EXHIBIT B – Application for Site Certificate

FACILITY INFORMATION
OAR 345-021-0010(1)(b)

REVIEWER CHECKLIST

(b) Exhibit B. Information about the proposed facility, construction schedule and temporary disturbances of the site, including:

Rule Sections	Section	✓
(A) A description of the proposed energy facility, including as applicable: (i) The nominal electric generating capacity and the average electrical generating capacity, as defined in ORS 469.300. (ii) Major components, structures and systems, including a description of the size, type and configuration of equipment used to generate electricity and useful thermal energy. (iii) A site plan and general arrangement of buildings, equipment and structures. (iv) Fuel and chemical storage facilities, including structures and systems for spill containment (v) Equipment and systems for fire prevention and control. (vi) For thermal power plants: (I) A discussion of the source, quantity and availability of all fuels proposed to be used in the facility to generate electricity or useful thermal energy. (II) Process flow, including power cycle and steam cycle diagrams to describe the energy flows within the system. (III) Equipment and systems for disposal of waste heat. (IV) The fuel chargeable to power heat rate. (vii) For surface facilities related to underground gas storage, estimated daily injection and withdrawal rates, horsepower compression required to operate at design injection or withdrawal rates, operating pressure range and fuel type of compressors.	B.2	

Rule Sections	Section	✓
(viii) For facilities to store liquefied natural gas, the volume, maximum pressure, liquefication and gasification capacity in thousand cubic feet per hour.		
(B) A description of major components, structures and systems of each related or supporting facility.	B.3	
(C) The approximate dimensions of major facility structures and visible features.	B.4	
(D) If the proposed energy facility is a pipeline or a transmission line or has, as a related or supporting facility, a transmission line or pipeline that, by itself, is an energy facility under the definition in ORS 469.300, a corridor selection assessment explaining how the applicant selected the corridor(s) for analysis in the application. In the assessment, the applicant shall evaluate the corridor adjustments the Department has described in the project order, if any. The applicant may select any corridor for analysis in the application and may select more than one corridor. However, if the applicant selects a new corridor, then the applicant must explain why the applicant did not present the new corridor for comment at an informational meeting under OAR 345-015-0130. In the assessment, the applicant shall discuss the reasons for selecting the corridor(s), based upon evaluation of the following factors: (i) Least disturbance to streams, rivers and wetlands during construction. (ii) Least percentage of the total length of the pipeline or transmission line that would be located within areas of Habitat Category 1, as described by the Oregon Department of Fish and Wildlife. (iii) Greatest percentage of the total length of the pipeline or transmission line that would be located within or adjacent to public roads and existing pipeline or transmission line rights-of-way. (iv) Least percentage of the total length of the pipeline or transmission line that would be located within lands that require zone changes, variances or exceptions. (v) Least percentage of the total length of the pipeline or transmission line that would be located in a protected area as described in OAR 345-022-0040. (vi) Least disturbance to areas where historical, cultural or archaeological resources are likely to exist. (vii) Greatest percentage of the total length of the pipeline or transmission line that would be located to avoid seismic, geological and soils hazards. (viii) Least percentage of the total length of the pipeline or transmission line that would be located within lands zoned for exclusive farm use.	NA	

Rule Sections	Section	✓
(E) If the proposed energy facility is a pipeline or transmission line or has, as a related or supporting facility, a transmission line or pipeline of any size: (i) The length of the pipeline or transmission line. (ii) The proposed right-of-way width of the pipeline or transmission line, including to what extent new right-of-way will be required or existing right-of-way will be widened. (iii) If the proposed transmission line or pipeline corridor follows or includes public right-of-way, a description of where the transmission line or pipeline would be located within the public right-of-way, to the extent known. If the applicant proposes to locate all or part of a transmission line or pipeline adjacent to but not within the public right-of-way, describe the reasons for locating the transmission line or pipeline outside the public right-of-way. The applicant must include a set of clear and objective criteria and a description of the type of evidence that would support locating the transmission line or pipeline outside the public right-of-way, based on those criteria. (iv) For pipelines, the operating pressure and delivery capacity in thousand cubic feet per day and the diameter and location, above or below ground, of each pipeline. (v) For transmission lines, the rated voltage, load carrying capacity, and type of current and a description of transmission line structures and their dimensions.	B.6	
(F) A construction schedule including the date by which the applicant proposes to begin construction and the date by which the applicant proposes to complete construction. Construction is defined in OAR 345-001-0010. The applicant shall describe in this exhibit all work on the site that the applicant intends to begin before the Council issues a site certificate. The applicant shall include an estimate of the cost of that work. For the purpose of this exhibit, "work on the site" means any work within a site or corridor, other than surveying, exploration or other activities to define or characterize the site or corridor, that the applicant anticipates or has performed as of the time of submitting the application.	B.7	

EXHIBIT B – Application for Site Certificate

FACILITY INFORMATION
OAR 345-021-0010(1)(b)

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APPENDICES

B.1 INTRODUCTION

Obsidian Solar Center LLC (Applicant) proposes to construct a photovoltaic (PV) solar power generation facility and related or supporting facilities (Facility) in Lake County, Oregon. Refer to Exhibit C for Facility location information, including areas of permanent and temporary disturbance within the site boundary. Applicant seeks the flexibility to develop the Facility in phases and divide the Facility into separate energy facilities as further described below. Exhibit B addresses the requirements of Oregon Administrative Rules (OAR) 345-021-0010(1)(b): *Information about the proposed facility, construction schedule and temporary disturbances of the site.*

The Facility will consist of up to 3,921 acres and provide a nominal generating capacity of up to 400 megawatts (MW) alternating current (ac) (up to 680 MW direct current [dc]). The Facility will have an average generating capacity of up to 200 MWac. The proposed Facility site boundary is shown on Figure B-1.

Applicant proposes to analyze impacts under the Oregon Energy Facility Siting Council (EFSC) standards using two design scenarios:

1. Full build-out without battery storage ("PV only")
2. Full build-out with battery storage (dispersed or centralized) ("PV plus storage")

Applicant is presenting two design scenarios assuming full buildout, both with and without battery storage, to reflect possible impacts. There is one potential layout presented for the PV only design scenario (Figure B-2), and two potential layouts presented for the PV plus storage design scenario: one with centralized storage and one with dispersed storage (Figures B-3 and B-4). Where applicable, for any given resource, the layout alternative that would likely have the greatest impact on the resource under consideration will be evaluated and is presented in the respective Application for Site Certificate (ASC) exhibit. Although there are two potential layouts associated with the PV plus storage design scenario, the discussions and analyses throughout the ASC assume that battery storage will be dispersed. The dispersed battery storage layout will likely have greater potential impacts on resources than centralized battery storage, due to the increased number of battery storage enclosures.

If the Facility includes battery storage, it will have more dc watts of nameplate capacity per watt of ac capacity and use the batteries to store overproduction until the energy can be utilized. The dc/ac ratio for a PV solar facility with storage is estimated at 1.8, whereas a typical PV solar facility without storage is about 1.4. These scenarios represent the maximum Facility footprint.

Refer to Figures B-2, B-3, and B-4 for representative Facility layout information.

Applicant intends to begin construction by December 2019, pending issuance of a Site Certificate from EFSC. Rather than estimating the size or schedule of each individual development phase, for purposes of this ASC and its analyses of impacts on various resources, Applicant assumes that construction activity in 2020 and the first quarter of 2021 will be modest. Applicant assumes that in the second quarter of 2021, regular construction activities will begin at an average rate of 0.8 MW per day (with up to 2 MW per day during peak summer months) with full Facility completion within two years thereafter.

Site Boundary Refinement

The proposed Facility size and site boundary are smaller than described in Applicant's Notice of Intent filed on February 16, 2018 (NOI). At the time the NOI was submitted, Applicant was exploring approximately 7,000 acres for potential development across four main Facility areas and associated generation tie (gen-tie) transmission line corridors. Subsequent to submittal of the NOI, Applicant referred to these Facility areas as Areas A through D (Figure B-1). After completing the resource studies, including desktop and field surveys, for this ASC, Applicant further evaluated the site boundary and reduced the size of the site boundary to avoid and minimize impacts to resource and account for refinement of Facility layout as follows:

- Eliminate Area B from the site boundary to avoid impacts on sensitive resources, including non-wetland waters, habitat, and cultural resources (refer to Exhibits J, P, and S for further discussion);
- Eliminate gen-tie transmission line corridors that are no longer needed with the removal of Area B;
- Eliminate Area C from the site boundary to avoid impacts on sensitive resources rather than refine the Facility layout to avoid and minimize potential impacts as a part of this ASC;
- Eliminate the gen-tie transmission line corridor associated with Area C, no longer needed with the removal of Area C; and
- Identify avoidance areas within Area A of the site boundary to avoid and minimize impacts on sensitive resources, including non-wetland waters, habitat, and cultural resources (refer to Exhibits J, P, and S for further discussion).

This ASC only analyzes the current site boundary under the applicable EFSC Standards. Some technical reports appended to and informing the exhibits in this ASC refer to Area B and Area C even though Applicant is now avoiding those areas. Applicant opted to keep this information in the technical reports to provide evidence to demonstrate that Applicant is taking steps to avoid and minimize impacts on sensitive resources and avoid disturbance to significant non-wetland waters; habitats and species; and historical, cultural, and archeological resources. Avoiding Area B and Area C also eliminates the need for multiple transmission line corridors and the point of

interconnection alternatives, which further reduces the Facility's impacts compared to the version proposed in the NOI.

