# PLAN OF DEVELOPMENT

# FOR THE ANGORA SOLAR PROJECT

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8MINUTE SOLAR ENERGY

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## ABBREVIATIONS

| | |
|---|---|
| 4x4 | four-wheel drive |
| AC | alternating current |
| AF | acre-feet |
| AFY | acre-feet per year |
| AMA | Active Management Area |
| APE | area of potential effect |
| ATV | all-terrain vehicle |
| AUM | animal unit month |
| BESS | battery energy storage system |
| BLM | Bureau of Land Management |
| BMP | best management practice |
| BOR | Bureau of Reclamation |
| CFR | Code of Federal Regulations |
| CGP | Construction General Permit |
| Corps | U.S. Army Corps of Engineers |
| CWA | Clean Water Act |
| DC | direct current |
| E | east |
| EPA | U.S. Environmental Protection Agency |
| ESA | Endangered Species Act |
| FEMA | Federal Emergency Management Agency |
| FLPMA | Federal Land Policy and Management Act |
| FPPA | Farmland Protection Policy Act |
| FTE | full time-equivalent |
| gen-tie | electrical generation interconnection |
| GHG | greenhouse gas |
| IPaC | Information for Planning and Consultation |
| kV | kilovolt |
| MDBM | Mount Diablo Base Meridian |
| MS4 | Municipal Separate Storm Sewer System |
| MW | megawatt |
| MWac | megawatt alternating current |
| MWh | megawatt hour |
| NAAQS | National Ambient Air Quality Standards |
| NDEP | Nevada Division of Environmental Protection |
| NEMA | National Electric Manufacturers Association |
| NEPA | National Environmental Policy Act |
| NHPA | National Historic Preservation Act |

| | |
|---|---|
| NRHP | National Register of Historic Places |
| NRS | Nevada Revised Statute |
| NVCRIS | Nevada Cultural Resource Information System |
| O&M | operations and maintenance |
| PCS | power conversion system |
| PEIS | Programmatic Environmental Impact Statement |
| POCO | Point of Change of Ownership |
| POD | plan of development |
| PV | photovoltaic |
| R | Range |
| ROW | right-of-way |
| RTU | remote terminal unit |
| SCADA | Supervisory Control and Data Acquisition |
| SCE | Southern California Edison |
| S | south |
| SOI | Secretary of the Interior |
| SR | State Route |
| SWPPP | Stormwater Pollution Prevention Plan |
| T | Township |
| TCP | Traditional Cultural Properties |
| U.S. | United States |
| USACE | U.S. Army Corps of Engineers |
| U.S.C. | United States Code |
| USDA | U.S. Department of Agriculture |
| USFWS | U.S. Fish and Wildlife Service |
| VRI | visual resource inventory |
| VRM | Visual Resource Management |
| WOUS | waters of the United States |

# 1.0 OVERVIEW

328CH 8me LLC (Applicant), a subsidiary of 8minute Solar Energy proposes to construct, operate and maintain, and (eventually) decommission the Angora Solar Project (Project), consisting of an up-to 400-megawatt (MW) alternating current (MWac) solar photovoltaic (PV) power generating and an up to 400 megawatt by four hour (MWh) battery energy storage system (BESS) facility (collectively, the solar facility) on approximately 2,618 acres in Clark County, Nevada. The Project would be located on Bureau of Land Management (BLM)- and Bureau of Reclamation (BOR)-managed lands and privately owned lands. The Project may also construct, operate, and maintain a 500-kilovolt (kV) electrical generation interconnection (gen-tie) transmission line across BLM, BOR, and private lands.

The Project would connect to the regional electrical grid at the Mohave Substation via a new overhead 500 kV single- or double-circuit gen-tie line by paralleling the existing Lugo-Mohave 500 kV transmission line (N-100096). The gen-tie line would run north and east from the Project Substation for approximately 9 miles to the Mohave Substation, which is located on private land west of Laughlin, Nevada. Overhead or underground collector lines would gather electricity generated by the solar arrays and deliver it to the Project substation. The collector lines would be located on BLM and BOR lands within the footprint of the solar facility, and the Project substation would be located on BLM land.

Components of the Project on BLM- and BOR-managed lands include the solar facility, structures associated with the gen-tie line, access roads, laydown and staging areas, a project substation, overhead or underground collector lines, up to five operations and maintenance (O&M) buildings with parking, and a perimeter fence. The gen-tie line would require a right-of-way (ROW) on federal lands for a distance of up to 6 miles where the line leaves the solar facility and connects with the first structure on private land in the vicinity of Needles Highway and Bruce Woodbury Drive. All portions of the gen-tie that would be on BLM- and BOR-managed lands would be constructed above ground.

