

6.8 SOLAR ENERGY CONVERSION SYSTEMS

6.81 INTENT: In order to balance the need for clean, renewable energy resources with the protection of the health, safety, and welfare of the residents of Gage County, Nebraska, the County finds these regulations are necessary in order to ensure that all solar energy conversion systems (SECS) are appropriately designed, sited and installed. These regulations pertaining to all solar energy conversion systems are intended to respond to equipment available at the time of adoption. Gage County recognizes that this is an emerging technology and that new means of collecting energy are under development. Accordingly, these standards will be reviewed and may be amended as technology advances.

6.81 TYPES OF SOLAR CONVERSION SYSTEMS:

- A. CLASS 1 - Small Solar Energy Conversion System (SSECS)** - A SSECS which has a rated capacity of up to one hundred (100) kilowatts and which is incidental and subordinate to another use of the same parcel. A system is considered a small solar energy system only if it supplies energy for site use, except that when a parcel on which the system is installed also received electrical power supplied by a utility company, excess electrical power generated and not presently needed for onsite use may be sold back to the utility company. To be used in conformance with Nebraska State Statutes 70-2001 through 70-2005, regarding the net metering of distributed generation systems of 25 kilowatts and less.
- B. CLASS 2 - Commercial Solar Energy Conversion System (CSECS)** - A CSECS which has a rated capacity greater than one hundred (100) kilowatts to one (1) megawatt, under a common or aggregated ownership that includes substations, cables/wire, convertors and other building accessories, whose main purpose is to supply electricity to on and off-site customers. CSECS may be included as an aggregated project, such as those projects that are developed and operated in a coordinated fashion, but which have multiple entities separately owning one or more of the CSECS within a larger project. Associated infrastructure such as power lines and transformers that service the facility may be owned by a separate entity but are also part of the aggregated project.
- C. CLASS 3 – Commercial Solar Energy Conversion System (CSECS)** - A CSECS which has a rated capacity greater than one (1) megawatt to two (2) megawatts, under a common or aggregated ownership that includes substations, cables/wire, convertors and other building accessories, whose main purpose is to supply electricity to off-site customers. CSECS may be included as an aggregated project, such as those projects that are developed and operated in a coordinated fashion, but which have multiple entities separately owning one or more of the CSECS within a larger project. Associated infrastructure such as power lines and transformers that service the facility may be owned by a separate entity but are also part of

the aggregated project.

CLASS 4 – Commercial Solar Energy Conversion System (CSECS) - A CSECS which has a rated capacity greater than two (2) megawatts, under a common or aggregated ownership that includes substations, cables/wire, convertors and other building accessories, whose main purpose is to supply electricity to off-site customers. CSECS may be included as an aggregated project, such as those projects that are developed and operated in a coordinated fashion, but which have multiple entities separately owning one or more of the CSECS within a larger project. Associated infrastructure such as power lines and transformers that service the facility may be owned by a separate entity but are also part of the aggregated project.

6.82 DEFINITIONS

A. Aggregated Project: Those projects that are developed and operated in a coordinated fashion, but which have multiple entities separately owning one or more of the individual CSECS within a larger project. Associated infrastructure such as power lines and transformers that service the facility may be owned by a separate entity but are also included as part of the aggregated project.

B. Accessory Solar Energy System: Systems which are accessory to the principal use on a property and designed to supply energy solely for the principal use.

C. Church: A building that houses a religious organization or congregation that meets in a specific location with constitutions and by-laws and is a qualified 501(c)(3) organization.

D. Commercial Solar Energy Conversion Systems (CSEC): A system designed to supply energy for off-site users on the distribution grid, or to export to a wholesale market via connection to the electric transmission grid.

E. Feeder Line: Any power line that carries electrical power from one or more solar collectors or individual transformers associated with individual solar energy collection to the point of interconnection with the electric power grid, in the case of interconnection with the high voltage transmission systems serving the CSECS.

F. Ground Mounted Panels: Freestanding solar panels mounted to the ground by use of racking, piling, piers, stabilizers or similar apparatus.

G. Grid-Tied Solar System: A photovoltaic solar system that is connected to an electric circuit served by an electrical company.

H. Off-Grid Solar System: A photovoltaic solar system in which the circuits energized by the solar system are not electrically connected in any way to electric circuits served by an electric utility company.

I. Height, Total System: The height above the grade of the system including the unit and the measured highest vertical extension of any portion of the SECS.

- J. Meteorological Tower / Measuring Devices: For the purpose of collecting data used to monitor solar energy or other data relevant to locating a SECS.
- K. Non-participating Property: Any property that is not the subject of an agreement with the Solar Energy Conversion System Owner or Operator.
- L. Participating Property: Any property that is under lease or other property agreement with the Solar Energy Conversion System Owner or Operator.
- M. Photovoltaic System: An active solar energy stem that converts solar energy directly into electricity.
- N. Rooftop or Building Mounted Solar Energy System: A solar energy system that is mounted to the roof or building using brackets, stands or other apparatus.
- O. Solar Collector (Accessory): A device, structure or a part of a device or structure that the principal purpose is to transform solar radiant energy into thermal, mechanical, chemical or electrical energy.
- P. Solar Glare: The glare effect that occurs when the sun reflects on the conversion system and that can affect people or near-by properties.
- Q. Solar Energy: Radiant energy received from the sun that can be collected in the form of heat or light by a solar collector.
- R. Solar Energy System (SES): An aggregation of parts including bases, structures, panels, convertors, generators and configuration necessary to convert the power of solar into mechanical or electrical energy; e.g. photovoltaic, heat, etc.
- S. Substation: Any electrical facility utilized to convert electricity produced by a SES for inter-connection with high voltage transmission lines.
- T. Transmission Line: The electrical power lines that are high voltage transmission lines carrying electricity over medium to long distances rather than directly interconnecting and supplying electric energy to retail customers.
- U. Yard, Front: A yard extending from the front lot line of the SECS and adjoining a public street or road to the front of the SECS between side lot lines.
- V. Yard, Rear: A yard extending between side lot lines and measured horizontally at right angles to the rear lot line from the rear lot to the nearest point of the SECS.
- W. Yard, Side: A yard between the SECS and the side lot line measured horizontally at right angles to the side lot line from the side lot line to the nearest point required minimum open space between the property line and the SECS.