Facility Customer Types

The Facility is being developed with the goal of offering maximum efficiency in terms of use of space and available technology, while providing maximum flexibility for potential customers. Applicant anticipates two customer types for the Facility:

- One or more customers who will enter into power purchase agreements with Applicant to purchase power directly from Applicant's Facility.
- One or more customers who will lease or purchase a portion of the Facility and directly own Facility assets. If a customer opts to own a portion of the Facility, Applicant and the customer may enter into a shared facilities agreement to share use of the Facility's related or supporting facilities and services and pursue a partial Site Certificate transfer and amendment to effectuate the ownership change.

For the second customer type, the Facility can be viewed as analogous to a single industrial park. The park may have one or more tenants, with each tenant exclusively occupying a portion of the industrial park and sharing with each other the common infrastructure. Similarly, one or more customers may own a portion of the Facility over which they have exclusive control (e.g., the customer's own energy facility or project, which may be PV solar only or PV solar combined with battery storage, depending on the customer's specifications), and the Facility's related or supporting facilities may be shared among customers under a shared facilities agreement.

Transferring and Amending the Site Certificate

If a customer seeks to purchase and own a portion of the Facility, Applicant may divide and transfer the Facility site certificate (as described further below) for the customer's specific energy facility asset. The customer's energy facility may then have its own site boundary, subject to the customer's site certificate terms and conditions, and that energy facility may be removed from the larger Facility site boundary, or there may be overlapping site boundaries. The customer's separate energy facility may be served by the Facility's related or supporting facilities within the Facility's site boundary via a shared facilities agreement.

The power purchase agreement customer is a contractual customer, and this customer type will not trigger a transfer or amendment of the site certificate under OAR chapter 345, division 27. A customer desiring direct project ownership, however, will require a transfer of a portion of the Facility site certificate. Accordingly, Applicant seeks the flexibility to divide and transfer the site certificate subsequent to its issuance to accommodate customers acquiring portions of the Facility. The process would likely involve the following steps:

- Applicant files notice of transfer with Oregon Department of Energy;
- Applicant files an amendment requesting to transfer portion of the Facility site certificate to customer; and
- Customer files an amendment requesting EFSC's approval to hold the transferred site certificate.

B.2 FACILITIES DESCRIPTION

OAR 345-021-0010(1) (b)(A) *A description of the proposed energy facility, including as applicable:*

> *(i) The nominal electric generating capacity and the average electrical generating capacity, as defined in ORS 469.300.*

Response:

PV Only

The Facility will provide a nominal generating capacity of up to 400 MWac (up to 560 MWdc), and an average generating capacity of up to 200 MWac.

PV Plus Storage

The Facility will provide a nominal generating capacity of up to 400 MWac (up to 680 MWdc), and an average generating capacity of up to 200 MWac.

> *(ii) Major components, structures and systems, including a description of the size, type and configuration of equipment used to generate electricity and useful thermal energy.*

Response:

Major Components, Structures, and Systems

The Facility will include the following major components (estimates based on preliminary design):

Table B-1 Major Facility Components

Component	PV Only	PV plus Storage (Dispersed)
3 MWac Block	160	160
Modules	1,326,858 (assumes 390 module wattage)	1,742,572 (assumes 390 module wattage)
Module Rows (on trackers)	16,587 x 78 module rows 636 x 52 module rows	21,644 x 78 module rows 1045 x 52 module rows
Posts	187,545	246,444
Inverters	160	160
Transformers	160	160

Key:
MWac = alternating current megawatts
PV = photovoltaic

Solar Modules

The PV solar panels will be installed to form module blocks consisting of the solar panels, trackers, racks, posts, inverters, transformers, and cabling. The likely solar panel specification used for the Facility will be a minimum 72-cell, 365-watt polycrystalline module installed on a single-axis tracker. However, Applicant seeks flexibility to use any type of similar, more advanced technology available at the time of final design. Figures B-2, B-3, and B-4 illustrate layouts using a 390-watt module. Applicant has not yet determined the manufacturer of panels to be used in the Facility, but all panels will be utility grade and obtained from a reputable manufacturer. Each module will measure approximately 3 by 7 feet (smaller options are available and might be selected) and will be placed on a non-specular metal galvanized steel rack. At full tilt, the panels will be approximately 7 feet high. Preliminary layout results in a ground coverage ratio of up to 34 percent, meaning that the area occupied by the panels (when tilted horizontally) will be 34 percent of the total area inside the fence. Refer to Figure B-5 for an illustration of installed trackers, racks, and panels that are similar to those described in this ASC.

Trackers and Racks

A typical 3-MW block has 100 rows of trackers, with 81 modules and 13 posts in each row. The rows are 15 feet apart, with 50 rows on either side of an inverter station. Arrangement of trackers and racks for the Facility will depend on final engineering. Each rack will be mounted 4 feet off the ground on a single-axis tracker that rotates 60 degrees to the east and west. Facility trackers will be manufactured by NetTracker or a comparable firm. The trackers will likely be made of nonspecular metal galvanized steel.

Posts

Each tracker will be supported by galvanized steel posts approximately 4 feet above ground height; post depth will vary depending on soil conditions, but embedment depth will range an average between 5 and 8 feet. Post locations and depths will be determined during final engineering and design.

Inverters and Converters

Before interconnecting to the electrical grid, the dc current must be converted from dc to ac power, and inverters serve this function. The inverter specification will fully comply with the applicable requirements of the National Electrical Code and Institute of Electrical and Electronics Engineers standards and will meet all requirements of Oregon's electric code and all requirements of interconnecting utility authorities. All inverter wiring and grounding methods will conform to the manufacturer's recommended practices, the Oregon electric code, and utility requirements.

PV Only

The Facility will use approximately 160 Power Electronics FS3000M or similar inverters to convert current from dc to ac. Refer to Figure B-6 for illustrative inverter specifications.

PV Plus Storage:

The Facility will use approximately 160 Power Electronics FS3000M or similar inverters to convert from dc to ac. In addition, to accommodate the charge and discharge of batteries, this Facility may include converters to convert the voltage of the dc current in and out of the battery. The specific inverters and/or converters will not be selected until final design is completed so that the most current technology available at that time may be considered.

Inverters will be outdoor rated and negatively grounded and will include ground fault detection and interruption capable of detecting ground faults in the dc current carrying conductors and components, intentionally grounded conductors, insulation monitoring, dc and ac overvoltage protection and lightning protection, humidity control, and data acquisition and communication monitoring interface.

Inverter Station

Each module block will include an inverter station, which will be approximately 8 feet wide, 30 feet long, and 5 feet tall.

Cabling and Combiner Boxes

Solar module technology uses direct current. Within each module block, several dc electrical cables will aggregate or "string" together into a combiner box. Combiner boxes will be located throughout each module block, and larger dc cables will run from combiner boxes to inverter stations. The cables will be located underground in excavated trenches approximately 4 to 5 feet deep and 3 feet wide. Where necessary due to ground conditions or sensitive areas (e.g., playas), the collector cable will be above ground in trays mounted on the racking below the panels. Applicant seeks flexibility to locate the collector cables underground or above ground depending on the ground conditions or sensitive areas, but wherever practical, Applicant will locate the collectors underground. Combiner boxes will have all required internal lightning and arc-fault circuit protection. All combiner boxes and isolation switches will be labeled "warning – electric shock hazard – do not touch terminals" and "terminals on both line and load sides may be energized in the open position."

Transformers

The inverter ac output voltage will be stepped up to a higher voltage (34.5 kilovolts [kV]) by pad-mounted transformers designed to integrate with the selected inverter. These medium voltage step-up transformers will be co-located with the inverters. Additionally, for projects that include storage the output voltage will be stepped up and stepped down to enable the power to enter and leave the batteries. Transformers will be collocated with the inverters and will be located within the inverter stations. Refer to Figure B-7 for an illustration of an inverter/ transformer installation.

(iii) A site plan and general arrangement of buildings, equipment and structures.

Response:

PV Only

A representative site plan showing the general arrangement of buildings, equipment, and structures for the Facility is provided in Figure B-2.

PV Plus Storage

A representative site plan showing the general arrangement of buildings, equipment, and structures is provided in Figures B-3 and B-4.

Final site plans and final design of solar modules and storage enclosures (and associated structures and equipment directly supporting the module blocks and storage enclosures) will vary

depending on final customer specifications (e.g., how much electricity the customer intends to generate and/or purchase) for the Facility.

(iv) Fuel and chemical storage facilities, including structures and systems for spill containment.

Response:

The transformers are the only structures that contain oil. A spill prevention control and countermeasure plan (SPCC Plan) will be put in place prior to construction. As part of the SPCC Plan, the transformers will be regularly monitored for leaks, and measures will be in place if any leaks are found to quickly control and remove oil. The generator step-up transformer will have a concrete catchment system.

(v) Equipment and systems for fire prevention and control.