## 1.1 BLM Purpose and Need

In accordance with the Federal Land Policy and Management Act (FLPMA) (43 United States Code [U.S.C.] § 1701), public lands are to be managed for multiple uses that consider the long-term needs of future generations for renewable and non-renewable resources. The BLM is authorized to grant ROWs on public lands for systems of generation, transmission, and distribution of electrical energy (§ 501[a][4]). Taking into account the BLM's multiple-use mandate, the BLM's purpose and need for this action is to respond to the ROW application submitted by the Applicant under Title V of FLPMA (43 U.S.C. § 1761) to construct, operate, maintain, and decommission the Project. The BLM would decide whether to deny the proposed ROW, grant the ROW, or grant the ROW with modifications. The BLM may include any terms, conditions, and stipulations it determines to be in the public interest, which may include modifying the proposed use or changing the location of the proposed facilities (43 Code of Federal Regulations [CFR] § 2805.10[a][1]). Other agencies may be identified as cooperating and participating agencies. The purpose and need for each of these agencies is to respond to authorization requests for permits and approvals to construct and operate the Project.

## 1.2 Applicants Purpose and Need

The fundamental purpose of the Project is to construct a clean, renewable source of solar electricity that helps meet the region's growing demand for power and helps fulfill national and State renewable energy and greenhouse gas (GHG) emission goals. Solar energy provides a sustainable, renewable source of power that helps reduce fossil fuel dependence and GHG emissions. Considering the entire process, from raw material sourcing through end-of-life-cycle collection and recycling, 400 MW of additional generating capacity would produce a small fraction of the GHG emissions of a fossil fuel plant with similar capacity.

Specific Project objectives are to:

- Establish a solar PV power-generating facility that is of sufficient size and configuration to produce approximately 400 MWac of electricity in order to provide Nevada a significant new source of renewable energy.
- Produce and transmit electricity at a competitive cost.
- Provide a means of conveying up to 400 MWac of renewable energy to the electric grid to meet increasing demand for in-state generation.
- Compliment the Applicant's dedication to environmental stewardship through environmentally sensitive project siting.
- Locate the facility in the rural part of Clark County in proximity to an available connection to the existing electrical transmission infrastructure.
- Minimize environmental effects by:
    - Avoiding the Paiute-ElDorado Valley Area of Critical Environmental Concern (ACEC) identified in the Las Vegas Resource Management Plan and Final Environmental Impact Statement (FEIS) Record of Decision (ROD);
    - Using existing electrical transmission facilities, ROWs, roads and other infrastructure where practicable;
    - Minimizing water use during operation;
    - Reducing GHG emissions; and
    - Using solar technology that is available, cost-effective, proven, efficient, easily maintained, recyclable, and environmentally sound.

## 1.3 Project Location

The Angora Solar Project's solar facility would be located on BLM and BOR land in Clark County, Nevada, approximately 9 miles southwest of Laughlin, Nevada, and 2.8 miles west of Needles Highway, near the Nevada-California border (Figure 1). The gen-tie line would originate at the Project substation on BLM-managed lands and would exit the northeast portion of the solar facility and traverse northeast across BLM, BOR, and private lands and connect to the Mohave Substation near Laughlin. The Project (i.e., gen-tie line, solar facility, collector lines, and access roads) would be located on a combination of private lands and BLM- and BOR-managed lands (Figure 2).

### 1.4 Legal Description

The 2,618-acre solar facility would be located on BLM and BOR lands in Township (T) 32 South (S), Range (R) 65 East (E) Sections 33, 34, and 35; and T33S, R65E, Section 1, 2, 3, 4, 10, 11, 12, 14, 15, and 23, Mount Diablo Meridian, NV. The approximately 9-mile (6 miles on federal lands) 500 kV gen-tie line would be located on BLM- and BOR-managed lands and private lands in T32S, R65E, Section 25, 26, 35, and T32S, R66E, Section 17, 19, 20, and 30.

### 1.5 Major Users Along the Route

Existing electric transmission lines, high-pressure natural gas pipelines, fiber optic lines, and associated access roads are located adjacent to the solar facility on BLM, BOR, and private lands. The solar field lands are primarily vacant. The Project occurs within the Laughlin Special Recreation Management Area (SRMA). There appears to be no active mining or industrial uses within the Project area.