6.83 Class 1 - Small Solar Energy Conversion System:

Class 1 - Small Solar Energy Conversion System (SSECS) - A SSECS which has a rated capacity of up to one hundred (100) kilowatts and which is incidental and subordinate to another use of the same parcel. A system is considered a small solar energy system only if it supplies energy for site use, except that when a parcel on which the system is installed also received electrical power supplied by a utility company and excess electrical power generated which is not presently needed for onsite use may be sold back to the utility company. To be used in conformance with Nebraska State Statutes 70-2001 through 70-2005, regarding the net metering of distributed generation of 25 KW and less.

A. General Site and Design Standards

1. Located on a lot or parcel of at least three (3) acres; or in the event of an existing non-conforming lot prior to zoning may be less.
2. Shall be permitted as an accessory use within a district and approved by the Zoning Administrator, in AG-1, AG-2, AG-3 and AG-4 Zoning Districts, provided that all requirements set forth in the application process have been met.

3. Minimum Yard Requirements:

A. No structure shall be placed within the high water mark of waterways in designated district, as identified by the Flood Insurance Rate Map (FIRM) as Special Flood Hazard Areas, unless the base or footings to such structure are at least one (1) foot above such high water mark.

B. Yard requirements are as follows:

Front Yard: There shall be a minimum front yard of not less than a distance of seventy-five (75) feet measured from the center line in conformance with Section 8.7.

Rear Yard: No limitations; unless abutting a R Residential District, then the minimum yard shall be fifteen (15) feet or unless abutting an improved county road, state or federal highway, then the minimum rear yard shall be seventy-five (75) feet, unless the right of way is greater.

Side Yard: No limitations; unless abutting a "R" Residential District then the minimum yard shall be ten (10) feet or unless abutting an improved county road, state or federal highway, then the minimum rear yard shall be seventy-five (75) feet, unless the right of way is greater.

C. Waiver of Requirements: Minimum rear, front and side yard setback requirements may be waived by agreement between adjoining landowners provide that:

- a) Said agreement for waiver is made in writing;
- b) Said agreement is presented to the Zoning Administrator upon application for zoning permit; and
- c) Said agreement shall be recorded in the Gage County Register of Deeds Office, indexed to the affected properties.

4. SSECS shall maintain a minimum setback distance from any public road of at least seventy-five (75) feet measured from center line of road or the highway right of way, whichever is greater.
5. Structures shall meet applicable industry structural codes, shall be neutral in color and shall not be used to display advertising.
6. SSECS shall meet all requirements for placement with the Federal Aviation Administration (FAA).
7. All electrical wires associated with a SSECS other than the wires necessary to connect the junction box and the grounding wires shall be located underground.
8. All ground mounted electrical and control equipment must be labeled and secured to prevent unauthorized access. A structure may not have step bolts or a ladder within eight (8) feet of the ground that is readily accessible to the public.
9. The owner of a SSECS shall minimize and mitigate any interference with electromagnetic communications, such as radio, telephone, internet or television signals caused by the facility.
10. Construction sites must be re-graded and re-vegetated to minimize environmental impacts.
11. SSECS application must include a plan during the application process that states all equipment, support structures, electrical equipment and fences will be removed upon the discontinuance of the system's operation.
12. Solar panels shall conform to the required front, side and rear lot setback requirements, except as provided herein:
 - a) A solar panel which is attached to an integral part of the principal building may project two feet into the front yard; six feet into the rear yard; and two feet into the side yard.
 - b) A solar panel which is freestanding shall be located only in the required rear or side yard provided it does not exceed 12 feet in height and not closer than five feet to any existing easement as measured from the closest point of structure including the foundation and anchorage's nor shall the solar panel be located in the required front yard.
 - c) The physical structure and connections to existing structures shall conform to the applicable state building and electrical codes.
 - d) Comply with any and /or all State and Federal regulations, if applicable.
13. Pre-Existing Solar Panels, as of January 1, 2023 may continue to be utilized so long as continuously maintained in operational condition.
14. The Gage County Zoning Administrator may require other testing and safeguards, prior to approval, as deemed necessary.

B. Application Requirements for Class 1 – Small Solar Energy Conversion Systems:

1. Application Requirements must include:
 - a. The name (s) of project applicant.
 - b. Name of the project owner (s).
 - c. The legal description and address of the project.
 - d. A description of the project including: number, type, nameplate generating capacity, agreement and means of interconnecting with the electrical grid.
 - e. Site layout, including the location of property lines, easements, wetlands, protected area, solar panels, electrical grid and all related accessory structures. This site layout shall include distances and be drawn to scale and in sufficient detail to allow for a determination that the manner of installation conforms to the National Electrical Code.
 - f. Certification by an Engineer competent in disciplines of solar energy.
 - g. Documentation of land ownership or legal control of the property.
 - h. Set-back waivers, if applicable.
 - i. Location of wetlands, designated scenic area and natural areas within 1,320 feet of the proposed solar panels.
 - j. Vegetation management plan dealing with overgrowth and soil stabilization and sterilization.
 - k. The applicant shall supply the Gage County Emergency Management Agency and local fire departments, with a basic emergency response plan and a map showing all shut offs, disconnects, valves, etc.
 - l. Evidence provided by Engineer / Architect, or equivalent that there will be no interference with any commercial and or public safety communication towers.
 - m. Proof of Liability Insurance
 - n. Discontinuation and Decommissioning Plan that states all equipment, support structures, electrical equipment and fences will be removed upon the discontinuance of the systems operation.

