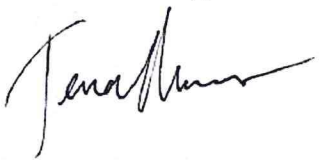
Oreana Solar, LLC

Application for a Special Use Permit

Applicants:

Oreana Solar, LLC



By: Tena Monson
Director of Distributed Generation Energy

Property Owner: Jay and Vickie Edgecombe

Permit Fee Calculation:

Application Fee:	$5,000.00
Total fees:	$5,000.00

Application Prepared by Geronimo Energy on behalf of Oreana Solar, LLC

1 Introduction

1.1 SUMMARY

Oreana Solar, LLC ("The Project" or "Oreana") respectfully submits this application for a Special Use Permit (SUP) to Macon County Planning and Zoning Department. Oreana requests that Macon County Zoning Board of Appeals motions for approval, and that the Environmental, Educational, Health and Welfare Committee, upon review, proposes a resolution to the Macon County Board to act on the petition and that Macon County Board approves for the Project to be permitted, constructed, owned, and operated by Oreana Solar, LLC. Due to the lengthy development process Oreana is requesting a two-year time period to pull a Building Permit and begin to establish the use. For review, the Project's detailed legal description is included in Appendix A and the site plan in Appendix B.

The Project will be located in the Whitmore Township, Section 17, Township 17-N Range 3-E, Macon County, Illinois. The Project will consist of a 2 MW community solar garden that will generate enough energy to power approximately 430 homes annually and avoid the emission of approximately 2,900 metric tons of carbon annually.[1] The Project plans to interconnect to the utility's existing distribution system.

The Project will be marketed as a host for a Community Solar project under the Illinois Adjustable Block Program. Under the program, utility customers may subscribe to a solar garden and receive a credit on their monthly electric bill based upon the production of their garden subscription. The final size of the facility will be dependent upon final interconnection parameters, final equipment design and demand for garden subscriptions. The project as proposed in this application represents anticipated build-out. See Appendix C for additional information.

Oreana is being developed by Geronimo Energy. Geronimo Energy is an experienced, full-service renewable energy company with a successful track record of executing renewable energy projects. Geronimo Energy is headquartered in Minneapolis, Minnesota, with satellite offices located in southwest Minnesota, North Dakota, South Dakota, Colorado, Illinois, New York and Michigan. Geronimo Energy has developed over 1,800 MWs of wind and solar projects that are either under construction or operational. With deep roots in agriculture, Geronimo prides itself on developing renewable energy projects that are farmer-friendly, community-driven, and beneficial for rural communities.

Geronimo has extensive experience and expertise in developing and bringing solar projects into operation. Geronimo previously developed and fully subscribed a 140 MW CSG portfolio that is part of Minnesota Xcel Energy's Solar*Rewards Program. 100 MW of this portfolio reached commercial operation in the fourth quarter of 2017, with the remaining projects scheduled to be

[1] Based on EPA Greenhouse Gas Equivalencies Calculator and 3,900,000 kWh annual production PVSYST model

online by the end of 2018. Additionally, Geronimo's Nordic Solar Portfolio is a large portfolio of Minnesota Community Solar Gardens with 2017-2018 Commercial Operation Dates (COD).

2 Project Description

2.1 SUMMARY AND LOCATION

The Project will be located in Macon Township, Section 17, Township 17-N Range 3-E, Macon County, Illinois. The Project area is zoned within the Agricultural District (A-1 District). Under §155.185 Proposed Solar Farm to Existing Special Regulations in the Zoning Ordinance, solar farms are permitted as a special use in the A-1 District and will comply with Title XV, Chapter 155 of Macon County's Code of Ordinances.

Planned project design will be up to a 2 MW solar facility owned as described in Section 2.2 of this application. It is proposed to utilize typical photovoltaic panels, inverters and either a fixed tilt or linear axis tracking system. The Project's footprint will be approximately 20 acres. The estimated start date will be spring of 2019.

2.2 PROJECT OWNERSHIP

Oreana Solar, LLC (Oreana or the Project) has a lease agreement for the Project site. Oreana Solar, LLC is the applicant.

2.3 PROJECT CONSULTANTS

Surveying, Preliminary Solar Array Design & Engineering:

Westwood Professional Services

7699 Anagram Drive, Eden Prairie, MN 55344

Wetland, Cultural & ESA Surveying:

Area M Consulting

2023 Alameda Street, Roseville, MN 55113

2.4 SOLAR PROJECT FACILITY

The Project's facilities will include:

- Solar modules, inverters and racking;
- Fencing;
- Access roads as required;
- On-site underground electrical collection lines;

- Up to one weather stations (up to 20 feet tall);
- Interconnection Poles, to connect the Project to the utility's distribution system.