## 2.0 PROJECT DESCRIPTION

The Project involves construction, O&M, and (eventual) decommissioning of an up to 400 MW PV electricity generation and an up to 400 MW x 4 hour BESS facility on BLM, BOR, and private lands. The Angora Solar Project may include the following Project elements discussed in detail below: solar arrays comprised of PV panels and inverters, onsite substation, underground or aboveground electrical collector lines connecting the inverters to the onsite substation, O&M buildings, BESS, laydown yards, and other related infrastructure such as access roads, fences, and telecommunication systems. Refer to Appendix A for diagrams depicting the initial Project plans.

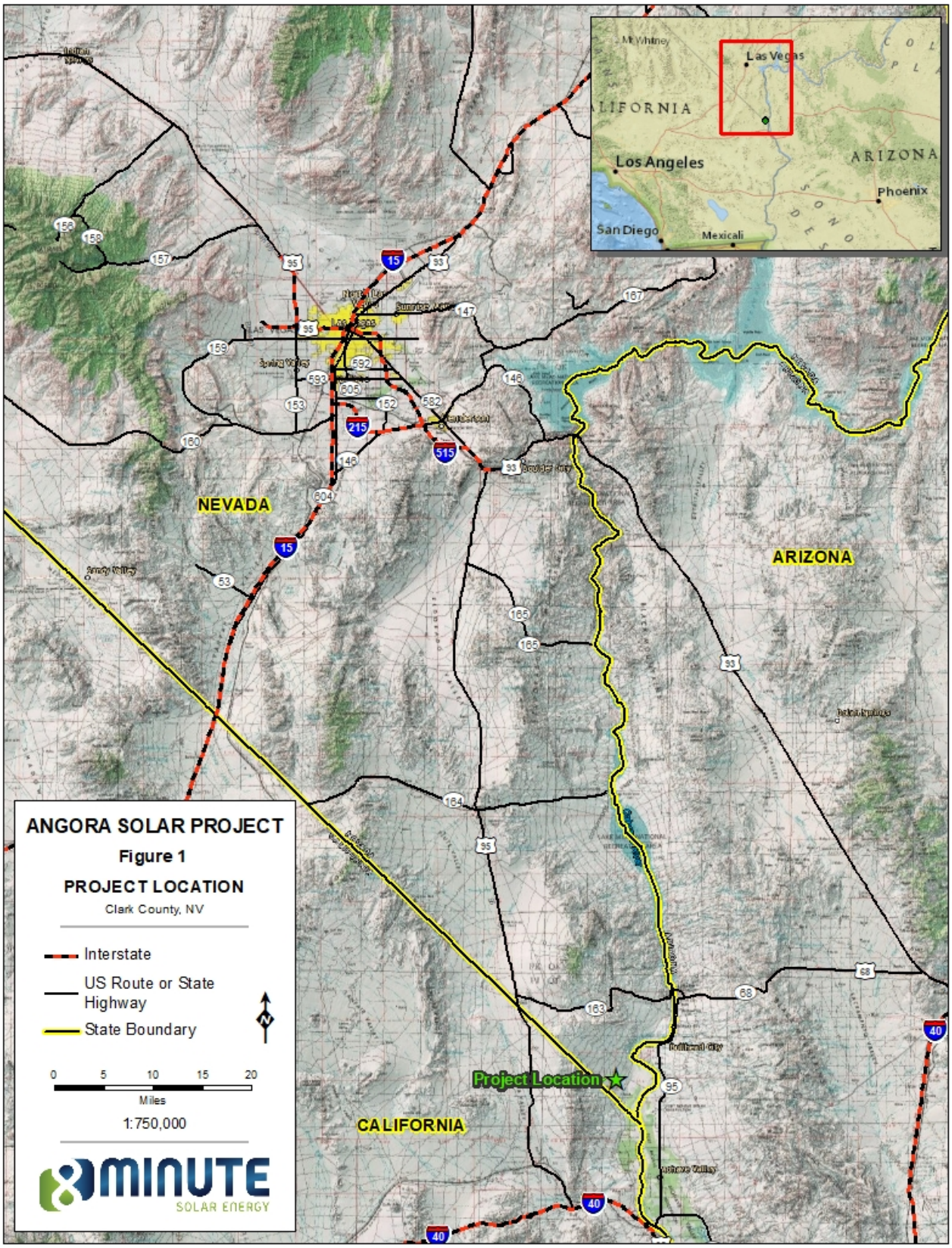


**Figure 1. Project Vicinity**

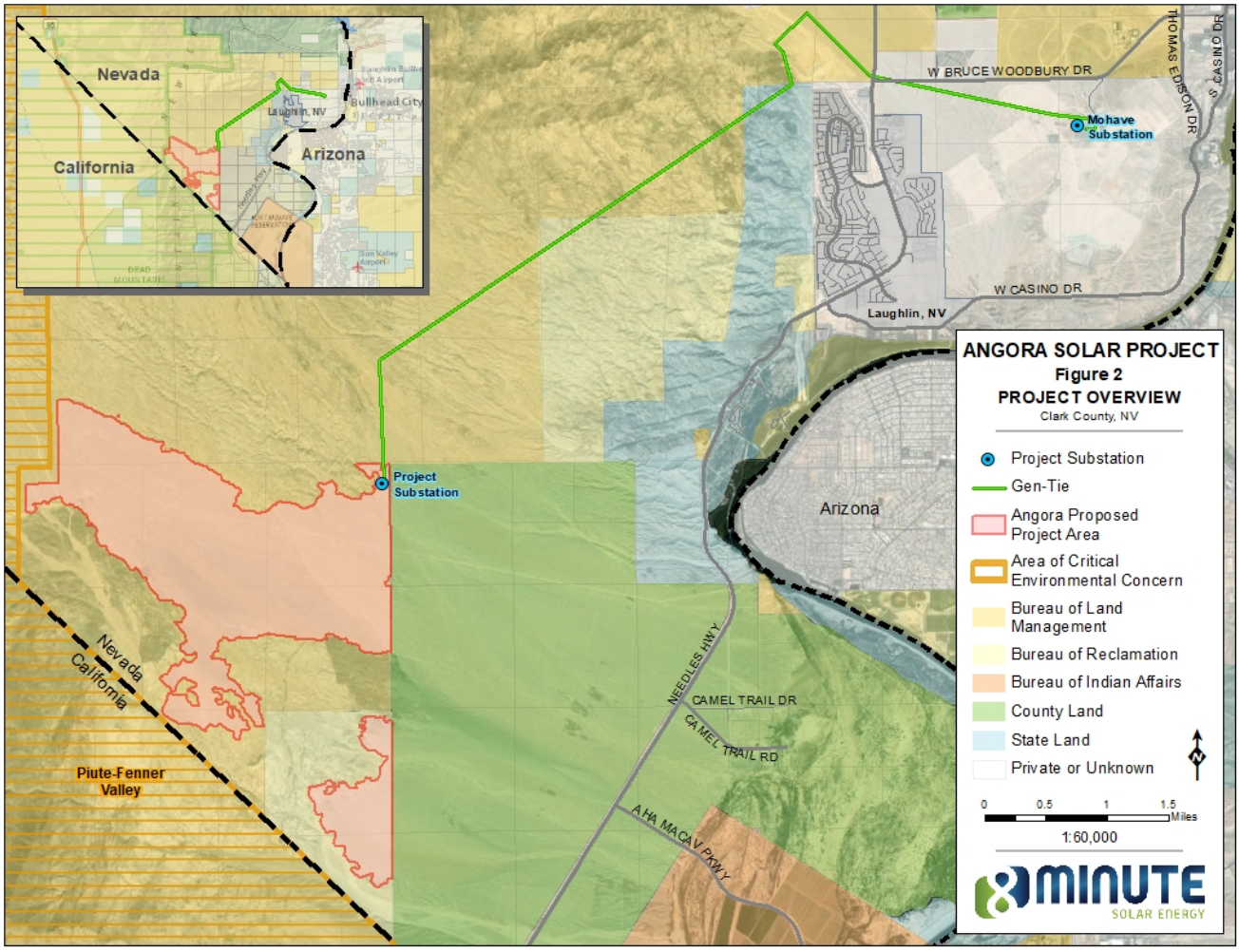


**Figure 2. Project Overview**

# 3.0 PROJECT ELEMENTS

The energy generated by the solar facility would be sold to a viable utility, commercial, or industrial off-taker under a long-term power purchase agreement, build-own-transfer agreement, or other like commercial purchase contract. The proposed Project would provide a direct connection between the solar facility substation and the existing Mohave Substation.

## 3.1 Solar Facility Elements

### 3.1.1 Solar Facility Access Roads

Access to the solar facility would occur on existing routes and new access roads on BLM and BOR lands. Appropriate routes for any new roads that are required to access the solar facility will be identified in

coordination with the BLM and BOR, and this Plan of Development (POD) will be updated with the route information. Within the solar facility, approximately 13 miles of access roads would be constructed to provide vehicle access to the solar equipment and collector lines. Some portions of the existing routes may require minor cleanup (e.g., vegetation removal, movement of rocks and boulders) to accommodate the transport of Project equipment to the solar facility. After construction, access routes to the solar facility, along the gen-tie line, and new routes constructed within the solar facility would continue to be utilized during O&M and decommissioning. These routes may require repair on an infrequent basis.