Response:

The equipment will meet National Electrical Code and Institute of Electrical and Electronics Engineers standards and will not pose a significant fire risk. If a fire were to start inside the fence, its primary fuel would be surface vegetation. Facility roads will be designed to act as fire breaks and will be sufficiently sized for emergency vehicle access in accordance with 2014 Oregon Fire Code Section 503 and Appendix D (Fire Apparatus Access Roads). Specifically, roads inside the site boundary will be at least 12 feet wide and made of compacted native soil. There will be access to all collector substations. Applicant will install a perimeter road that is 20 feet wide with additional space to provide at least a 30-foot, noncombustible, defensible space clearance. These measures will help keep external fires out and internal fires in. Any potential fires inside the Facility site boundary will be controlled by trained Facility staff who will be able to access the Facility 24 hours a day, seven days a week. In the rare event of an electrical fire in the module blocks or substation, it is likely that Facility staff will monitor and contain the fire, but not try to extinguish it. The control house and operations and maintenance (O&M) building(s) will have smoke detectors, fire extinguishers, and eyewash stations to protect the buildings and workers.

No specific fire prevention or control system is required or recommended for the battery system. Local and state building and fire codes will be followed for the batteries and their enclosures.

B.3 DESCRIPTION OF RELATED OR SUPPORTING FACILITIES

OAR 345-021-0010(1)(b)(B) *A description of major components, structures and systems of each related or supporting facility.*

Response: The Facility will include the following related or supporting facilities:

Table B-2 Related or Supporting Facilities

Component	PV Only	PV plus Storage (Dispersed)
Direct current electrical system	Up to 2 million miles of cable; combiner boxes	Up to 2 million miles of cables; combiner boxes
34.5-kV ac electrical system	Inverters, step-up transformers, and 160 "home run" cables to the collector substations	Inverters, step-up transformers, and 160 "home run" cables to the collector substations
Collector Susbstations	Up to four collector substations with step-up transformers	Up to four collector substations with step-up transformers
115-kV generation-tie (gen-tie) transmission line	2 miles	2 miles
115/500-kV step-up substation	One, with up to two 115- to 500-kV transformers	One, with up to two 115- to 500-kV transformers
Operations &Maintenance Buildings	Up to two	Up to two
Perimeter Fence	Approximately 18 miles	Approximately 18 miles
Battery Storage Enclosures	0	Up to 134
Batteries	0	Yes
Inverters	160	160
Redox Electrolyte Fluid	0	14,000 gallons per MW

Key:
ac = alternating current
kV = kilovolt
MW = megawatt

Related or supporting facilities consist of the 34.5-kV collection system, collector substations, 115-kV gen-tie transmission line, 115/500-kV step-up substation and transformer, O&M building(s), access and service roads and gates, temporary staging areas, perimeter fence, and the storage system (including cell stack, balance of plant, and enclosures).

34.5-kV Electrical Collection System

The Facility's collection system carries power generated by the solar panels to the combiner boxes and to the inverter pads. Power will be initially generated by the PV panels at 1,500 volts, move through the underground dc cabling system to the inverters, then step up to 34.5 kV.

Collector Substations

The Facility may have up to four collector substations, occupying approximately 1 acre each. Each collector substation includes equipment, foundations, poles, and anchoring systems.

115-kV Gen-tie Transmission Line

At each collector substation, power will be increased to 115 kV through pad-mounted transformers. The power will then run from the collector substation via an overhead 115-kV gen-tie transmission line to a new 115/500-kV substation near the point of interconnection with the Portland General Electric 500-kV transmission line. The Facility will include a new double-circuit 115 kV overhead gen-tie transmission line of approximately 2 miles. The gen-tie transmission line will be located in a 60-foot-wide corridor within the site boundary.

115/500-kV Step-up Substation

The Facility will include a new 115/500-kV step-up substation located at the point of interconnection, where the power will be stepped up from 115 to 500 kV utilizing one or two step-up transformers.[1] The approximate dimensions of the 115/500-kV step up substation are 300 feet by 300 feet.

O&M Building

The Facility will have up to two O&M building(s) within the site boundary to be used primarily for storage of extra equipment and supplies. Each O&M building will be located on approximately 0.5 acres (which includes parking) and will consist of a building approximately 50 by 50 feet in size. Each O&M building will consist of a warehouse-like storage area; potentially a bathroom, a sink, and a work area with a table or desk; one or two exempt groundwater wells; and possibly a septic system. Applicant may opt to not install a bathroom and sink, in which case Applicant would contract with a local service provider for portable toilets and handwashing stations. Under this scenario, no on-site septic system would be required. Refer to Exhibit U for details about service providers.

Temporary Staging Area(s)

During construction, Applicant will deliver equipment directly to active work areas within the site boundary to facilitate assembly and installation of material and equipment. Applicant will mow vegetation in, but will not clear (i.e., grade or perform other soil disturbance), specific or

[1] The specifications for the gen-tie and step-up substation will be confirmed during final engineering and design.

central staging areas. Lay-down areas will ultimately become part of the Facility's permanent footprint, and therefore no temporary staging areas are identified on the Facility maps.

Perimeter Fence

The Facility will be fully fenced in and secure, with a perimeter fence at least 7 feet tall (including 1 foot of barbed wire).

Batteries and Related Components

Additional related or supporting facilities for the PV plus storage Facility will include flow technology batteries and related components. The estimated capacity of battery storage facilities is up to approximately 50 MW of charge/discharge capacity and up to 250 MWh of long-term storage (5–6 hours). Applicant anticipates using long-duration flow batteries developed for utility-scale projects. Applicant does not intend to install and operate lithium batteries and therefore is not seeking approval from EFSC at this time to use lithium batteries as an alternative.

Storage Enclosures

The batteries will be maintained in steel-frame enclosures to protect against moisture and dust. Flow batteries may be configured and sized within the storage enclosure in a wide variety of ways depending on desired MW/megawatt hours (MWh) output. For example, a system containing five 250-kilowatt energy storage units, which would provide 1.25 MW/6 MWh of storage, could be located in a structure measuring approximately 50 feet wide by 67 feet long by 30 feet high (0.08 acres). Refer to Figure B-8 for an illustration of a battery storage enclosure.

The PV plus storage (dispersed) Facility could include up to 134 battery storage enclosures occupying approximately 25 acres of the 3,921-acre site.

The PV plus storage (centralized) Facility could include up to three battery storage enclosures occupying less than 10 acres of the 3,921-acre site.

Cell Stack

Flow batteries consist of a cell stack with the balance of plant (BOP) on either side. The cell stack contains membranes, electrodes, and bipolar plates. The cell stack is where the battery charge and discharge occur. Refer to Figure B-9 for an illustration of a flow battery.

Balance of Plant

The BOP consists of large polymer tanks on each side of the cell stack, pumps, piping (polyvinyl chloride), thermal controls, and power conversion hardware (single stage, bidirectional inverters). The storage tanks that contain the water-based electrolyte used in the system have primary and secondary spill containment devices to avoid inadvertent mixing of the aqueous electrolytes contained in the tanks with local groundwater. The electrolyte fluid is non-toxic, non-flammable, and thermally stable. The thermal system control in the BOP is a combination of a heating, ventilation, air conditioning (HVAC) air-to-air and glycol-to-air (non-toxic) heat exchanger, keeping the batteries thermally stable over a wide operating range.

B.4 DIMENSIONS OF FACILITIES AND VISIBLE FEATURES

OAR-345-021-0010(1)(b)(C) *The approximate dimensions of major facility structures and visible features.*

Response:

PV Module Block Dimensions

PV only.

The Facility will include approximately 130 module blocks.

PV plus storage.

The Facility will include approximately 130 module blocks.

In either design scenario, each module block occupies approximately 22 acres. At maximum rotation, the tops of the panels are approximately 7 feet tall above the ground.

There is a common misperception that PV solar panels result in glint and glare that pose a public safety risk or potential visual impact. Glint, also known as a specular reflection, may be produced by direct reflection of sunlight from the surface of a PV module. Glint is typically brief in duration and highly directional and can cause temporary viewer distraction. Glare is reflective diffused light caused by light from artificial sources or the sun reflecting off of light-colored or smooth surfaces such as metal, glass, water, or polished stone. Glare intensity varies depending on the source and intensity of the light, time of day, time of year, angle of reflectance, weather, atmospheric conditions, color and texture of material surface finish, length of exposure, nature and sensitivity of receptors, and other factors. According to the Bureau of Land Management's (BLM's) Best Management Practices for Reducing Visual Impacts of Renewable Energy

Facilities on BLM-Administered Lands, the potential for solar PV panel glare varies "…depending on panel orientation, sun angle, viewing angle, viewer distance, and other visibility factors" (U.S. Department of the Interior 2013).

The solar panel surfaces will be dark bluish in color and have very low reflectivity due to the use of an anti-reflective coating, dimpling of the panel glass surface, and the overall light-absorption character of the low-iron glass typically used in solar PV modules. Modern solar PV panels are designed to reflect as little as 2 percent of incoming sunlight, depending on the angle of the sun (Federal Aviation Administration 2010).

Given that PV panels will reflect very little light and that the Facility will be located away from military training routes, Applicant does not expect the Facility to pose a concern related to glint or glare or be a concern for aircraft, including military overflights, which was confirmed by the U.S. Navy during consultation (refer to Appendix B-1).

O&M Building Dimensions

Each O&M building will be located on approximately 0.5 acres (with parking) and will consist of a building approximately 50 feet by 50 feet in size and 14 feet in height. Applicant seeks approval for up to two O&M buildings within the site boundary.