The Project footprint is approximately 20 acres. Oreana selected the specific development area based on available land use guidance, significant landowner interest, interconnection suitability, optimal solar resource, and minimal environmental impact.

Oreana has provided a site plan of existing conditions and a site plan of proposed conditions for the solar gardens in Appendix B. This proposed site plan will denote the general footprint and layout of the Project including proposed locations of facilities.

The Project's final layout will optimize electrical generation and efficiency of the solar resource while avoiding and minimizing environmental, cultural, and economic impacts. The Project's facilities will be sited so as to comply with the county's setback requirements, where applicable, as well as other voluntarily-imposed setbacks. To the extent applicable, the Project will also comply with all other local, state, and federal regulatory standards.

The county structure setback and height regulations in for the A-1 District and our proposed setbacks and heights are found below in Table 1:

TABLE 1: SETBACK TABLE

	County Requirements	**Proposed Setbacks**
Front Yard	50' from property lines	≥50'
Side Yard	50'	≥50'
Rear Yard	50'	≥50'
Residences	500' from non-participating residences	≥1,000' from nearest residence
Height	20'	≤20'
Fence Height	8'	≤7' with 6' high plus 1' of barb

The Project's proposed components include PV modules mounted on an either a fixed tilt or linear axis tracking system, with inverters. The modules vary in size, with approximate dimensions of 4 to 6.5 feet long by 2 to 3.5 feet wide, and 1 to 2 inches thick. The foundations of the racking system will likely be a driven steel pier and will unlikely require concrete, although some concrete foundations may be required. Geotechnical soil testing will determine final installation process. Foundations will be certified by a manufacturer's engineer or another qualified engineer to ensure professional standards are met given the local soil and climate conditions. Areas of bare ground at the facility will be re-vegetated with a low-growing seed mix.

The modules will be electrically strung together to inverters. The inverters will convert the DC power from the modules to AC power. Additionally, a transformer will step up the voltage of

generated electricity to meet the local interconnection voltage of the utility's distribution grid. From the inverters, electrical cable will be buried underground to the Point of Interconnection. Here the system will interconnect to the existing distribution infrastructure. The POI is the electrical point at which the projects electrical equipment will meet the utility's infrastructure. The design standards for interconnection are the full responsibility of and defined by the utility. The project is required to comply with the utility's specifications and will have riser poles in order to meet the utility's infrastructure which is located above ground. The utility will then own and operate their poles within the POI. Any permits and regulations related to these poles are the utility's responsibility. Oreana will secure all private easements for its facilities and will secure permits and other authorizations from the state, county and township governments as needed.

An interconnection agreement with the utility will be provided prior to construction. The Interconnection Agreement process is built in with the Illinois Adjustable Block Program.

The Project will use a Data Acquisition System (DAS), which allows for remote monitoring of the Project. The monitoring system provides status views of electrical and mechanical data, operation and fault status, meteorological data, and grid station data. For security, the Project will be fenced and have site security cameras. Access to the Project area is through lockable gates.

2.4.1 Construction

Construction of the solar gardens will begin starting as early as spring of 2019 with intended completion of the Project during 2019.

Traffic during construction is estimated to be 25-35 trucks daily. Traffic will include pickup trucks, semi-trailers for delivery of equipment, and other machinery. It is unexpected that any overweight or oversized loads will be used during construction.

2.4.2 Stormwater

The Project will adhere to the Illinois Environmental Protection Agency (IEPA) Construction Stormwater Permit Requirements, including obtaining a NPDES stormwater permit.

2.4.3 Project Components

- Panel Type-
  - Photovoltaic panels
- Panel Size-
  - Varying in size approximately 4 to 6.5 feet long by 2 to 3.5 feet wide, and 1 to 2 inches thick
- Racking Type-
  - Linear axis tracking system or fixed-tilt racking system

  - Utilizes galvanized steel for foundations and frame
- Panel Height-
  - Fixed-tilt: up to 15 feet
  - Tracking: up to 15 feet
- Typical Panel Material-
  - Glass
  - Aluminum frame
  - Weatherized plastic backing
- Inverter Skid and electrical cabinets
  - Enclosed inverters and transformers
  - Overhead shade will be 10 to 12 feet tall and the equipment enclosure, if used, will be up to approximately 45 feet long by 10 feet wide by 10 feet tall.
- Metering and Switching Gear
  - Electrical equipment required to connect to The utility's system
- Access roads
  - Gravel roads within the fenced area leading to the inverter skids for repair
- Rated Power & Performance-
  - 1000-1500 volt system that steps up to local distribution voltage
- Safety-
  - Tempered glass, security fence (6-foot chain link, 1 foot barbed wire), security cameras, on-site cables buried underground.