### 3.1.2 Solar Blocks

Mounted PV solar panels, inverter stations, and transformers would be combined to form solar blocks. The solar blocks would be repeated to provide up to 400 MWac of electrical generating capacity. The electricity generated from the solar panels (direct electrical current [DC]) would be delivered through underground or overhead cables to an inverter station where the DC is converted to alternating electrical current (AC). Inverter stations are generally located in the middle of each solar block. A transformer would then step up the voltage (likely to 34.5 kV) to for transmittal of energy via collector lines to the onsite Project Substation.

The transformers would be contained in steel enclosures. The inverter stations could be contained in an enclosed or canopied metal structure on a skid or concrete mounted pad. The enclosures would be designed to meet National Electric Manufacturers Association (NEMA) 1 or NEMA 3R IP44 standards for electrical enclosures in order to contain any fire that could occur in structures. The enclosures would be constructed on 6 inches of stone with filter fabric underlay, and each enclosure pad would be approximately 261 square feet in size. The Project would include about 98 inverter stations, which would occupy a total of approximately 0.98 acres.

Solar panels would be installed on rows of single-axis trackers that would rotate to follow the sun over the course of the day. Depending on the soil conditions within the solar facility, the wind load capacity of the solar panels, and the mounting structure supporting the solar panels, the foundations for the mounting structures would be embedded driven steel posts or screw anchors only if soil conditions do not support driven posts. The mounting structures would extend approximately 12 feet below ground and may be encased in concrete or a small concrete footing. The layout of the solar blocks would be optimized for the desired energy production while accounting for site characteristics, such as soil conditions, site topography, and site hydrology. The solar panels would be up to 20 feet above ground at their highest point, which would occur during the morning and evening hours when the trackers are tilted at their maximum angle. Each solar block would be powered by a low-voltage electric drive motor. The motors would typically be operated for a few seconds every 5 to 10 minutes during daylight conditions to move the panels in approximately one-degree increments.

Meteorological monitoring stations would be located at multiple locations within the solar blocks to monitor wind speed and communicate with the trackers. This would allow the trackers to rotate the panels to a flat position during high winds. Meteorological stations would be mounted on or near the inverter stations and would likely not exceed 25 feet in height from the ground.

### 3.1.3 Project Substation

The onsite Project substation would contain several components including auxiliary power transformers, distribution cabinets, revenue metering systems, a microwave transmission tower, voltage switch gear, a control building, and a mechanical electrical equipment room. The substation would occupy an area of approximately 1 acre and would be surrounded by a chain-link fence.

### 3.1.4 Collector Lines

Energy generated from the solar facility would be transferred to the Project substation through approximately 35.43 miles of underground or overhead collector lines located within the solar facility. At the Project substation, the electricity would be stepped up again to 500 kV for delivery to either the Mohave Substation or the Arida Substation (located on private land) via the gen-tie line. If constructed underground, the collector lines would be installed in underground trenches approximately 4 feet deep and 3 feet wide. Approximately 12.8 acres of the solar facility would be disturbed by the collector line installation.

### 3.1.5 Battery Energy Storage System

The solar facility may include one or more BESSs. The BESSs would consist of modular and scalable battery packs and battery control systems that conform to national safety standards. The BESSs would be located in pad- or post-mounted, stackable metal structures (approximately 40 feet long by 8 feet wide by 8 feet high) or a separate building in compliance with applicable regulations. The maximum height of a building, if used, would not exceed 25 feet. The total acreage of the BESS would not exceed 32 acres. The dimensions and number of BESSs would vary depending on the application, supplier, chosen configuration, and applicable building standards. The BESSs would be located in the area of disturbance within the solar facility.

### 3.1.6 Site Fencing

The Project site would be enclosed within a chain link perimeter fence, potentially with barbed wire, measuring up to 8 feet in height (from finished grade). The fence would have controlled access points, lighting, and possibly security alarms, security camera systems with remote monitoring, and security guard vehicle patrols to deter trespassing and/or unauthorized activities. Additional fencing may also be installed around any onsite substation. The fence would be approximately 114,293 linear feet, following the perimeter of the property.

### 3.1.7 Communication Systems Infrastructure

Telecommunications systems would be installed at the transformers consisting of a remote terminal unit (RTU), communications line (i.e., T-1 line), microwave receiver mounted on the building or on a lattice tower up to 100 feet tall, and miscellaneous communication cables and link equipment, as required. Fiber optics would be installed on the gen-tie line to link the Proposed Project to either the Mohave Substation or Arida Substation (located on private land). Support equipment (i.e., metering class current transformers and potential transformers) would also be installed to facilitate metering of

all applicable energy outputs. The lattice structure may be erected within the solar facility to facilitate wireless communications to provide a back-up option for site telecommunications.