6.84 Class 2 – Commercial Solar Energy Conversion System (CSECS) – A CSECS which has a rate capacity greater than hundred (100) kilowatts to one (1) megawatt under a common or aggregated ownership that includes substations, cables/wire, convertors and other building accessories, whose main purpose is to supply electricity to on and off-site customers. CSECS may be included as an aggregated project, such as those projects that are developed and operated in a coordinated fashion, but which have multiple entities separately owning one or more of the CSECS within a larger project. Associated infrastructure such as power lines and transformers that service the facility may be owned by a separate entity, but are also part of the aggregated project.

General Site and Design Standards:

1. Located on a lot or parcel of at least three (3) acres.
2. Permitted by a Special Use Permit to be issued in the AG-1, AG-2, AG-3 and AG-4 Zoning Districts.

3. Minimum Yard Requirements:

A. No structure shall be placed within the high water mark of waterways in designated district, as identified by the Flood Insurance Rate Map (FIRM) as Special Flood Hazard Areas, unless the base or footings to such structure are at least one (1) foot above such high water mark.

B. Setbacks:

From Public Road: CSECS shall maintain a minimum setback distance from any public road of at least seventy five (75) feet measured from center of road or the highway right of way, whichever is greater.

From Participating Property: No setback is required between an adjacent residence of a property participating, in the same aggregated project.

From Non-Participating Property: CSECS shall maintain a minimum of seventy five (75) feet from property line.

From Non-Participating Existing Dwelling: CSECS shall maintain a minimum setback of 660 feet (1/8 mile) from property line.

From Churches, Public Schools, Rockford Lake State Park, NRD Big Indian, NRD Wildcat Lake and Homestead National Historical Park: CSECS shall maintain a minimum setback of 1,320 ft (1/4 mile) from property line.

From Approved Platted Subdivisions: CSECS shall maintain a minimum setback of 1,320 ft (1/4 mile) from property line.

From Towns and Villages that do not have applicable zoning regulations: CSECS shall maintain a minimum setback of 1,320 ft (1/4 mile) from property line.

C. Waiver of Set-back Requirements: Set-back requirements may be waived by agreement between adjoining landowners provide that:

- a) Said agreement for waiver is made in writing;
- b) Said agreement is presented to the Zoning Administrator upon application for zoning permit; and
- c) Said agreement shall be recorded in the Gage County Register of Deeds Office, indexed to the affected properties.

4. Structures shall meet applicable industry structural codes, shall be neutral in color and shall not be used to display advertising.

5. CSECS shall meet all requirements for placement with the Federal Aviation Administration (FAA).

6. CSECS shall provide visual screening for adjacent non-participating, public park uses and school uses:

Fences, walls, berming, vegetation or some combination thereof to provide visual screening shall be used. Fencing, walls or berming may be used to supplement other screening methods, but shall not account for over fifty percent (50%) of the screening. Existing natural features, topography and vegetation may be used to achieve visual screening if provided in accordance to the visual screening requirements provided herein.

- a. If the visual screening is for adjacent non-participating residential uses, it shall be provided as follows:
 - i. If the screen is required, the screen shall cover one hundred percent (100%) of the surface area of a vertical plane extending along the property line adjacent to the CSECS at an amount equal to or greater than the surface area of the dwelling to be visually screened, plus seventy five (75) feet in both directions or until it reaches a public road right-of-way, which comes first, and from the ground to a height of at least eight (8) feet above the adjacent ground.
- b. If the visual screening is for adjacent non-participating public park or school uses, it shall be provided as follows:
 - i. The screen shall cover at least seventy percent (70%) of a vertical plane extending along the entire property line adjacent to the CSECS from the ground to a height of at least eight (8) feet above the adjacent ground.
- c. If the visual screening is achieved through a fence or wall, it shall be provided along the property line and the front road as follows:
 - i. Acceptable fence and wall materials for visual screening include masonry, stone and wood, but exclude chain link fences (with or without slats.) Alternative fence and materials being used for screening must be approved the Zoning Administrator.
- d. If the visual screening is achieved through berming it shall be provided along the property line as follows:
 - i. The side slopes shall not exceed three to one (3 to 1), horizontal to vertical.
 - ii. The mounded ground surface shall be protected to prevent erosion through the use of turf lawn or other alternative groundcovers.
- e. If the visual screening is achieved through vegetation, it shall be provided along the property line as follows:

At a rate of at least four (4) trees every one hundred (100) linear feet. Of the four (4) trees every one hundred (100) linear feet, at least one (1) shall be a deciduous shade tree and three (3) shall be evergreen or ornamental trees. The trees shall be evenly distributed within each one hundred (100) linear feet section.

 - i. At least two-thirds (2/3), but no more than three quarters (3/4) of the total ornamental/evergreen trees along the property line shall be made up of evergreen trees.