Collector Substation Dimensions

The Facility will include up to four collector substations, each approximately 1 acre in size and 10 feet in height (with lightning protection of up to 40 feet).

Transmission Line Dimensions

The 115-kV gen-tie transmission line will run from a collector substation to the 115/500 kV step-up substation and will be approximately 2 miles in length and up to 70 feet in height. The overhead gen-tie transmission line will be supported by single steel monopole structures up to 6 feet in diameter, spaced approximately 300 feet apart, which will be set on concrete foundations and which may have directional anchoring system structures.

Battery Storage Enclosures

Batteries will be maintained in steel-frame enclosures to protect against moisture and dust. A PV plus storage (dispersed) Facility could include up to 134 battery storage enclosures occupying less than 25 acres within the approximately 3,921-acre site boundary. Dispersed battery storage enclosures would be approximately 50 feet wide by 67 feet long by 30 feet high and occupy approximately 0.08 acres each.

A PV plus storage (centralized) Facility could include up to three battery storage enclosures occupying less than 10 acres within the approximately 3,921-acre site boundary. Centralized battery storage enclosures would be approximately 200 feet wide by 200 feet long by 30 feet high and occupy approximately 1 acre each.

B.5 CORRIDOR SELECTION ASSESSMENT

OAR 345-021-0010(1)(b)(D) *If the proposed energy facility is a pipeline or a transmission line or has, as a related or supporting facility, a transmission line or pipeline that, by itself, is an energy facility under the definition in ORS 469.300, a corridor selection assessment explaining how the applicant selected the corridor(s) for analysis in the application.*

Response:

The Facility will have one 115-kV gen-tie transmission line as a related or supporting facility, but the transmission line is not, by itself, an energy facility under the definition in Oregon Revised Statutes 469.300. The Facility will not include a pipeline. Therefore, this rule is not applicable

B.6 TRANSMISSION LINES AND PIPELINE

OAR 345-021-0010(1)(b)(E) *If the proposed energy facility is a pipeline or transmission line or has, as a related or supporting facility, a transmission line or pipeline of any size:*

(i) The length of the pipeline or transmission line.

Response:

The proposed Facility will include one newly constructed, parallel double circuit 115-kV gen-tie transmission line from the Facility 115-kV collector substation(s) in Area A to the 115/500-kV substation approximately 2 miles to the west and adjacent to the three existing 500-kV transmission lines owned by Portland General Electric Company, Pacificorp and Bonneville Power Authority.

(ii) The proposed right-of-way width of the pipeline or transmission line, including to what extent new right-of-way will be required or existing right-of-way will be widened.

Response:

The 115-kV gen-tie transmission line will be constructed in the Lake County right-of-way, which is 30 feet wide on either side of the center line in Connley Lane.

(iii) If the proposed transmission line or pipeline corridor follows or includes public right-of-way, a description of where the transmission line or pipeline would be located within the public right-of-way, to the extent known. If the applicant proposes to locate all or part of a transmission line or pipeline adjacent to but not within the public right-of-way, describe the reasons for locating the transmission line or pipeline outside the public right-of-way. The applicant must include a set of clear and objective criteria and a description of the type of evidence that would support locating the transmission line or pipeline outside the public right-of-way, based on those criteria.

Response:

The proposed gen-tie transmission line will be built within the County's right-of-way opposite the existing distribution line operated by Midstate Electric Cooperative. The proposed gen-tie transmission line will be placed in the right-of-way, as indicated on Figure B-2.

(iv) For pipelines, the operating pressure and delivery capacity in thousand cubic feet per day and the diameter and location, above or below ground, of each pipeline.

Response:

The Facility will not have a pipeline; therefore, this rule is not applicable.

(v) For transmission lines, the rated voltage, load carrying capacity, and type of current and a description of transmission line structures and their dimensions.

Response:

The proposed overhead gen-tie transmission line will have a voltage rating of 115 kV and will be able to carry the full output of the Facility. Refer to Section B.4 for transmission line dimensions.

B.7 CONSTRUCTION SCHEDULE

OAR 345-021-0010(1)(b)(F) *A construction schedule including the date by which the applicant proposes to begin construction and the date by which the applicant proposes to complete construction. Construction is defined in OAR 345-001-0010. The applicant shall describe in this exhibit all work on the site that the applicant intends to begin before the Council issues a site certificate. The applicant shall include an estimate of the cost of that work. For the purpose of*

this exhibit, "work on the site" means any work within a site or corridor, other than surveying, exploration or other activities to define or characterize the site or corridor, that the applicant anticipates or has performed as of the time of submitting the application:

Response:

Applicant proposes to begin construction on or before December 31, 2019 and to complete Facility construction by the end of 2023 at the latest. This timeline allows for unexpected work interruptions, work start delays, and other contingencies.

Applicant does not anticipate beginning any work within the site boundary for the Facility before the EFSC has issued a site certificate. However, if any work is required, it will be limited to surveying, exploration or other activities to define or characterize the site for purposes of finalizing the Facility's final design.

B.8 REFERENCES

Federal Aviation Administration. 2010. *Technical Guidance for Evaluating Selected Solar Technologies on Airports.* Washington, DC. Airport Planning and Environmental Division.

United States Department of the Interior. 2013. Best Management Practices for Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands. Bureau of Land Management. Cheyenne, Wyoming. 342 pp, April.

Area C (removed from Facility plans)

Area D

Gen-tie Transmission Line Corridor

Area A

County Road 5-10C (Connley Lane)

Gen-ties Transmission lines (removed from Facility plans)

Area B (removed from Facility plans)

Fort Rock Rd

County Road 5-14G (Oil Dri Road)

M:\Portland\Obsidian\Maps\MXDs\ASC\B1_ProjectOverview.mxd

- Site Boundary
- Facility
- Areas removed from Facility plans
- Gen-tie Transmission Line
- Gen-tie Transmission Lines (removed from Facility plans)
- Bonneville Power Administration Transmission Line (500kV)
- PGE Transmission Line (500kV)

Note: Area B, Area C, and their associated gen-tie transmission lines are no longer being considered for development