Oreana is currently evaluating several systems for installation that include the following:

Linear Axis Tracking System:
A Linear axis tracking system tracks the solar resource throughout the day. The panels are generally aligned in rows north and south and face east in the morning, perpendicular to the ground during mid-day, and then west in the afternoon. The panels are adjusted by a small motor to slowly rotate throughout the day.

Fixed-tilt Racking System:
A fixed-tilt racking system does not rotate. It remains in a fixed position, facing a southerly direction.

Images 1-5 below visually show the general racking equipment and dimensions of both a fixed-tilt racking system and a linear axis tracking system.

Image 1 – Fixed-Tilt System Racking

Image 2 – Fixed-Tilt System Dimensions

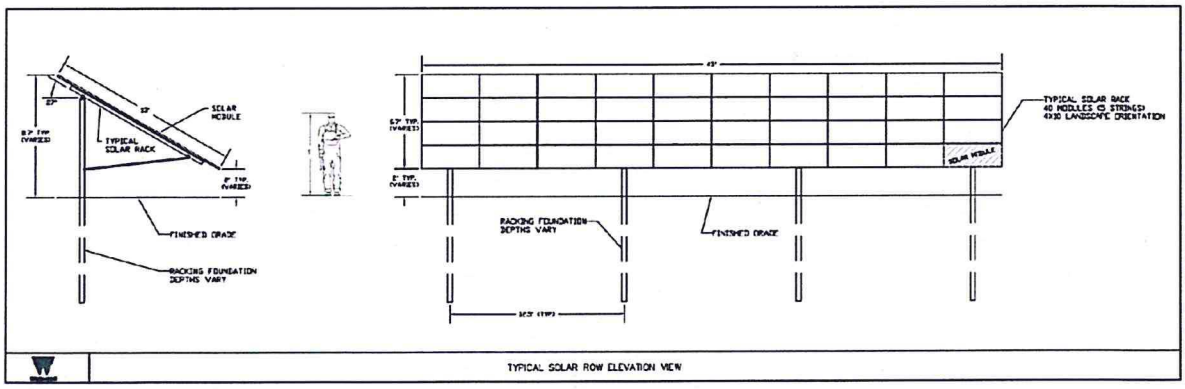


Image 3 – Tracking System Racking

Image 4 – Tracking System Dimensions

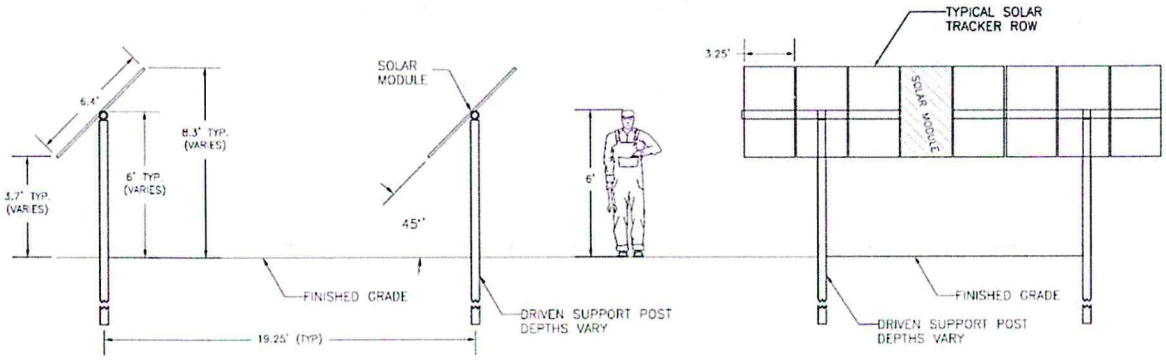


Image 5 – Standard Steel Pier Foundations

2.4.4 Aesthetics

To limit reflection, solar PV panels are constructed of dark, light-absorbing materials. Today's panels reflect as little as two percent of the incoming sunlight depending on the angle of the sun and assuming use of anti-reflective coatings.

