Repowering does not require a new Conditional Use permit or permit amendment if the footprint of the SCS is the same or reduced. Any increase in the footprint of the facility will require a permit amendment.
7. Any applicant for a SCS project shall meet with and shall indicate they have met the requirements of the electric utility and have in place an interconnection agreement with the electric utility.
8. All NSCS and CSCS operations shall have located at key access points signage stating specific language as outlined by the electric utility.
9. SCS may be installed in the floodway fringe subject to the Dakota County floodplain regulations, as may be amended from time to time, given that all components are installed a minimum of one foot (1') above base flood elevation and subject to written authorization of the Floodplain Administrator.
10. No SCS shall be constructed in the identified Floodway.
11. Concentrated Solar Power (CSP) systems are prohibited within Dakota County.
12. Financial assurances shall be in place as part of the Decommissioning Plan.

900.4.103 Individual Solar Conversion Systems

1. General Requirements for ISCS: ISCS's shall conform to the required front, side and rear lot setback requirements except as provided herein:

a. An SCS which is attached to an integral part of the principal building shall meet all local, state, and federal codes for building, electrical, plumbing, and accessibility.
b. A ground-mounted SCS may be located only in the required rear yard provided it does not exceed 12-feet in height and is located not less than five feet from the rear lot line and not closer than one foot to any existing easement as measured from the closest point of the structure including its foundation and anchorage.
c. No ground-mounted SCS shall be located in the required side yard or front yard.
d. All ISCS's shall have an agreed to solar access easement, on the south side of the yard, from any neighboring properties. Said easement shall be filed as an instrument to each property's deed and said easement shall stay in place as long as the ground mounted SCS is in place and operational.
e. The applicant for any ISCS shall provide evidence that they have a working Net Metering agreement with the electric utility.

2. Structural Requirements: The physical structure and connections to existing structures shall conform to the applicable local, state, and federal codes.

3. Plot Plan: The application for a permit shall be accompanied by a plot plan drawn to scale showing property lines, existing structures on the lot, proposed solar panel location with respect to property lines, and dimensions of the proposed solar panel.

4. Preexisting Solar Panels: Notwithstanding noncompliance with the requirements of this section, a solar panel erected prior to the adoption of these Regulations, pursuant to a valid zoning permit issued by Dakota County, may continue to be utilized so long as it is maintained in operational condition.

5. Decommissioning

a. Whenever an SCS ceases operation on a property, it shall be required to report this to the Dakota County Zoning Office and the electric utility.
b. Whenever, a ground mounted SCS is no longer operating, the property owner shall have six months to

completely remove the structure and wiring. The location of the SCS shall be returned to a usable state based upon the surrounding property.

Section 900.4.104 Neighborhood Solar Conversion Systems

1. **General Requirements for NSCS:** NSCS's shall meet the following requirements as provided herein:
   a. An NSCS shall be set on its own lot within the neighborhood/development;
   b. The NSCS shall be designed and constructed for no more than the anticipated maximum solar usage in the designated neighborhood or development;
   c. No excess power generated shall be sold or given to a user outside the agreed upon neighborhood or development, except via a Net Metering agreement;
   d. The developer shall provide Dakota County with all solar easements established; however, Dakota County shall not be responsible for enforcing said easements;
   e. All solar easements shall be enforced by an establish Homeowners Association for the development/neighborhood.
   f. A ground mounted NSCS shall be protected with fencing and/or bollards;
   g. All connections to the uses within the neighborhood shall be made underground;
   h. An access agreement between the developer, Homeowners Association, and any other necessary other entity and the electric utility shall exist in case of an emergency;
   i. A Net Metering agreement between the developer, Homeowners Association, and any other entity and the electric utility shall exist in case of excess electricity; and
   j. All ground mounted NSCS's shall have an agreed to solar access easement from any neighboring properties. Said easement shall be filed as an instrument to each property's deed and said easement shall stay in place as long as the ground- mounted NSCS is in place and operational.

2. **Structural Requirements:** The physical structure and connections to existing structures shall conform to the applicable local, state, and federal codes.

3. **Solar Oriented Subdivision/Plot Plan:**
   a. Whenever a NSCS is part of a proposed new subdivision, the developer shall outline the specific lot(s) or outlot (s) where the NSCS will be placed.
   b. Specific developments/neighborhoods initially designed with an NSCS shall identify all solar easements on the preliminary and final plats and shall be recorded the same as other utility easements. In addition, the subdivision plats shall indicate, in addition to all other requirements in the subdivision regulations, the location of all proposed underground conduits serving the other lots in said subdivision.
   c. The application for a permit shall be accompanied by a plot plan drawn to scale showing property lines, existing structures on the lot, proposed solar panel location with respect to property lines, and dimensions of the proposed solar panel.
   d. The developer shall install all underground wiring as prescribed by the electric utility.
   e. All underground wiring shall be protected by a utility easement or located within prescribed rights-of-way.
   f. The developer shall provide Dakota County with As-builts of the wiring locations within the subdivision.