0 1 2 Miles

N

0 1 2 Kilometers

Figure B-1
Facility Overview

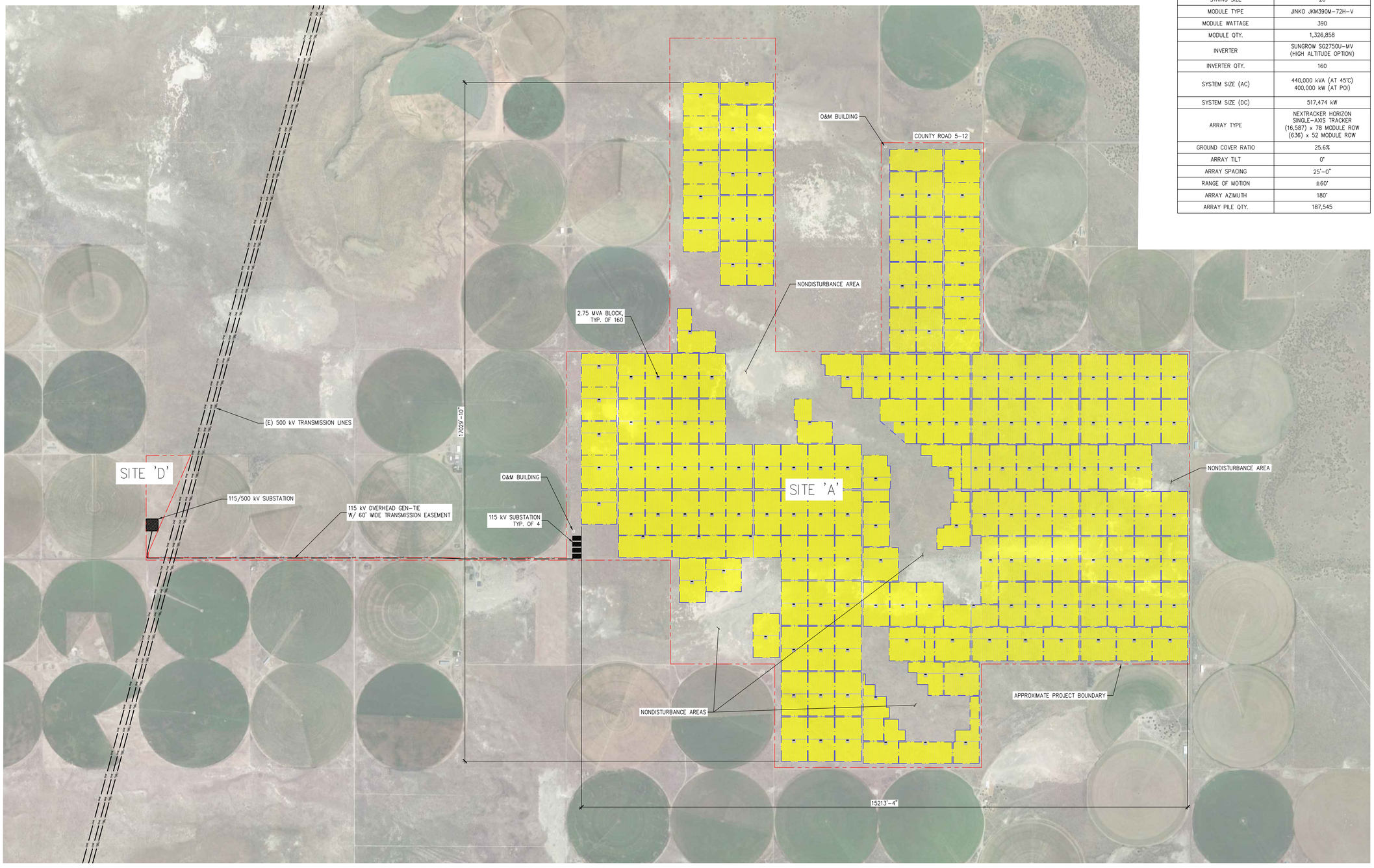
Obsidian Solar Center

October 2019

Obsidian Solar Center LLC

Sources: Esri 2019

PART B SYSTEM SUMMARY	
PROJECT LOCATION	LAKE COUNTY, OR
ALTITUDE	4,735'
DESIGN TEMPERATURE (MIN.)	-23°C
STRING SIZE	26
MODULE TYPE	JINKO JKM390M-72H-V
MODULE WATTAGE	390
MODULE QTY.	1,326,858
INVERTER	SUNGROW SG2750U-MV (HIGH ALTITUDE OPTION)
INVERTER QTY.	160
SYSTEM SIZE (AC)	440,000 kVA (AT 45°C) 400,000 kW (AT POI)
SYSTEM SIZE (DC)	517,474 kW
ARRAY TYPE	NEXTRACKER HORIZON SINGLE-AXIS TRACKER (16,587) x 78 MODULE ROW (636) x 52 MODULE ROW
GROUND COVER RATIO	25.6%
ARRAY TILT	0°
ARRAY SPACING	25'-0"
RANGE OF MOTION	±60°
ARRAY AZIMUTH	180°
ARRAY PILE QTY.	187,545



PHOTOVOLTAIC ARRAY SITE PLAN

N

0 250' 500' 1000' 2000'

1" = 1000'-0"

Figure B-2

PRELIMINARY

SWINERTON RENEWABLE ENERGY

CONSULTANT

BLYMYER ENGINEERS
1101 MARINA VILLAGE PARKWAY # 100
ALAMEDA, CA 94501 510.521.3773

STAMP/SEAL

REV #	DESCRIPTION	DATE
	FOR CLIENT REVIEW	

PROJECT TITLE:

FORT ROCK SOLAR
SINGLE-AXIS TRACKER
PHOTOVOLTAIC ARRAYS
400 MWAC
LAKE COUNTY, OR

SHEET TITLE:

PHOTOVOLTAIC ARRAY SITE PLAN

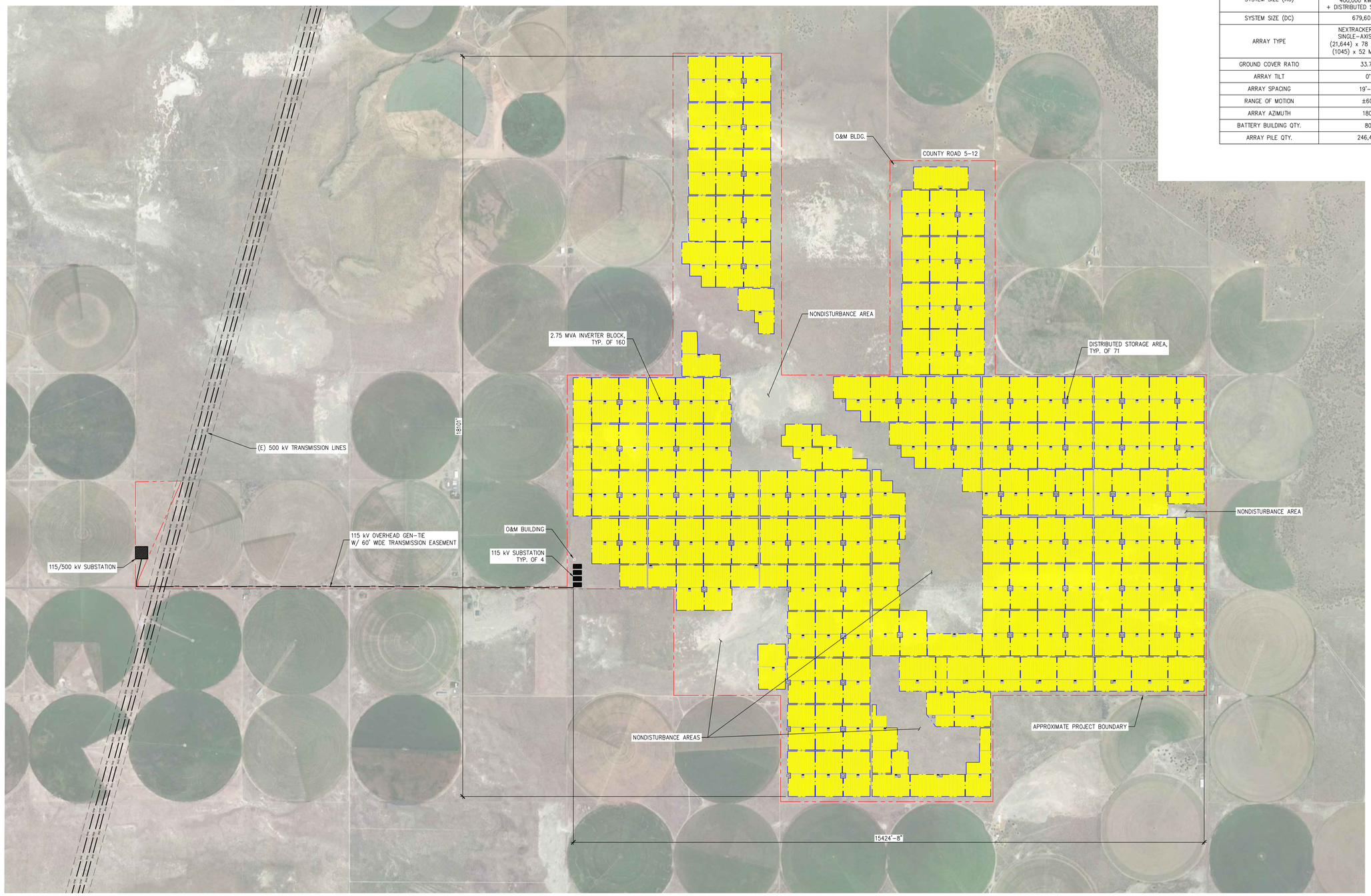
Figure B-2

JOB NO.: 2180XX	PROJECT MGR: CG
DRAWN: **BA**	SCALE: **1" = 1000'-0"**

SHEET NUMBER

G-100.0

SYSTEM SUMMARY	
PROJECT LOCATION	LAKE COUNTY, OR
ALTITUDE	4,735'
DESIGN TEMPERATURE (MIN.)	−23°C
STRING SIZE	26
MODULE TYPE	JINKO JKM390M−72H−V
MODULE WATTAGE	390
MODULE QTY.	1,742,572
INVERTER	SUNGROW SG2750U−MV (HIGH ALTITUDE OPTION)
INVERTER QTY.	160
SYSTEM SIZE (AC)	440,000 kVA (AT 45°C) 400,000 kW (AT POI) + DISTRIBUTED STORAGE BESS
SYSTEM SIZE (DC)	679,603 kW
ARRAY TYPE	NEXTRACKER HORIZON SINGLE−AXIS TRACKER (21,644) x 78 MODULE ROW (1045) x 52 MODULE ROW
GROUND COVER RATIO	33.7%
ARRAY TILT	0°
ARRAY SPACING	19'−0"
RANGE OF MOTION	±60°
ARRAY AZIMUTH	180°
BATTERY BUILDING QTY.	80
ARRAY PILE QTY.	246,444



PHOTOVOLTAIC ARRAY SITE PLAN

SCALE: 1" = 1000'-0"

N

0 250' 500' 1000' 2000'

1" = 1000'-0"

Figure B-3

PRELIMINARY

\\10.10.101.9\cad_drawings\Acad\2018dwg\Swinerton Fort Rock OR Obsidian\01 CAD\option #2\working\G-100.dwg September 06, 2018 - 2:54PM bsuyeung

SWINERTON RENEWABLE ENERGY

CONSULTANT

BLYMYER ENGINEERS
1101 MARINA VILLAGE PARKWAY # 100
ALAMEDA, CA 94501 510.521.3773

STAMP/SEAL

REV #	DESCRIPTION	DATE
	FOR CLIENT REVIEW	

PROJECT TITLE:

OBSIDIAN SOLAR CENTER
SINGLE-AXIS TRACKER
PHOTOVOLTAIC ARRAYS
400 MWAC
LAKE COUNTY, OR

SHEET TITLE:

PHOTOVOLTAIC ARRAY SITE PLAN

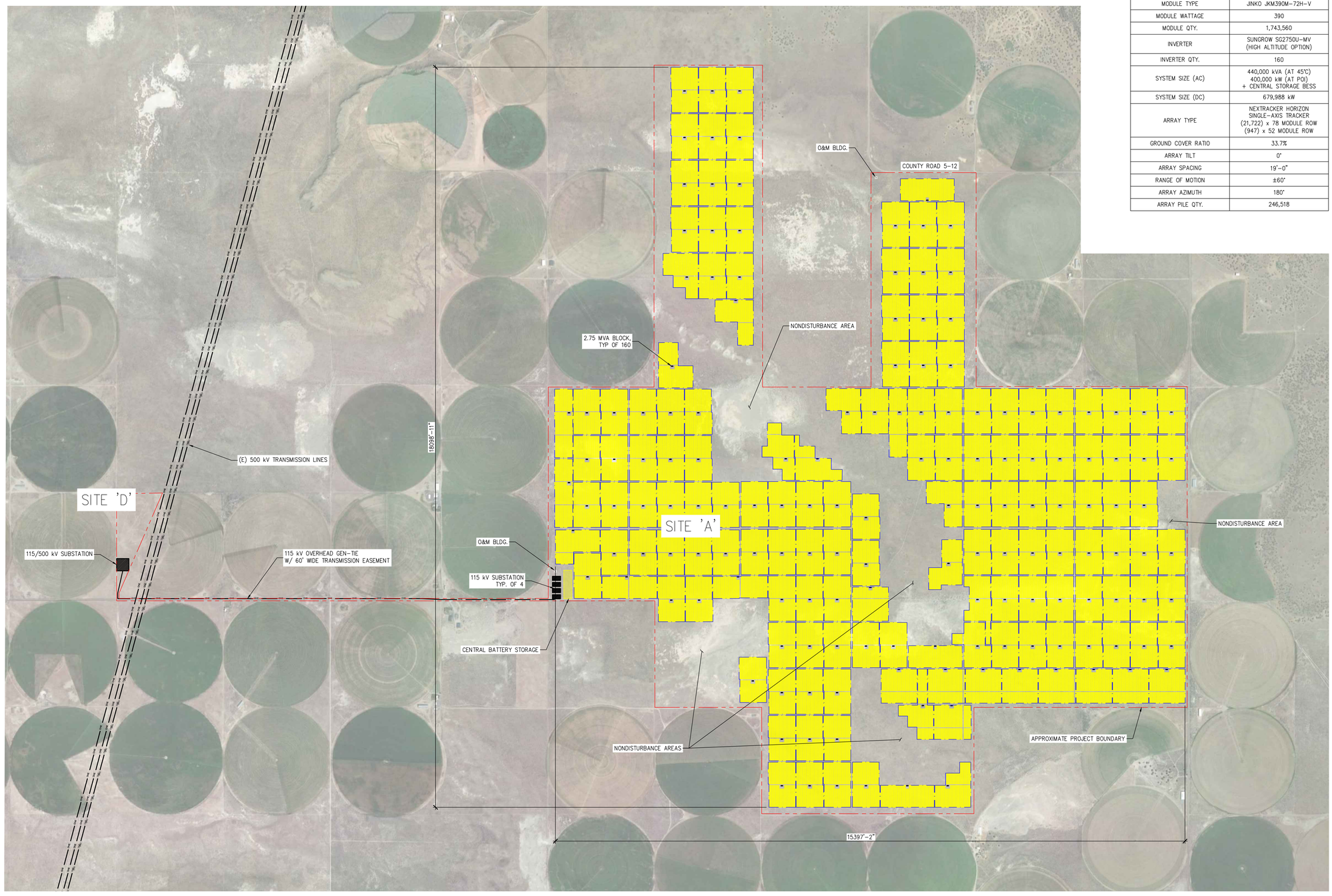
Figure B-3

JOB NO.: 2180XX	PROJECT MGR: CG
DRAWN: BA	SCALE: 1" = 1000'-0"

SHEET NUMBER

G-100.0

SYSTEM SUMMARY	
PROJECT LOCATION	LAKE COUNTY, OR
ALTITUDE	4,735'
DESIGN TEMPERATURE (MIN.)	-23°C
STRING SIZE	26
MODULE TYPE	JINKO JKM390M-72H-V
MODULE WATTAGE	390
MODULE QTY.	1,743,560
INVERTER	SUNGROW SG2750U-MV (HIGH ALTITUDE OPTION)
INVERTER QTY.	160
SYSTEM SIZE (AC)	440,000 kVA (AT 45°C) 400,000 kW (AT POI) + CENTRAL STORAGE BESS
SYSTEM SIZE (DC)	679,988 kW
ARRAY TYPE	NEXTRACKER HORIZON SINGLE-AXIS TRACKER (21,722) x 78 MODULE ROW (947) x 52 MODULE ROW
GROUND COVER RATIO	33.7%
ARRAY TILT	0°
ARRAY SPACING	19'-0"
RANGE OF MOTION	±60°
ARRAY AZIMUTH	180°
ARRAY PILE QTY.	246,518



PHOTOVOLTAIC ARRAY SITE PLAN
SCALE: 1" = 1000'-0"

N

0 250' 500' 1000' 2000'
1" = 1000'-0"

Figure B-4

PRELIMINARY

SWINERTON
RENEWABLE ENERGY

CONSULTANT

BLYMYER
ENGINEERS
1101 MARINA VILLAGE PARKWAY # 100
ALAMEDA, CA 94501 510.521.3773

STAMP/SEAL

REV #	DESCRIPTION	DATE
	FOR CLIENT REVIEW	

PROJECT TITLE:
FORT ROCK SOLAR
SINGLE-AXIS TRACKER
PHOTOVOLTAIC ARRAYS
400 MWAC
LAKE COUNTY, OR

SHEET TITLE:
PHOTOVOLTAIC ARRAY
SITE PLAN

Figure B-4

JOB NO.: 2180XX	PROJECT MGR: CG
DRAWN: BA	SCALE: 1" = 1000'-0"

SHEET NUMBER
G-100.0

Figure B-5
Illustration of Installed Solar Facility

Obsidian Solar Center

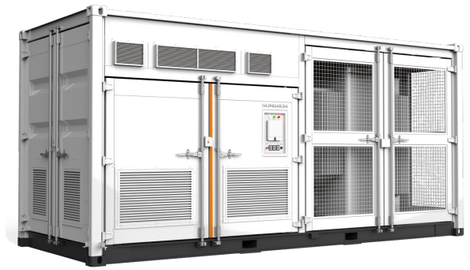
October 2019

Obsidian Solar Center LLC

SUNGROW

SG2500U-MV

Turnkey Station for North America 1500 Vdc System - MV Transformer Integrated



High Yield

- Advanced three-level technology, max. inverter efficiency 98.8%
- Effective cooling, 1.1 overload capacity, no derating up to 50 ℃
- Max. DC/AC ratio more than 1.5

Easy O&M

- Integrated current, voltage and MV parameters monitoring function for online analysis and fast trouble shooting
- Modular design, easy for maintenance
- Convenient external LCD

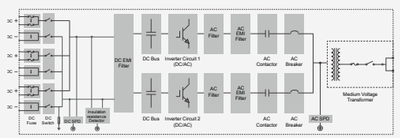
Saved Investment

- Low transportation and installation cost due to 20-foot container design
- DC 1500 V system, low system cost
- Integrated MV transformer and LV auxiliary power supply

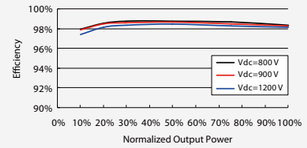
Grid Support

- Comply with UL 1741, UL 1741 SA, IEEE 1547, Rule 21 and NEC code
- Grid support including L/HVRT, L/HFRT, soft start/stop, specified power factor control and reactive power support

Circuit Diagram



Inverter CEC Efficiency Curve



SG2500U-MV

Input (DC)	SG2500U-MV
Max. PV input voltage	1500V
Min. PV input voltage / Startup input voltage	800 V / 840 V
MPP voltage range for nominal power	800 – 1300 V
No. of independent MPP inputs	1
No. of DC inputs	21
Max. PV input current	3508 A
Max. DC short-circuit current	4210 A
PV array configuration	Negative grounding

Output (AC)	
AC output power	2750 kVA @ 45 ˚C / 2500 kVA @ 50 ˚C
Max. inverter output current	2886 A
AC voltage range	10 – 35 kV
Nominal grid frequency / Grid frequency range	50 Hz / 45 – 55 Hz, 60 Hz / 55 – 65 Hz
THD	< 3 % (at nominal power)
DC current injection	< 0.5 % In
Power factor at nominal power / Adjustable power factor	> 0.99 / 0.8 leading – 0.8 lagging
Feed-in phases / Connection phases	3 / 3

Efficiency	
Inverter max. efficiency / Inverter CEC efficiency	98.8 % / 98.5 %

Transformer	
Transformer rated power	2500 kVA
Transformer max. power	2750 kVA
LV / MV voltage	0.55 kV / 10 – 35 kV
Transformer vector	Dy1
Transformer cooling type	ONAN (Oil Natural Air Natural)
Oil type	Mineral oil (PCB free) or degradable oil on request

Protection	
DC input protection	Load break switch + fuse
Inverter output protection	Circuit breaker
AC MV output protection	Load break switch + fuse
Overvoltage protection	DC Type II / AC Type II
Grid monitoring / Ground fault monitoring	Yes / Yes
Insulation monitoring	Optional
Overheat protection	Yes