The solar array will occupy most of the Project site for the solar facilities. The electrical transformers and inverters, and access roads complete the solar project. Most of the facility, including the solar field, will be low-profile. Currently, the proposed generation tie line will be built underground to the point of interconnection with the utility infrastructure.

2.4.5 Lighting

Oreana may have security lighting at the entrance that will be down lit. There may be lights at each inverter that will be down lit and switch controlled for repair purposes.

For more detail about the lighting proposed at the Project site, see the site plans in Appendix B.

2.4.6 Operations and Maintenance

Oreana will be professionally maintained and operated. Primary tasks include scheduled monthly and quarterly inspection(s) of electrical equipment, vegetation management as well as snow removal on access drives as needed.

Final seed mixes will be finalized prior to construction. Up to three different types seed mixes will be utilized on site: vegetation within the array, vegetation in open area-between the array and fence, and wetland/stormwater basin seed mix if applicable.

3 Compliance with Macon County Zoning Resolution

3.1 TABLE 2: COMPLIANCE WITH MACON COUNTY ZONING RESOLUTION.

Requirement Number	Requirement	Oreana response in fulfilling requirement
Proposed Section 155.185 Solar Farm to Existing Special Regulations		
C. 1.	Solar farm. Solar farms, also known as solar power plants and solar energy generation facilities, shall be permitted in the (A-1) Agricultural district as a special use, in accordance with the following minimal regulations and design standards.	Oreana is located in the "A-1" Agricultural Zoning District and is requesting a Special Use Permit.
C. 1. a.	Design Standards. The design standards and bulk regulations listed in the (A-1) Agricultural district for setbacks, lot size, lot coverage, lot area, height, and signage shall be suspended for all solar farms and the following regulations shall apply instead. All other design standards and bulk regulations of the district shall apply.	Oreana, as proposed, is in compliance with the following regulations.

C. 1. a. 1.	Foundations- The manufacturer's engineer or another qualified engineer shall certify that the foundation and design of the solar panels is within accepted professional standards, given local soil and climate conditions.	The foundations of the solar arrays will be certified by an engineer.
C. 1. a. 2.	Other Standards and Codes- All solar farms shall comply with any applicant local, state, federal regulatory standards, and the National Electrical Code.	Oreana will comply with applicable regulations.
C. 1. a. 3.	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. Exemptions or variances may be granted in instances where shallow bedrock, watercourses, or other elements of natural landscape interfere with the ability to bury lines.	Refer to Section 2.4 for more details and see Appendix B.
C. 1. a. 4.	Minimum lot size- No solar farm shall be erected on any lot less than 5 acres in size.	Oreana is in compliance with this requirement. The Project footprint is proposed at approximately 20 acres. See Appendix B.
C. 1. a. 5.	Height- Systems, equipment, and ground or pole-mounted solar energy systems shall not exceed 20 feet in height, which oriented at maximum tilt. Excluded from this height requirement, however, are electric transmission lines and utility poles.	See Appendix B.
C. 1. a. 6.	Setbacks- A minimum of fifty (50) feet must be maintained on all property lines. Solar panels shall be kept at least five hundred (500) feet from a residence that is not part of the Special Use Permit.	See Appendix B.
C. 1. a. 7.	Lighting- Lighting shall be installed for security and safety purposes only. Except with respect to lighting	Refer to Section 2.4.5 and see Appendix B.

	required by the FCC or FAA, all lighting shall be shielded so that no glare extends substantially beyond the boundaries of the property upon which the solar farm is located.	
C. 1. a. 8.	Signage- An appropriate warning sign shall be provided at the entrance of the facility and along the perimeter to the solar farm project. The sign at the entrance to the facility shall include the facilities 911 address and a 24-hour emergency contact number.	Oreana will contain appropriate warning signage with the facility's 911 address and a 24-hour emergency contact number at the entrance.
D. 1. (a. – j.)	Application Requirements. The following information shall be submitted as part of the application: A site plan with existing conditions showing the following:	See Appendix B.
D. 2. (a. – d.)	A site plan of proposed conditions showing the following:	See Appendix B.
D. 3. a.	The applicant shall submit an acceptable weed/ grass control plan for property inside and outside the fenced area for the entire property. The Operating Company or Successor during the operation of the Solar Farm shall adhere to the weed/grass control plan.	See Appendix C.
D. 3. b.	Perimeter fencing shall have a maximum of eight (8) feet shall be installed around the boundary of the solar farm. The fence shall contain appropriate warning signage that is posted such that it is clearly visible on the site.	See Appendix B.
D. 4. a.	The manufacture's specifications and recommended installation methods for all major equipment, including solar panels, mounting systems and foundations for poles and racks.	See Appendix D.