- vii. Each tree shall have a minimum mature height of fifteen (15 feet).
 - viii. Must maintain the original standard of planting.
- f. Visual screening is not required along the property line adjacent to a Participating property.
7. All ground mounted electrical and control equipment must be labeled and secured to prevent unauthorized access. All electrical wires associated with a CSECS other than the wires necessary to connect the disconnect junction box and the grounding wires shall be located underground.
8. The owner of a CSECS shall minimize and mitigate any interference with electromagnetic communications, such as radio, telephone, internet or television signals caused by the facility.
9. Construction sites must be re-graded and re-vegetated to minimize environmental impacts and the plan must be submitted with the application.
10. Each CSECS system application shall have a decommissioning plan outlining the means, procedure and costs of removing all related support infrastructure. This plan must be submitted with the application, and state all equipment, support structures, electrical equipment and fences will be removed upon discontinuance of the system's operation within one (1) year.
11. The CSECS shall comply with any and/or all State and Federal regulations, if applicable.
12. The Gage County Planning Commission and Gage County Board of Supervisors may require other testing and safeguards, prior to approval, as deemed necessary.
13. A Solar Resource Measurement Device used for the purpose of a solar energy conversion system is permitted by a Conditional Use Permit, approved by the Gage County Zoning Administrator for the Aggregated Project and must meet setback requirements of those established for a CSECS. If the Solar Resource Measurement Device is non-functional, it shall be removed after a period of two (2) years from discontinuance.
14. Each CSECS must have a 911 address.
15. The CSECS shall be designed and placed in such a manner to minimize adverse visual and noise impacts on adjacent areas. Such things as screenings, fencing, vegetation, trees, shrubs and pollinator plantings can be used, however such design should be included in the application documents.
16. In no case shall a CSECS be located within any required setback or in any front yard area; except that a non-participating landowner can waive a setback requirement by a written agreement submitted at the time of the application. Such agreement must be filed with the Register of Deeds and proof of that filing shall be provided to the Gage County Planning & Zoning Administrator prior to approval of the permit.
17. Structures for the CSECS project must provide a structural analysis, stamped by a licensed engineer registered in the State of Nebraska.

18. Colors and surface treatment of the CSECS and supporting structures shall, to the greatest extent possible, minimize disruption of the natural characteristics of the site. No logos or advertisements are allowed on these structures. The project shall be marked with a visible identification number applicable to the project with current contact numbers

19. Reasonable measures shall be taken to mitigate specific adverse visual impacts such as potential glint or reflections which affect residences within or immediately adjacent to the project area.

20. The applicant shall minimize or mitigate any interference with electromagnetic communications, such as radio, telephone or television signals caused by any solar energy facility.

6.85 Class 3 - Commercial Solar Energy Conversion System (CSECS) - A CSECS which has a rated capacity greater than one (1) megawatt to two (2) megawatts under a common or aggregated ownership that includes substations, cables/wire, convertors and other building accessories, whose main purpose is to supply electricity to off-site customers. CSECS may be included as an aggregated project, such as those projects that are developed and operated in a coordinated fashion, but which have multiple entities separately owning one or more of the CSECS within a larger project. Associated infrastructure such as power lines and transformers that service the facility may be owned by a separate entity, but are also part of the aggregated project.

General Site and Design Standards:

1. Located on a lot or parcel of at least twenty (10) acres.
2. Permitted by a Special Use Permit to be issued in the AG-1, AG-2, AG-3 and AG-4 Zoning Districts.
3. Minimum Yard Requirements:
 - A. No structure shall be placed within the high water mark of waterways in designated district, as identified by the Flood Insurance Rate Map (FIRM) as Special Flood Hazard Areas, unless the base or footings to such structure are a least one (1) foot above such high water mark.

B. Setbacks:

From Public Road: CSECS shall maintain a minimum setback distance from any public road of at least seventy-five (75) feet measured from center of road or the highway right of way, whichever is greater.

From Participating Property: No setback is required between an adjacent residence of a property participating, in the same aggregated project.

From Non-Participating Property: CSECS shall maintain a minimum of one hundred fifty (150) feet from property line.

From Non-Participating Existing Dwelling: CSECS shall maintain a minimum setback of

1,320 feet (1/4 mile) from property line.

From Churches, Public Schools, Rockford Lake State Park, NRD Big Indian, NRD Wildcat Lake and Homestead National Historical Park: CSECS shall maintain a minimum setback of 2,640 feet (1/2 mile) from property line.

From Approved Platted Subdivisions: CSECS shall maintain a minimum setback of 2,640 feet (1/2 mile) from property line.

From Towns and Villages that do not have applicable zoning regulations: CSECS shall maintain a minimum setback of 2,640 feet (1/2 mile) from property line.

C. Waiver of Set-back Requirements: Set-back requirements may be waived by agreement between adjoining landowners provide that:

- a) Said agreement for waiver is made in writing;
- b) Said agreement is presented to the Zoning Administrator upon application for zoning permit; and
- c) Said agreement shall be recorded in the Gage County Register of Deeds Office, indexed to the affected properties.

4. Structures shall meet applicable industry structural codes, shall be neutral in color and shall not be used to display advertising.

5. CSECS shall meet all requirements for placement with the Federal Aviation Administration (FAA).

6. CSECS shall provide visual screening for adjacent non-participating, public park uses and school uses:

Fences, walls, berming vegetation or some combination thereof to provide visual Screening shall be used. Fencing, walls or berming may be used to supplement other screening methods, but shall not account for over fifty percent (50%) of the screening. Existing natural features, topography and vegetation may be used to achieve visual screening if provided in accordance to the visual screening requirements provided herein.