4. **Decommissioning**
   a. A decommissioning plan shall be required to ensure that facilities are properly removed after their useful life. Decommissioning of solar panels must occur in the event they are not in use for 12 consecutive months. The plan shall include provisions for removal of all structures and foundations, restoration of soil and vegetation and a plan ensuring financial resources will be available to fully decommission the site. Dakota County may require the posting of a bond, letter of credit or the establishment of an escrow account to ensure proper decommissioning.

Section 900.4.200 Commercial Solar Conversion Systems:

1. Applicability

The purpose of this subsection is to provide standards tor fixed-panel photovoltaic solar farms or CSCS consisting of ground-mounted solar panels capturing energy from the sun and converting it to electricity. The provisions of this section are based on a ground-mounted photovoltaic facility using a rammed post construction technique and panels supporting the flow of rainwater between each module and the growth of vegetation beneath the arrays and limiting the impacts of stormwater runoff. The rammed post construction technique allows for minimal disturbance to the existing ground and grading of the site. Based on the assumed solar farm design, Dakota County finds the use to be low intensity with minimal trip generation, low amounts of impervious cover, and low emission thus the use is compatible in urbanized, non- urbanized, or low-density areas with other uses.

2. Site Development Standards:

a. Lot coverage: No more than one percent of the gross site area shall be occupied by enclosed buildings and structures.
b. Setbacks: A thirty-foot side and rear setback shall apply only to the setback area measured from a lot line that abuts a residential use or residential zoning district. The side or rear setback shall be eliminated where the use does not abut a residential use or residential zoning district, or the two districts are separated by a public right-of-way.
c. Height: The average height of the solar panel arrays shall not exceed 12 feet.
d. Landscaping Buffer: The primary use of the property shall determine the buffer requirement. Where a ground-mounted photovoltaic solar farm is the primary use the property shall be considered industrial or agricultural for the purposes of buffer requirements, there are no requirements for screening from public streets.
e. Stormwater Management: Fixed panel solar arrays shall be considered pervious and the property shall be designed to absorb or detain specific runoff. The impervious cover calculation shall include the support posts of the panels, any roads or impervious driveway surfaces, parking areas and buildings on the site.
f. A property developed pursuant to this subsection shall be required to plat however water and sewer connections shall not be required. Suitable fire department access shall be required.
g. Signage shall conform to the Dakota County Sign Regulations.
h. Customer owned on-site power lines shall be buried except where connecting to existing overhead utility lines. This requirement shall not apply to fiber optic connections.
i. Fencing: Due the unique security requirements of this land use, and to facilitate the educational value of seeing this land use, fencing up to eight feet in height is permitted provided the fencing material is predominantly open.
j. All State and Federal codes and provisions not specified in this subsection are required including but not limited to tree preservation, traffic impact analysis and historic preservation.

3. Submittal Requirements:

All Plans shall contain the following:

a. These requirements shall apply to both the Conditional Use Permit.
b. A plot plan, drawn to scale, of the property indicating the total site acreage, landscape and buffer areas, tree preservation, location of all structures, the proposed location of the solar panels, the distances of the solar panels to structures on the property as well as distances to the property lines;
c. The plot plan shall include any roads, electric lines and/ or overhead utility lines;
d. A description of the electrical generating capacity and means of interconnecting with the electrical grid as coordinated and pre-approved with the appurtenant Power District;
e. A copy of the interconnection agreement with the local electric utility
f. Drawings or blueprints of solar panels and arrays in conjunction with the application for a building permit for a solar farm/solar powerplant;
g. Structural engineering analysis for a solar panel, array and its foundation, as applicable.

h. Manufacturer's recommended installations, if any; and
i. Documentation of land ownership and/or legal authority to construct on the property.
j. A decommissioning plan shall be required to ensure that facilities are properly removed after their useful life. Decommissioning of solar panels must occur in the event they are not in use for 12 consecutive months. The plan shall include provisions for removal of all structures and foundations, restoration of soil and vegetation and a plan ensuring financial resources will be available to fully decommission the site. Dakota County reserves the right to require the posting of a bond, letter of credit or the establishment of an escrow account to ensure proper decommissioning.

4. Compliance with Other Regulations:

a. Zoning permit applications for CSCS's shall be accompanied by a line drawing of electrical components in sufficient detail to allow for a determination that the manner of installation conforms to the State's adopted electrical code and that has been pre- approved by the associated power district meeting their Distribution Generation Requirements and Guidelines; and
b. This subsection does not waive any requirements of any state or Federal codes, electrical codes or other technical codes as applicable.

5. Discontinuation.

A CSCS shall be considered abandoned after one year without energy production. The solar equipment owner shall remove all SCS equipment and appurtenances within 90 days of abandonment.