D. 5. a.	A description of the method of connecting the SOLAR array to a building or substation.	Refer to Section 2.4 and see Appendix B.
D. 5. b.	Utility interconnection details and a copy of written notification to the utility company requesting the proposed interconnection.	See Appendix E.
D. 6. a.	For solar energy systems located within five hundred (500) feet of an airport or within approach zones of an airport, the applicant shall complete and provide the results of the Solar Glaze Hazard Analysis Tool (SGHAT) for the Airport Traffic Control Tower cab and final approach paths, consistent with the Interim Policy, FAA Review of Solar Energy Projects on Federal Obligated Airports, or most recent version by the FAA	Oreana is not located in an airport approach zone or within 500 feet of an approach zone of an airport. Oreana will be in compliance with the Interim Policy, FAA Review of Solar Energy Projects on Federal Obligated Airports, or the most recent version by the FAA.
D. 7. a.	A fire protection plan for the construction and the operation of the facility, and emergency access to the site.	See Appendix F.
D. 8. a.	Solar Farm developers shall be required to initiate a natural resource review consultation with the Illinois Department of Natural Resources (IDNR) through the Department's online EcoCat Program. Areas reviewed through this process will be endangered species and wetlands. The cost of the EcoCat consultation shall be borne by the developer.	See Appendix G.
D. 9. a.	All routes on either County or Township Road that will used for the construction and maintenance purposes shall be identified on the site plan. All routes for either egress or ingress need to be shown. The routing shall be approved subject to the approval of the Macon County Highway Engineer in coordination with the Township Road Commissioners. The Solar Farm developer complete and provide a	Oreana does not anticipate that construction activities will cause a measurable amount of damage to the County's road system. Oreana proposes to submit possible routes for construction deliveries to the Macon County Highway Engineer in concurrence with an Access Permit Application. If existing paved or gravel roads are damaged during construction

	preconstruction baseline survey to determine existing road conditions for assessing potential future damage due to development related traffic. The development shall provide a road repair plan to ameliorate any and all damage, installation or replacement of roads that might be required by the developer. The developer shall provide a surety bond in an amount and form approved by the Highway/ Road Officials when warranted.	Oreana shall return them to pre-existing conditions
D. 10. a. (1. – 2.)	The Developer shall provide a decommissioning plan for the anticipated service life of the facility or in the event, the facility is abandoned or had reached its life expectancy.	See Appendix H.
Section 155.029 Special Use		
(A)	*Purpose.* The development and execution of a zoning ordinance is based upon the division of the county into districts, within which districts the use of land and buildings and the bulk and location of buildings and structures in relation to the land are substantially uniform. It is recognized, however, that there are special uses which, because of their unique characteristics, cannot be properly classified in any particular district or districts without consideration, in each case, of the impact of those uses upon neighboring land and of the public need for the particular use at the particular location. The special uses fall into two categories:	Oreana is applying for a Special Use Permit in the spirit of the proposed solar ordinance. Oreana is located, as permitted, in the Agricultural District as a special use.
(A) (1)	Uses publicly operated or traditionally concerning a public interest; and	NA
(A) (2)	Uses entirely private in character but of such an unusual nature that their operation may give rise to unique problems with respect to their impact	This is addressed with Oreana's compliance to Macon County's proposed addition of Solar Farms to

	upon neighboring property or public facilities.	Existing Special Regulations.
(B) (1)	The establishment, maintenance, or operation of the special use will not substantially be detrimental to or endanger the public health, safety, welfare, and morals;	It is not anticipated that Oreana will be detrimental to or endanger the public health, safety, welfare and morals. Oreana is low profile, does not create odors and is virtually noiseless.
(B) (2)	The special use will not substantially be injurious to the use and enjoyment of other property in the immediate vicinity for the purposes already permitted, or substantially diminish and impair property values within the neighborhood;	Oreana does not anticipate that it will be injurious to the use and enjoyment of adjacent property as permitted.
(B) (3)	The establishment of the special use will not substantially impede the normal and orderly development and improvements of surrounding property for uses permitted in the district;	Due to the low profile of solar, it is not anticipated that Oreana will have an adverse effect on the development or improvement of surrounding property.
(B) (4)	The adequate utilities, access roads, drainage, and/or other necessary facilities have been or are being provided;	Oreana does not anticipate using public services and infrastructure, with the exception of police and fire, if needed. Oreana does not require sewer or water.
(B) (5)	Adequate measures have been or will be taken to provide ingress and egress so designed as to minimize traffic congestion in public streets; and	It is not anticipated that Oreana will cause a traffic hazard or congestion during the operational phase. Typical construction traffic is expected during the construction of the facility. Refer to Section 2.4.1 for more details. Oreana will obtain an access permit prior to construction.
(B) (6)	The special use shall in all other aspects conform to the applicable regulations of the district in which it is located, except as the regulations may in each instance be modified by the County Board pursuant to the recommendation of the Zoning Board of Appeals.	Oreana conforms to the proposed Solar Farm provision to the Existing Special Regulations of Macon County's Zoning Ordinance and applicable regulations of the district.