- a. If the visual screening is for adjacent non-participating residential uses, it shall be provided as follows:
 - i. If the screen is required, the screen shall cover one hundred percent (100%) of the surface area of a vertical plane extending along the property line adjacent to the CSECS at an amount equal to or greater than the surface area of the dwelling to be visually screened, plus seventy five (75) feet in both directions or until it reaches a public road right-of-way, which comes first, and from the ground to a height of at least eight (8) feet above the adjacent ground.
- b. If the visual screening is for adjacent non-participating public park or school uses,

it shall be provided as follows:

- i. The screen shall cover at least seventy percent (70%) of a vertical plane extending along the entire property line adjacent to the CSECS from the ground to a height of at least eight (8) feet above the adjacent ground.
 - c. If the visual screening is achieved through a fence or wall, it shall be provided along the property line and the front road as follows:
 - i. Acceptable fence and wall materials for visual screening include masonry, stone and wood, but exclude chain link fences (with or without slats.) Alternative fence and materials being used for screening must be approved the Zoning Administrator.
 - d. If the visual screening is achieved through berming it shall be provided along the property line as follows:
 - i. The side slopes shall not exceed three to one (3 to 1), horizontal to vertical.
 - ii. The mounded ground surface shall be protected to prevent erosion through the use of turf lawn or other alternative groundcovers.
 - e. If the visual screening is achieved through vegetation, it shall be provided along the property line as follows:
 - 1. At a rate of at least four (4) trees every one hundred (100) linear feet. Of the four (4) trees every one hundred (100) linear feet, at least one (1) shall be a deciduous shade tree and three (3) shall be evergreen or ornamental trees. The trees shall be evenly distributed within each one hundred (100) linear feet section.
 - i. At least two-thirds (2/3), but no more than three quarters (3/4) of the total ornamental/evergreen trees along the property line shall be made up of evergreen trees.
 - ii. Each tree shall have a minimum mature height of fifteen (15 feet).
 - iii. Must maintain the original standard of planting.
 - f. Visual screening is not required along the property line adjacent to a participating property.
7. All ground mounted electrical and control equipment must be labeled and secured to prevent unauthorized access. All electrical wires associated with a CSECS other than the wires necessary to connect the disconnect junction box and the grounding wires shall be located underground.
8. The owner of a CSECS shall minimize and mitigate any interference with electromagnetic communications, such as radio, telephone, internet or television signals caused by the facility.
9. Construction sites must be re-graded and re-vegetated to minimize environmental impacts and the plan must be submitted with the application.
10. Each CSECS system application shall have a decommissioning plan outlining the means, procedure and costs of removing all related support infrastructure. This plan must be submitted with the application, and state all equipment, support structures, electrical equipment and fences

will be removed upon discontinuance of the system's operation within one (1) year.

11. The CSECS shall comply with any and/or all State and Federal regulations, if applicable.

12. The Gage County Planning Commission and Gage County Board of Supervisors may require other testing and safeguards, prior to approval, as deemed necessary.

13. A Solar Resource Measurement Device used for the purpose of a solar energy conversion system is permitted by a Conditional Use Permit, approved by the Gage County Zoning Administrator for the Aggregated Project and must meet setback requirements of those established for a CSECS. If the Solar Resource Measurement Device is non-functional, it shall be removed after a period of two (2) years from discontinuance.

14. Each CSECS must have a 911 address.

15. The CSECS shall be designed and placed in such a manner to minimize adverse visual and noise impacts on adjacent areas. Such things as screenings, fencing, vegetation, trees, shrubs and pollinator plantings can be used, however such design should be included in the application documents.

16. In no case shall a CSECS be located within any required setback or in any front yard area; except that a non-participating landowner can waive a setback requirement by a written agreement submitted at the time of the application. Such agreement must be filed with the Register of Deeds and proof of that filing shall be provided to the Gage County Planning & Zoning Administrator prior to approval of the permit.

17. Structures for the CSECS project must provide a structural analysis, stamped by a licensed engineer registered in the State of Nebraska.

18. Colors and surface treatment of the CSECS and supporting structures shall, to the greatest extent possible, minimize disruption of the natural characteristics of the site. No logos or advertisements are allowed on these structures. The project shall be marked with a visible identification number applicable to the project with current contact numbers

19. Reasonable measures shall be taken to mitigate specific adverse visual impacts such as potential glint or reflections which affect residences within or immediately adjacent to the project area.

20. The applicant shall minimize or mitigate any interference with electromagnetic communications, such as radio, telephone or television signals caused by any solar energy facility.

6.86 Class 4 - Commercial Solar Energy Conversion System (CSECS) - A CSECS which has a rated capacity greater than two (2) megawatts under a common or aggregated ownership that includes substations, cables/wire, convertors and other building accessories, whose main purpose is to supply electricity to off-site customers. CSECS may be included as an aggregated project, such as those projects that are developed and operated in a coordinated fashion, but which have multiple entities separately owning one or more of the CSECS within a larger project. Associated infrastructure such as power lines and transformers that service the facility may be owned by a separate entity, but are also part of the aggregated project.

General Site and Design Standards:

1. Located on a lot or parcel of at least twenty (20) acres.
2. Permitted by a Special Use Permit to be issued in the AG-1, AG-2, AG-3 and AG-4 Zoning Districts.
3. Minimum Yard Requirements:
 - A. No structure shall be placed within the high water mark of waterways in designated district, as identified by the Flood Insurance Rate Map (FIRM) as Special Flood Hazard Areas, unless the base or footings to such structure are at least one (1) foot above such high water mark.

B. Setbacks:

From Public Road: CSECS shall maintain a minimum setback distance from any public road of at least seventy-five (75) feet measured from center of road or the highway right of way, whichever is greater.

From Participating Property: No setback is required between an adjacent residence of a property participating, in the same aggregated project.

From Non-Participating Property: CSECS shall maintain a minimum of six hundred sixty (660) feet from property line.

From Non-Participating Existing Dwelling: CSECS shall maintain a minimum setback of 2,640 feet (1/2 mile) from property line.

From Churches, Public Schools, Rockford Lake State Park, NRD Big Indian, NRD Wildcat Lake and Homestead National Historical Park: CSECS shall maintain a minimum setback of 3,960 feet (3/4 mile) from property line.

From Approved Platted Subdivisions: CSECS shall maintain a minimum setback of 2,640 feet (1/2 mile) from property line.

From Towns and Villages that do not have applicable zoning regulations: CSECS shall maintain a minimum setback of 2,640 feet (1/2 mile) from property line.