The Project would have a Supervisory Control and Data Acquisition (SCADA) system that would allow for the remote monitoring and control of inverters and other Project components. The SCADA system would be able to monitor Project output and availability and to run diagnostics on the equipment. This equipment would be located in the O&M building and would connect to the communications system.

### 3.1.8 Operations and Maintenance Buildings

The solar facility would include approximately eight O&M buildings with onsite parking. The O&M buildings would be storage containers (e.g., Connex Box) approximately 40 feet long by 8 feet wide. The O&M buildings could include offices, repair facilities/parts storage, a control room, and restrooms. A septic tank and leach field could be used for collection, treatment, and disposal of sanitary waste. If a septic system were not used, portable toilets would be used.

Additional components of the O&M facilities would include aboveground water storage tanks, signage, a flagpole, trash containers, and the SCADA system. The O&M buildings and components would be equipped with exterior lighting as approved by BLM and BOR. Minimal lighting would be used and would be directed downward and away from wildlife habitat. The O&M buildings would occupy approximately 0.06 acre of the Project area, plus additional area for the storage tanks and parking.

The design and construction of the buildings and associated water/wastewater systems would be consistent with Clark County building standards and approved by the BLM and BOR.

### 3.1.9 Laydown Yards

A temporary laydown yard about 16.3 acres would be established within the solar facility on BLM and BOR lands. The laydown yard would be used for parking and to stage equipment and materials during Project construction.

## 3.2 Gen-Tie Transmission Line Elements

The gen-tie line for the Project would interconnect to the Mohave Substation, and would be approximately 6 miles (31,680 linear feet) in length on BLM and BOR managed lands. Approximately 28 structures would be constructed for the gen-tie line; approximately 3 of these structures would be located on BOR-managed lands and approximately 25 structures would be located on BLM-managed lands. The portion of the gen-tie line from the boundary of the solar field to the connection with the last structure would require authorization from BLM for a 200-foot-wide ROW up to 31,680 linear feet in length, or approximately 146 acres (134 acres on BLM and 12 acres on BOR lands).

### 3.2.1 Transmission Support Structures

For the interconnection with the Mohave Substation, approximately 28 transmission support structures would be erected and would typically be spaced 1,200 to 1,600 feet apart (center to center), depending on the topographic, hydrologic, and geologic conditions of the underlying lands. The gen-tie

line would require two dead end structures (one within the solar facility at the Project substation, and one on private land at the Mohave Substation) and one angle structure (on private land). These structures would be composed of one or more steel or lattice poles with heights generally ranging from 150 to 200 feet. The minimum ground clearance of the conductor cable(s) would be 30 to 35 feet. Communications cable or fiber optic cable would also be installed on the transmission structures. The communications cable or fiber optic line would only be for communication purposes related to the Project and would not be sub-leased.

### 3.2.2 Gen-Tie Service Road

The gen-tie line was designed with an emphasis on occupying the smallest ground disturbance footprint practicable and sited to follow existing roads. The gen-tie connecting the Project to the Mohave Substation would utilize the existing access roads for the existing Lugo-Mohave 500kV line, and would require short spur roads to allow access from the existing road to work areas for the new Project transmission structures. Spur roads, if necessary, would be 12 feet wide and constructed from the main access roads and/or existing transmission structure footprints to provide access to work areas for new gen-tie line transmission structures. The Project would also include existing access on BLM- and BOR-managed lands to access the gen-tie easement. The existing roads may require blading and improvements in certain areas.

### 3.2.3 Point of Change of Ownership Structure

The Applicant would be responsible for constructing the gen-tie line from the Project Substation to the dead-end structure and 500 kV switch at the Mohave Substation located on private lands. This dead-end structure is called the Point of Change of Ownership (POCO) structure and is the location where the ownership of the gen-tie line changes from the Applicant to the electric utility that purchases the energy generated at the solar facility. From the POCO structure, the remaining transmission structures to the point of the interconnection terminal within the existing 500 kV Mohave Substation would be constructed by a separate electric utility company (potentially SCE or NV Energy).

### 3.2.4 Transmission Provider's Interconnection Facilities

The 500 kV transmission structures would be installed with overhead conductor cable, including optical fiber composite overhead ground wire or equivalent, between the POCO structure and the Mohave Substation. Dedicated relays and SCADA systems required for equipment protection and connection to fiber feeds would be installed at the Mohave 500 kV Switching Station for the gen-tie line interconnection.