(C)	*Planned Developments*	NA
(D)	*Conditions and guarantees.* Prior to the granting of any special use permit the Zoning Board of Appeals may recommend and the County Board shall stipulate any conditions and restrictions upon the establishment, location, construction, maintenance, and operation of the special use as deemed necessary for the protection of the public interest and to secure compliance with the standards and requirements specified in division (B) of this section. In all cases in which special uses are granted, the County Board shall require evidence and guarantees as it may deem necessary as proof that the conditions stipulated in connection therewith are being and will be complied with.	Oreana will comply with any conditions and meets the criteria laid out in division (B) of this section.

Additional information on Oreana for the application process:

Petition for Special Use Permit Part D – Standards for Special Use Responses

1. **What would be the impact of the proposed Special Use on the public health, safety, welfare or morals within the surrounding area?**

   Oreana does not anticipate it will be injurious to the neighboring properties as permitted. Oreana is low profile, does not create odors and is virtually noiseless. Oreana is setback approximately 1,080 feet from the nearest residence, allowing substantial distance to mitigate visual impacts. Additionally, the conversion of tillable acreage to stable prairie mix is anticipated to improve drainage.

2. **How would the proposed Special Use impact the use, enjoyment or value of property in the surrounding area?**

   Solar farms as a Special Use are allowed and guided by the county for placement in Agricultural Districts with a Special Use Permit. Oreana does not anticipate effecting the use or enjoyment of the immediate area or adversely affecting the value of property in the immediate area.

3. **How would the proposed Special Use impact the normal and orderly development and improvement of property in surrounding area?**

   The predominant land use surrounding Oreana is for agriculture. Due to the low profile of solar, it is not anticipated that Oreana will have an adverse effect on the development or improvement of surrounding property.

4. **Are there adequate utilities and facilities in place for the proposed Special Use? How would the proposed Special Use impact the utilities and facilities in the surrounding area?**

   Oreana does not require water or sewer or other public utilities with exception to police and fire, if needed. All electrical connections will be completed by the Project and the utility to the standards that are required to connect into the grid. Gravel access roads will be required to access inverters for repairs.

5. **What would be the impact of the proposed Special Use on traffic in the area? Are any measures being taken to address ingress and egress to the proposed use?**

   Oreana will have a laydown area within or adjacent to the project footprint during construction that will provide space for employees on site and the delivery of equipment. During the operational phase of the project, parking is not needed outside the fences area due to the low traffic nature of the project. Vehicles servicing the area will be able to park inside the fence.

6. **Would the proposed Special Use conform to all the other regulations of the Macon County Zoning Ordinance, as well as all applicable state and local laws and regulations?**

   Oreana meets the requirements of the proposed Solar Farm ordinance, section 155.185. Requirements for a Solar Farm as a Special Use are outlined in Table 2.

Site Plan of Existing and Proposed Conditions

See Appendix B.

Compliance with IEPA Construction Stormwater Permits

The Project will adhere to any IEPA construction permit requirements, including a NPDES.

Compliance with State Electric Code

The Project will comply with all state electric code requirements.

Foundations

Construction plans signed by an engineer will be submitted prior to construction.

Other Standards and Codes

Oreana will be in compliance with any applicable local, state, and federal regulatory standards.

Power and Communication Lines

Power lines within the fenced area will be underground to the extent practical.

4 Conclusion

The Project as designed and planned complies with Macon County's Special Use Permit and Proposed Solar Farm Ordinance. Oreana is working in close coordination with the landowner of the Project site and will continue to engage the surrounding neighbors and the community as the Project develops. Due to the lengthy development process Oreana is requesting a two-year time period to pull a Building Permit and begin to establish the use. Oreana Solar, LLC respectfully requests that Macon County's County Board approve and permit the Project.