C. Waiver of Set-back Requirements: Set-back requirements may be waived by agreement between adjoining landowners provide that:

- a) Said agreement for waiver is made in writing;
- b) Said agreement is presented to the Zoning Administrator upon application for zoning permit; and
- c) Said agreement shall be recorded in the Gage County Register of Deeds Office, indexed to the affected properties.

4. Structures shall meet applicable industry structural codes, shall be neutral in color and shall not be used to display advertising.

5. CSECS shall meet all requirements for placement with the Federal Aviation Administration (FAA).

6. CSECS shall provide visual screening for adjacent non-participating, public park uses and school uses.

Fences, walls, berming vegetation or some combination thereof to provide visual Screening shall be used. Fencing, walls or berming may be used to supplement other screening methods, but shall not account for over fifty percent (50%) of the screening. Existing natural features, topography and vegetation may be used to achieve visual screening if provided in accordance to the visual screening requirements provided herein.

- a. If the visual screening is for adjacent non-participating residential uses, it shall be provided as follows:
 - i. If the screen is required, the screen shall cover one hundred percent (100%) of the surface area of a vertical plane extending along the property line adjacent to the CSECS at an amount equal to or greater than the surface area of the dwelling to be visually screened, plus seventy five (75) feet in both directions or until it reaches a public road right-of-way, which comes first, and from the ground to a height of at least eight (8) feet above the adjacent ground.
- b. If the visual screening is for adjacent non-participating public park or school uses, it shall be provided as follows:
 - i. The screen shall cover at least seventy percent (70%) of a vertical plane extending along the entire property line adjacent to the CSECS from the ground to a height of at least eight (8) feet above the adjacent ground.
- c. If the visual screening is achieved through a fence or wall, it shall be provided along the property line and the front road as follows:
 - i. Acceptable fence and wall materials for visual screening include masonry,

stone and wood, but exclude chain link fences (with or without slats.) Alternative fence and materials being used for screening must be approved the Zoning Administrator.

- d. If the visual screening is achieved through berming it shall be provided along the property line as follows:
 - i. The side slopes shall not exceed three to one (3 to 1), horizontal to vertical.
 - ii. The mounded ground surface shall be protected to prevent erosion through the use of turf lawn or other alternative groundcovers.
- e. If the visual screening is achieved through vegetation, it shall be provided along the property line as follows:
 - i. At a rate of at least four (4) trees every one hundred (100) linear feet. Of the four (4) trees every one hundred (100) linear feet, at least one (1) shall be a deciduous shade tree and three (3) shall be evergreen or ornamental trees. The trees shall be evenly distributed within each one hundred (100) linear feet section.
 - ii. At least two-thirds (2/3), but no more than three quarters (3/4) of the total ornamental/evergreen trees along the property line shall be made up of evergreen trees.
 - iii. Each tree shall have a minimum mature height of fifteen (15 feet).
 - iv. Must maintain the original standard of planting.
- f. Visual screening is not required along the property line adjacent to a participating property.

7. All ground mounted electrical and control equipment must be labeled and secured to prevent unauthorized access. All electrical wires associated with a CSECS other than the wires necessary to connect the disconnect junction box and the grounding wires shall be located underground.

8. The owner of a CSECS shall minimize and mitigate any interference with electromagnetic communications, such as radio, telephone, internet or television signals caused by the facility.

9. Construction sites must be re-graded and re-vegetated to minimize environmental impacts and the plan must be submitted with the application.

10. Each CSECS system application shall have a decommissioning plan outlining the means, procedure and costs of removing all related support infrastructure. This plan must be submitted with the application, and state all equipment, support structures, electrical equipment and fences will be removed upon discontinuance of the system's operation within one (1) year.

11. The CSECS shall comply with any and/or all State and Federal regulations, if applicable.

12. The Gage County Planning Commission and Gage County Board of Supervisors may require other testing and safeguards, prior to approval, as deemed necessary.

13. A Solar Resource Measurement Device used for the purpose of a solar energy conversion system is permitted by a Conditional Use Permit, approved by the Gage County Zoning Administrator for the Aggregated Project and must meet setback requirements of those established for a CSECS. If the Solar Resource Measurement Device is non-functional, it shall be removed after a period of two (2) years from discontinuance.

14. Each CSECS must have a 911 address.

15. The CSECS shall be designed and placed in such a manner to minimize adverse visual and noise impacts on adjacent areas. Such things as screenings, fencing, vegetation, trees, shrubs and pollinator plantings can be used, however such design should be included in the application documents.

16. In no case shall a CSECS be located within any required setback or in any front yard area; except that a non-participating landowner can waive a setback requirement by a written agreement submitted at the time of the application. Such agreement must be filed with the Register of Deeds and proof of that filing shall be provided to the Gage County Planning & Zoning Administrator prior to approval of the permit.

17. Structures for the CSECS project must provide a structural analysis, stamped by a licensed engineer registered in the State of Nebraska.

18. Colors and surface treatment of the CSECS and supporting structures shall, to the greatest extent possible, minimize disruption of the natural characteristics of the site. No logos or advertisements are allowed on these structures. The project shall be marked with a visible identification number applicable to the project with current contact numbers.

19. Reasonable measures shall be taken to mitigate specific adverse visual impacts such as potential glint or reflections which affect residences within or immediately adjacent to the project area.

20. The applicant shall minimize or mitigate any interference with electromagnetic communications, such as radio, telephone or television signals caused by any solar energy facility.