General Data	
Dimensions (W*H*D)	6058*2896*2438 mm 238.5"*114.0"*96.0"
Weight	15.7 T 34612.6 lb
Degree of protection	NEMA 3R
Auxiliary power supply	110 Vac, 5 kVA / Optional: 480 Vac, 30 kVA
Operating ambient temperature range	-30 to 60 ℃ (> 50 ℃ derating) -22 to 140 ℉ (> 122 ℉ derating)
Allowable relative humidity range (non-condensing)	0 – 95 %
Cooling method	Temperature controlled forced air cooling
Max. operating altitude	1000 m (standard) / > 1000 m (optional) 3280.8 ft(standard) / > 3280.8 (optional)
Display	Touch screen
Communication	Standard: RS485, Ethernet; Optional: optical fiber
Compliance	UL 1741, IEEE 1547, UL1741 SA, NEC 2014/2017
Grid support	Night SVG function (optional), L/HVRT, L/HFRT, active & reactive power control and power ramp rate control

Figure B-6
Representative Inverter Specifications

Obsidian Solar Center

October 2019

Figure B-7
Illustration of Inverter/Transformer Installation

Obsidian Solar Center

October 2019

Obsidian Solar Center LLC

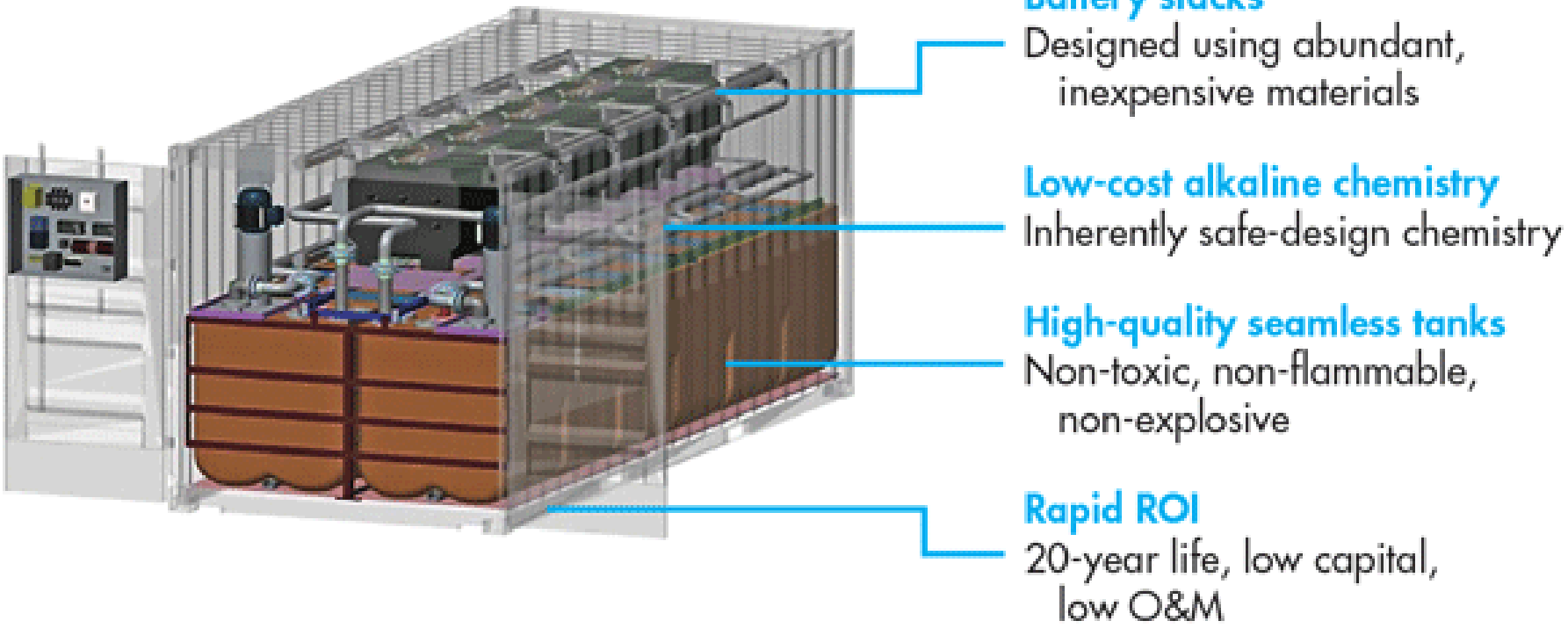
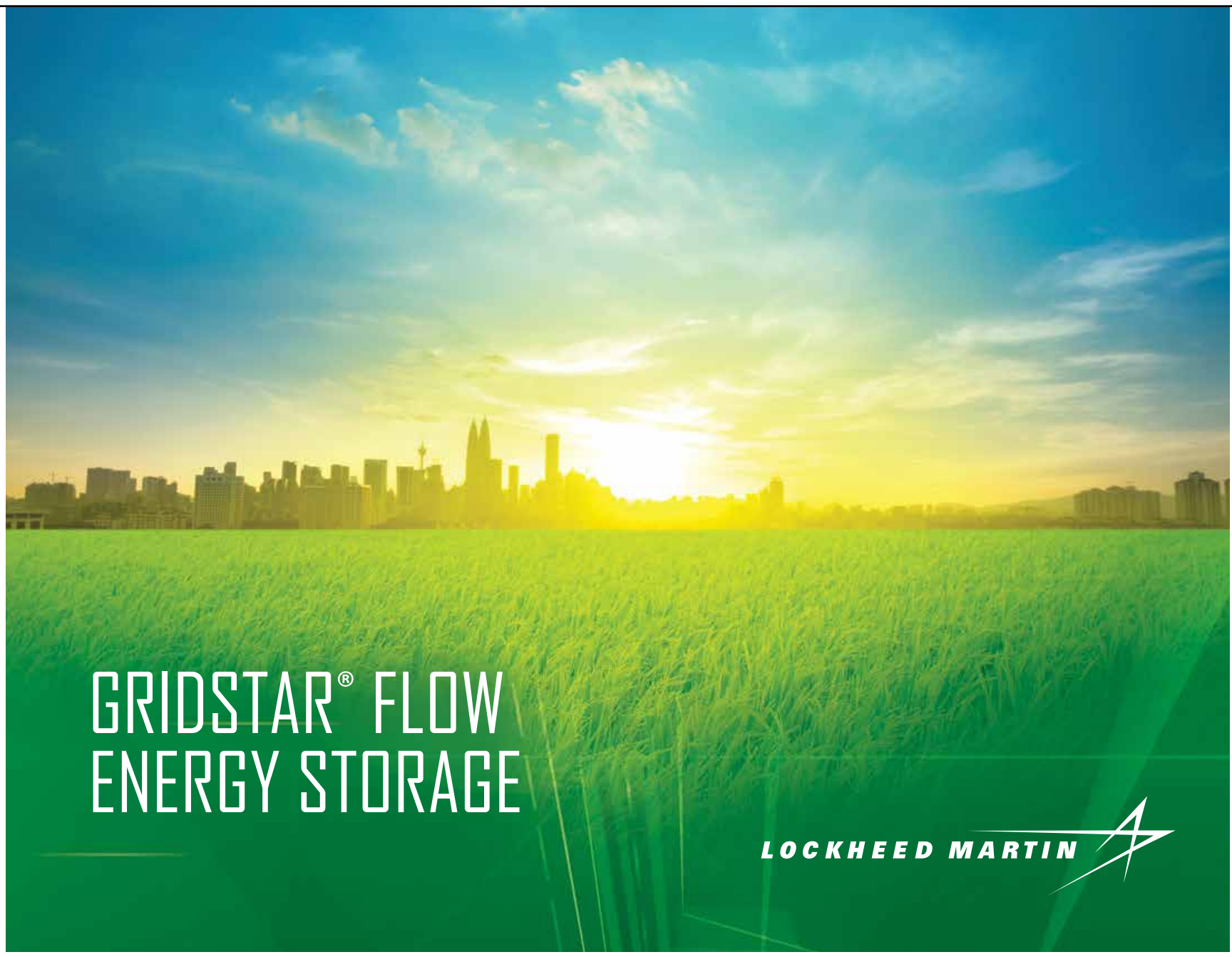


Figure B-8
Illustration of a Battery Storage Enclosure

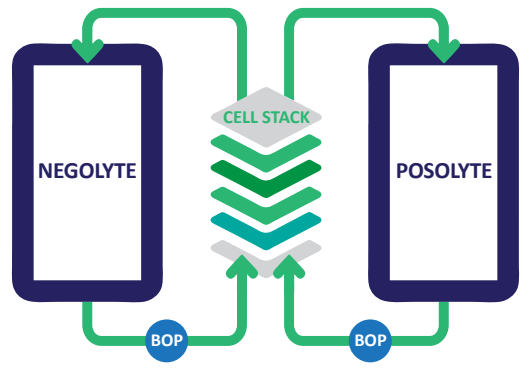


GRIDSTAR® FLOW ENERGY STORAGE SYSTEM

Lockheed Martin Energy is pioneering a new flow battery designed to provide **flexible, durable, long-duration (>6 hours) energy storage** for utility scale projects.