### 3.2.5 Fiber-Optic Installation

The new static fiber-optic cable is manufactured in approximately 3.5- to 4-mile reel lengths. The Project equipment for installing the cable would include a cable reel, a tensioner trailer pulled behind a line truck, and a four-wheel-drive (4x4) pickup truck. At the cable-pulling end, the equipment would include a V-groove cable puller (winch), either mounted on or pulled behind a line truck, and a 4x4 pickup truck.

### 3.2.6 Telecommunications and Metering at the Solar Project Substation

Telecommunications would be installed consisting of an RTU and necessary communications equipment for the Project including a multiplexer on the communications line (i.e., T-1 line) and miscellaneous communication cables and link equipment, as required. Support equipment (i.e., metering class current transformers and potential transformers) would be installed inside the Project lease area to facilitate metering of all applicable energy outputs.

## 3.3 Project Feature Specifications and Disturbance Areas

Permanent disturbance areas would be those areas where the surface of the ground is not restored to its existing condition after construction, such as those relating to foundations or new access roads. Temporary disturbance areas include those where construction activity would take place but where restoration of the surface would be possible, such as those relating to temporary work areas, pull sites, and laydown yards. In some places, areas of temporary disturbance would overlap with areas previously disturbed. The Project is estimated to result in approximately 34 acres of permanent disturbance and 66 acres of temporary disturbance on BLM-managed lands (Table 1) and approximately 5 acres of permanent disturbance and 10 acres of temporary disturbance on BOR-managed lands (Table 2).

**Table 1. Temporary and permanent disturbance on BLM-managed lands**

| Project Components | Quantity | Permanent Facilities | Temporary Facilities | Temporary Disturbance | Permanent Disturbance |
|---|---|---|---|---|---|
| Access Roads (20 ft wide) | 548 ft | 548 ft x 20 ft | 548 ft x 28 ft | 0.35 acre | 0.25 acre |
| Access Roads (12 ft wide) | 61,819 ft | 61,819 ft x 12 ft | 61,819 ft x 20 ft | 28.38 acres | 17.03 acres |
| Laydown and Staging Areas (multiple) | N/A | N/A | Complex Geometry | 15.12 acres | N/A |
| Inverters | 86 | 29 ft x 9 ft | 33 ft x 13 ft | 0.85 acre | 0.52 acre |
| Tracker Posts | 135,565 | 0.5 ft Diameter | N/A | N/A | 0.61 acre |
| Substation | 1 | 158 ft x 117 ft | N/A | N/A | 0.41 acre |
| Collector Line Trenches | 165,131 ft | 165,131 ft x 3 ft | N/A | N/A | 11.37 acre |
| O&M Building | 5 Connex boxes | 40 ft x 8 ft | N/A | N/A | 0.04 acre |
| Perimeter Fence | 90,218 ft | 90,218 ft x 1 ft | 90,218 ft x 5 ft | 10.36 acre | 2.07 acre |
| Gen-Tie Structures | 25 | 12 ft Diameter | N/A | N/A | 0.06 acres |
| Gen-Tie Structure Laydown/Work Areas | 25 | N/A | N/A | 10.84 acres | 0.86 acres |

| Project Components | Quantity | Permanent Facilities | Temporary Facilities | Temporary Disturbance | Permanent Disturbance |
|---|---|---|---|---|---|
| Gen-Tie Spur Roads | N/A | N/A | N/A | N/A | 0.74 acres |
| Gen-Tie ROW | N/A | 134 acres | N/A | N/A | N/A |
| **Total** | - | - | - | **65.9 acres** | **33.96 acres** |

*Table Abbreviations*: ft=feet; N/A=not applicable; O&M=operations and maintenance; ROW=right-of-way