6.87 Application Requirements for Class 2, Class 3 and Class 4:

The applicant for a special use permit for construction of a CSECS shall file an application with the Gage County Zoning Administrator. The application shall include the name(s) of the project applicant(s); the name of the project owner(s); the legal description and address for the project. The application shall also include the following documents:

A. A survey map illustrating the following:

1. Property lines, dimensions, acreage encompassed and contours with appropriate intervals for site evaluation;

2. Location and elevation of all components of the proposed CSECS;
 3. Location and dimensions of all existing structures and uses on property within one (1) mile of the CSECS;
 4. Location of any overhead utility lines on the property;
 5. Location of all known communications towers within two (2) miles of the proposed CSECS;
 6. Access roads;
 7. Adjacent ownership, land uses, existing residences, schools, churches, hospitals, public libraries, federal, state, county or local parks, recognized historic or heritage sites, identified wildlife preserves or habitat areas to a distance of 5,280 ft (one-mile);
- B. Provide a copy of the Easement Deed or similar recorded documents from the Gage County Register of Deeds Office, for each Participating Property.
 - C. Provide a map illustrating all Transmission Lines connecting to the Substation.
 - D. Compliance with FAA regulations, including any documentation required by the FAA, which shall include Form 7460, certifying approval of each proposed location, if applicable.
 - E. Provide minutes from meeting (s) with the Beatrice Airport Authority Board to discuss and review the proposed CSECS site plan.
 - F. Results of Consultation with the National Oceanic and Atmospheric Administration (NOAA), National Weather Service, or any other relevant weather monitoring in the CSCES project areas, when applicable.
 - G. Results of consultation regarding potential interference with existing communication facilities within the CSWECS project area.
 - H. Applicant shall identify potential effects in terms of constraints or benefits the solar energy facility may place on current or future use of the land within the project site and the surrounding area. The extent of any limitations due to public health and safety risks shall be specifically addressed and the effects on the following activities shall also be addressed:
 1. Existing or proposed tourist or recreation activities;
 2. Residential activities;
 3. Industrial activities;
 4. Agricultural activities;
 5. Commercial activities.

- I. Application shall meet all requirements of NDEE, NRCS and NRD Districts in the project area. Soil erosion, sediment control and storm water runoff plan shall address what types of erosion control measures will be used during each phase of the project. It shall identify plans for:
1. Grading;
 2. Construction and drainage of access roads;
 3. Design features to control dust;
 4. Design features to maintain downstream water quality;
 5. Re-vegetation to ensure slope stability;
 6. Restoring the site after temporary project activities;
 7. Disposal or storage of excavated materials;
 8. Protecting exposed soil;
 9. Stabilizing restored material and removal of silt fences or barriers when the area is stabilized; and
 10. Maintenance of erosion controls throughout the life of the project;
 11. Must present an acceptable weed or vegetation plan at the time of permit.
- J. Applicant shall provide information regarding flora and fauna of the proposed project area including:
1. Officially listed threatened or endangered species;
 2. Critical habitat and habitat conditions;
 3. An avian study based on the U.S. Fish and Wildlife Service.
- K. A pre-construction noise and glare study shall be conducted; and shall include all property within one (1) mile (5,280 ft) of the CSECS. Projections of any glare on a structure shall include the extent and duration of the glare on the existing structure. The protocol, methodology and modeling shall be included in the study. The complete results and full study report shall be submitted to the Gage County Planning Commission for review at the time of the application.
- L. Standard drawings of the structural components of the CSECS.
- M. Certification by a registered licensed Engineer in the State of Nebraska that shows:
1. There is a substantial need for the proposed use of CSECS, greater than one hundred (100) KW;
 2. All applicable local, state and federal building, structural and electrical codes have been followed;
 3. The site is feasible for a CSECS; and can be successfully operated in the climate conditions found in Gage County;
 4. The design and safety of the proposed CSECS can withstand weather related events.

- N. An escrow account shall be set up when the Applicant applies for a Special Use Permit for a CSECS. The monetary amount filed by the Applicant with Gage County shall be in an amount estimated by the Gage County Board of Supervisors to cover all reasonable costs and expenses associated with the special zoning review and approval process, which can include but are not limited to any reports or studies which the Gage County Zoning Commission and/or Gage Board of Supervisors anticipates it may have done related to the zoning review process for this application. Such escrow amount shall include established fees. At any point during the zoning review process the Gage County Zoning Commission and/or Gage County Board of Supervisors shall require that the Applicant place additional monies into the Gage County escrow in the event funds prove insufficient. If the escrow amount needs replenished and the Applicant refuses to do so within fourteen (14) days after receiving notice, the zoning review and approval process shall cease until Applicant makes the required escrow deposit. Any escrow amounts which are more than actual costs shall be returned to the Applicant within ninety (90) days of permitting process completion. An itemized billing of all expenses shall be provided to the Applicant. The Gage County Planning and Zoning Commission and/or Gage County Board of Supervisors may hire qualified professionals for each and any of the technical fields associated with the Special Use Permit, such as, but not limited to, electrical, acoustics, environmental, economics, wildlife, health and land use.
- O. Applicant shall be required to fund an escrow account for investigation of complaints for but not limited to glare, stray voltage, stray voltage, noise and signal interference, with the amounts of funds to be set at the discretion of the Gage County Board of Supervisors. When the escrow account balance is below \$5,000, Gage County shall notify the Applicant. The Applicant shall replenish within 45 days of notification.

6.88 Construction and Operations

- A. All public roads to be used for the purpose of transporting CSECS substation materials, cement or equipment for construction, operation or maintenance of the CSECS shall be identified and applicable weight and size permits from the impacted road authority(ies) shall be obtained prior to construction. A pre-construction survey must be conducted with the appropriate jurisdictions to determine existing road conditions. Those included are Applicant(s); Land Owner(s); Township Representative(s); Highway Superintendent(s) and/or Zoning Administrator(s). The survey shall include photographs and a written agreement to document the conditions of the public roads and facilities. All expenses of the survey shall be the Applicant's responsibility.
- B. Prior to the commencement of construction, the Applicant shall enter into an agreement with the Gage County Highway Department regarding use of county roads during construction. The agreement shall include traffic routes, time of year use, staging areas and any other physical sites related to the CSECS. All roads shall be

constructed and maintained to allow access, at all times, by any emergency service vehicles. The CSECS owner shall be responsible for immediate repair of damage to public roads and drainage systems stemming from construction, operation or maintenance of the CSECS. Any violation of the agreement will incur an assessment against the Applicant for damages as determined by the Applicant and the Board of Supervisors.