Applications:

- Large-scale renewables integration
- Transmission and distribution asset deferral
- Large-scale industrial energy management
- Utility reserve capacity and peak power
- Microgrid support



CELL STACK:
- Membranes
- Electrodes
- Bipolar plates

ACTIVE MATERIALS:
- Redox-active compounds (Posolyte, Negolyte)

BALANCE OF PLANT (BOP):
- Pumps, tanks, piping
- Control & power conversion hardware

Advantages

Long discharge duration and deep charge-discharge cycles

Low total cost of ownership

Long useful life

System-level safety and siteability – non-flammable battery chemistry

Full Lockheed Martin warranty

Coordination Chemistry Flow Battery (CCFB)

Flow batteries differ from sealed batteries (e.g., lead acid, lithium-ion) in that they separate the power and energy portions of a battery system and allow each to be independently sized. Energy is stored in a liquid electrolyte which is flowed through a stack of electrodes.

Lockheed Martin's GridStar Flow system is based on our proprietary battery chemistry comprising metal ligand coordination compounds. The chemistry combines low-cost, earth abundant transition metals with commodity chemical ligands to optimize battery performance and affordability.

GridStar Flow systems are designed to exhibit lower system cost, higher efficiency, and longer useful life than currently available long-duration batteries.

Contact Information:
storage@lmcoenergy.com, (617) 374-3797 x234
www.lockheedmartin.com/energystorage

LOCKHEED MARTIN

Figure B-9
Illustration of a Flow Battery

Obsidian Solar Center

October 2019

Appendix B-1
U.S. Navy Confirmation Correspondence

From: Peacher, Kimberly N CIV NAVFAC NW, AM <kimberly.peacher@navy.mil>
Sent: Thursday, July 19, 2018 3:41 PM
To: Michelle Slater <mslater@obsidianrenewables.com>
Subject: RE: NOI Comment re Obsidian Solar Center

Michelle,

Based on the information provided, most of the development and interconnect infrastructure will be on or outside of the western lateral limits of the VR-1353 and IR-342. As such no impacts will occur from the current proposed location of the transmission infrastructure.

If the location or project components change please let me know.

Thank you.

V/R,
Kimberly Peacher
Community Planning & Liaison Officer
Northwest Training Range Complex
(360) 930-4085

-----Original Message-----
From: Michelle Slater <mslater@obsidianrenewables.com>
Sent: Thursday, July 19, 2018 2:58 PM
To: Peacher, Kimberly N CIV NAVFAC NW, AM <kimberly.peacher@navy.mil>
Subject: [Non-DoD Source] RE: NOI Comment re Obsidian Solar Center

Kimberly,

Thank you for the reply. I spoke to our contractor today and confirmed that the expected height of the transmission poles is 70 feet.

The potential route for the line is from Fort Rock Road (County Road 5-10) east along Connley Lane to the proposed point of interconnection (area D) and west from Area A to Area D. There is a Midstate Cooperative distribution line along that same route; we would be on the opposite side of the street from Midstate in the County right of way. It is depicted on the attachment called 7.19.18 OSC map - transmission. I am also attaching Figure G-4 from our notice of intent to file with EFSC (filed in January) - the site boundary is superseded (and shown transmission alternatives have been dropped) but it gives a broader geographic context for the project area.

Please let me know if you need any additional information for your evaluation.
Thank you,
Michelle

-----Original Message-----
From: Peacher, Kimberly N CIV NAVFAC NW, AM <kimberly.peacher@navy.mil>

Sent: Thursday, July 19, 2018 2:30 PM
To: Michelle Slater <mslater@obsidianrenewables.com>
Subject: RE: NOI Comment re Obsidian Solar Center

Hello Michelle,

Thank you for following up.

Based on the project location we don't foresee glint/glare to be a concern for military overflights. I did notice that the SANDIA tools is now for military, state, and federal government employees only. They do have another tool references on the website - Forge Solar, which provides a free trial. For future reference, we can also do a review of the project using SANDIA. Despite better technology and engineering, solar projects can still create a potential hazard in such locations where there is a sharp turning radius and therefore still needs to be evaluated on a project by project basis.

Will the 115kV line will be under 100'? Do you have a map depicting the location of the line?

The OEAAA Preliminary Screening Tool helps provide a very broad and general overview but it doesn't account for such factors as cumulative impacts, secondary impacts, nor does it provide a comprehensive assessment accounting for numerous factors such as already built infrastructure and specific missions that play into our review. For review of projects it is best to conduct an early consultation with the military personnel for a thorough review of the project and all potential impacts.

Thank you.

V/R,
Kimberly Peacher
Community Planning & Liaison Officer
Northwest Training Range Complex
(360) 930-4085

-----Original Message-----
From: Michelle Slater <mslater@obsidianrenewables.com>
Sent: Monday, July 16, 2018 5:19 PM
To: Peacher, Kimberly N CIV NAVFAC NW, AM <kimberly.peacher@navy.mil>
Subject: [Non-DoD Source] RE: NOI Comment re Obsidian Solar Center

Kimberly,

I am following up with you regarding the proposed solar project in Ft Rock, Lake County Oregon. I want to first confirm that you have no further questions about the transmission infrastructure or, if you do, to clarify what information you need.

Second, I wanted to respond to your question about a glint/glare analysis. We have not conducted such an analysis. PV panels do not typically present the same glint/glare issue as other solar technologies can.

Regarding the Sandia reflectivity assessment specifically, it appears the web tool for this assessment is no longer available. Another tool might be available, but we do not believe that this particular technology poses a reflectivity issue. Unlike mirrors and troughs, PV panels are matte black and designed to absorb rather than reflect light.

The FAA's Obstruction Evaluation/Airport Airspace Analysis (OE/AAA) webpage (https://oeaaa.faa.gov/oeaaa/external/gisTools/gisAction.jsp) does include a link to an online mapping tool called the "DoD Preliminary Screening Tool". Entering the project coordinates into this DoD tool results in a map that shows our project as being in the "GREEN" or no impact zone.

Based on this, we wonder if the Navy could be satisfied that no additional glint/glare assessment is required.

Best regards,
Michelle Slater

-----Original Message-----
From: Peacher, Kimberly N CIV NAVFAC NW, AM <kimberly.peacher@navy.mil>
Sent: Monday, February 26, 2018 8:29 PM
To: Michelle Slater <mslater@obsidianrenewables.com>
Subject: RE: NOI Comment re Obsidian Solar Center

Michelle,

Thank you for clarifying the transmission will remain the same as current infrastructure.

Regarding reflectivity, have you reviewed the project for glint and glare?

Thank you for reaching out.

V/R,
Kimberly N. Peacher
Community Planning and Liaison Officer
Northwest Training Range Complex
(360) 930-4085
Kimberly.peacher@navy.mil

-----Original Message-----
From: Michelle Slater [mailto:mslater@obsidianrenewables.com]
Sent: Monday, February 26, 2018 6:06 PM
To: Peacher, Kimberly N CIV NAVFAC NW, AM
Subject: [Non-DoD Source] FW: NOI Comment re Obsidian Solar Center

Kimberly,

Kellen forwarded your emails to me (the one below and the email with the updated map). I am coordinating the work on the site certificate and EFSC review and wanted to address your questions. I am happy to have a call with you if that is easier.

The 500 AGL should be no problem. With the design of this solar project, the PV arrays are only about 4 feet off the ground, 6 feet at full tilt. The perimeter fence is 12 feet or less, I believe, and the inverters are under 8 feet. We will be building a 115-kv gentie near the three existing 500 Kv transmission lines and the existing Midstate line. I don't yet know the exact height of proposed transmission poles but they will be consistent with existing infrastructure. I will provide more specific information on pole-height shortly.

Best,
Michelle

-----Original Message-----
From: TARDAEWETHER Kellen * ODOE [mailto:Kellen.Tardaewether@oregon.gov]
Sent: Friday, February 23, 2018 12:52 PM
To: Michelle Slater
Subject: FW: NOI Comment re Obsidian Solar Center

Good afternoon Michelle,

I'm forwarding a comment received from the Navy regarding the proposed facility location in relation to military training routes. We encourage you to contact them to coordinate. Thanks,

Kellen

Kellen Tardaewether
Senior Siting Analyst
Energy Facility Siting Division
Oregon Department of Energy
550 Capitol St N.E., 1st Floor
Salem, OR 97301
P:(503) 373-0214
C: (503) 586-6551
Oregon.gov/energy

Leading Oregon to a safe, clean, and sustainable energy future.

-----Original Message-----
From: Peacher, Kimberly N CIV NAVFAC NW, AM [mailto:kimberly.peacher@navy.mil]
Sent: Thursday, February 22, 2018 1:47 PM
To: TARDAEWETHER Kellen * ODOE <Kellen.Tardaewether@oregon.gov>
Subject: NOI Comment re Obsidian Solar Center

Good Afternoon Kellen,

Thank you for providing the NOI for Obsidian Solar Center. We have completed a preliminary assessment of the project in relation to military training areas, shown on the attached map. The proposed project appears to be underneath two military training routes, IR 342 and VR 1353, with a floor (the lower the military is authorized to fly per the FAA) of 500AGL.

Regarding the associated transmission infrastructure, what is the proposed tower heights?

Lastly, we would like to request the project proponent review this proposal for glint and glare using the Sandia reflectivity assessment to ensure no impacts to the pilots visibility.

This additional information will support the military review of this project. We would be happy to discuss further with both ODOE and the project applicant. In addition, we can provide the shapefiles associated with the attached map to the applicant.

Thank you very much.

V/R,
Kimberly N. Peacher
Community Planning and Liaison Officer
Northwest Training Range Complex
(360) 930-4085
Kimberly.peacher@navy.mil