- C. Solid and hazardous wastes, including but not limited to crates, packaging materials, damaged or worn parts, as well as used oils and lubricants shall be removed from the site promptly and disposed of in accordance with all applicable local, state and federal regulations.

6.89 Safety Measures

- A. Each CSECS shall be equipped with both manual and automatic controls to limit the power so it does not exceed the design limits.
- B. CSECS shall include no sign or advertising of any kind, except for one sign not to exceed two (2) square feet posted near the entrance to the facility, electrical equipment and entrances. The sign shall contain the following information:
 - 1. Warning – high voltage;
 - 2. Manufacturer's name;
 - 3. Operator's name;
 - 4. Emergency phone number;
 - 5. Emergency shutdown procedures;
- C. Each CSECS shall be properly grounded to safely sustain natural lightning strikes in conformance with the National Electric Code.
- D. Any CSECS facility shall be equipped with anti-climbing devices if applicable. Tower climbing apparatus shall not be located within fifteen (15) feet of the ground and site shall be enclosed with a locked protective fence at least eight (8) feet high around the site.
- E. The CSECS operator shall maintain a current insurance policy which will cover liability, installation, operation and any possible damage or injury that might result from the failure of any part or parts of the generation and transmission facility. The amount of said policy shall be established as a condition of approval. The CSECS shall be warranted against any system failures reasonably expected in severe weather operation.
- F. An Emergency Operations Plan (EOP) must be placed on file and kept current with Gage County Zoning Administrator Gage County Emergency Management and Fire and Rescue Department (s) within the project jurisdiction. The plan shall include an all-hazards planning approach, based on an emergency incident or disaster of any magnitude or geographic size that may cause disruption to the function of CSECS and include contacts for notification.

- G. Upon completion of the CSECS project the Applicant shall meet with local Fire and Rescue jurisdiction to review the Emergency Operations Plan.

6.90 Discontinuation and Decommissioning

- A. A cash escrow account is required before the permit is approved to guarantee removal and restoration upon discontinuation, decommissioning or abandonment of the facilities. The amount of the escrow shall include the current gross cost of decommissioning and restoration and the permit holder shall be responsible for the holding/setup fee. It shall be funded at a minimum of 10% increments annually until fully funded to satisfy the current projected decommissioning and restoration costs. The amount required may change when projected costs are reviewed and updated every 5 years. After being fully funded by year 10, the applicant shall continue to fund the escrow at 3% of its value for the life of the project with repeated 5-year cost reviews and updates. Any escrow amounts which are more than actual costs shall be returned to the Applicant within (90) days after the facilities have been fully decommissioned.

Upon transfer of any CSECS permit, the permit holder shall submit proof that the escrow has been reassigned. The transfer of a CSECS permit must be filed with the Register of Deeds and evidence of that filing shall be presented to the Gage County Planning and Zoning Administrator and Gage County Board of Supervisors.

- B. A CSECS shall be considered a discontinued use after one (1) year without energy production, unless a plan is developed and submitted to the Gage County Zoning Administrator outlining the steps and schedule for returning the CSECS to service. All CSECS and accessory facilities shall be removed four (4) feet below ground level within ninety (90) days of the discontinuation of use. This period may be extended by the Zoning Administrator following a written request by an agent of the owner of the CSECS.

- C. Each CSECS shall have a decommissioning and restoration plan detailing the projected means and costs of removing CSECS at the end of the serviceable life or upon becoming a discontinued use and completion of property restoration. The costs estimates shall be prepared by an independent competent party approved by the Gage County Board of Supervisors, such as a professional engineer, a contractor capable of decommissioning or a person with suitable expertise or experience with decommissioning and restoration. The decommissioning and restoration plan and projected costs shall be reviewed and updated every 5 (five) years.

6.91 Noise

A. No CSECS shall exceed 55 dBA 10-minute leq at the nearest structure occupied by a Participant. In the event of periods of severe weather, as defined by the United States Weather Service, a CSECS may exceed 55 dBA. A Participating landowner may waive a noise limitation by written agreement, which shall be submitted at the time of the application.

1. No CSECS shall exceed 40 dBA during day time and 37 dBA at night (night hours are 10:00 p.m. to 7:00 a.m.) at the nearest residence of a nonparticipating property; or
 - a. Three (3) dBA maximum 10-minute leq allowed above ambient noise level.
 - b. In the event of periods of severe weather, as defined by the United States Weather Service, a CSECS may exceed 55 dBA.

A non-participating landowner can waive a noise requirement by written agreement. A written waiver shall be submitted at the time of the application. Such an agreement must be filed with the Register of Deeds and proof of that filing shall be provided to the Gage County Planning & Zoning Administrator prior to approval of the permit.

- B. The Gage County Planning and Zoning Administrator and the Gage County Board of Supervisors shall require post-construction noise level measurements at the expense of the holder of the Special Permit within one (1) year of completion. The testing shall be completed by a licensed, independent acoustical engineer, and the results shall be forwarded to the Gage County Board of Supervisors. The results will be a public document subject to Nebraska's public records laws.
- C. All noise complaints regarding the operation of any CSECS shall be referred, in writing, to the Gage County Planning and Zoning Administrator and the Gage County Board of Supervisors.
- D. The Gage County Board of Supervisors shall determine whether a violation has occurred.