## Table 2. Temporary and permanent disturbance on BOR-managed lands

| Project Components | Quantity | Permanent Facilities | Temporary Facilities | Temporary Disturbance | Permanent Disturbance |
|---|---|---|---|---|---|
| Access Roads (20 ft wide) | N/A | N/A | N/A | N/A | N/A |
| Access Roads (12 ft wide) | 10,799 ft | 10,799 ft x 12 ft | 10,799 ft x 20 ft | 4.96 acres | 2.97 acres |
| Laydown and Staging Areas (multiple) | N/A | N/A | Complex Geometry | 1.19 acres | N/A |
| Inverters | 12 | 29 ft x 9 ft | 33 ft x 13 ft | 0.12 acre | 0.07 acre |
| Tracker Posts | 18,912 | 0.5 ft Diameter | N/A | N/A | 0.09 acre |
| Substation | N/A | N/A | N/A | N/A | N/A |
| Collector Line Trenches | 9,825 ft | 9,825 ft x 3 ft | N/A | N/A | 0.68 acre |
| O&M Building | 2 Connex boxes | 40 ft x 8 ft | N/A | N/A | 0.01 acre |
| Perimeter Fence | 24,075 ft | 24,075 ft x 1 ft | 24,075 ft x 5 ft | 2.76 acre | 0.55 acre |
| Gen-Tie Structures | 3 | 12 ft Diameter | N/A | N/A | 0.008 acres |
| Gen-Tie Structure Laydown/Work Areas | 3 | N/A | N/A | 1.30 acres | 0.10 acres |
| Gen-Tie Spur Roads | N/A | N/A | N/A | N/A | 0.09 acres |
| Gen-Tie ROW | N/A | 12 acres | N/A | N/A | N/A |
| **Total** | - | - | - | **10.33 acres** | **4.57 acres** |

*Table Abbreviations*: ft=feet; N/A=not applicable; O&M=operations and maintenance; ROW=right-of-way

### 3.4 Safety Requirements

Safety precautions and emergency systems would be implemented as part of the design and construction of the Project to ensure safe and reliable operation. Administrative controls may include classroom and hands-on training in O&M procedures, general safety items, and a maintenance program plan. These controls would complement Project design and monitoring features to enhance safety and reliability.

## 4.0 CONSTRUCTION OF THE FACILITIES

### 4.1 Geotechnical Investigation

Prior to construction, geotechnical surveys would be conducted to provide information for foundation designs and transmission structures. The geotechnical studies would allow for observations of subsurface conditions, and soil samples would be obtained for laboratory testing and soil classification. Results of the analysis would help inform several design-related parameters including cement types and corrosion protection of foundation elements.

The subsurface exploration program would involve drilling borings with a rubber tire 4x4 drill rig or similar equipment. A 4x4 side-by-side all-terrain vehicle (aka: “gator”) and/or pickup trucks would be used to drive support personnel to boring locations. During the borings, drive samples would be obtained from the subsurface for laboratory testing.

If necessary, test pits would also be conducted. Test pits would be conducted using a standard rubber tire backhoe equipped with a 24-inch bucket, or similar equipment. No personnel would enter the test pits. About 15 gallons (three 5-gallon buckets) of material would be collected from the surface to a depth of 1 foot at select test pit locations (not all test pits would be sampled). These samples may be tested in the laboratory for gradation, plasticity, maximum density, thermal resistivity, and corrosion characteristics. Each test pit would be backfilled immediately upon completion; no excavation would be left open.

Field resistivity testing may also be conducted, if necessary. The field resistivity testing would be non-intrusive. Four steel pin electrodes (about the size of tent stakes) would be driven by hand into the ground about 4 inches deep, and an electrical current would be induced between the two outer electrodes. The two inner electrodes would be used to record the electrical resistivity of the current going through the earth.

### 4.2 Site Engineering Surveys

On-ground investigations would be completed to accurately locate the Project components, Project boundaries, and the centerline of the gen-tie within the ROW. Prior to construction, the limits of construction disturbance areas would be determined by surveying and staking. Where necessary, the limits of the ROW, work areas, and access roads would also be flagged. All construction activities would be confined to these areas to prevent unnecessary impacts affecting sensitive areas. These areas, which would include buffers established to protect biological resources, also would be staked and flagged. The locations of underground utilities would be located, staked, and flagged in order to guide construction activities.

## 4.3 Timing of Activities

Construction would generally occur between 5 a.m. and 5 p.m., Monday through Friday, but could occur seven days a week. Additional hours may be necessary to make up schedule deficiencies, or to complete critical construction activities. For instance, during hot weather, it may be necessary to start work earlier (as early as 3 a.m.) to avoid work during high ambient temperatures. Also, construction would require some nighttime activity for installation, refueling equipment, staging material for the following day's construction activities, service or electrical connection, or inspection, quality assurance/control, and testing activities. Nighttime activities would be performed with temporary lighting. Some activities may require construction activities 24 hours per day, 7 days per week.

## 4.4 Access Roads

Existing roads would be used to access the construction site, wherever feasible. The project area can be accessed from the east via Needles Highway and existing access roads across private lands onto BLM- and BOR-managed lands. Construction of the solar facility and gen-tie would begin with improvements to existing access roads or construction of new 20-foot-wide maintenance roads, where necessary, and establishment of spur roads where needed to the new structures. Spur roads would typically be 12 feet wide and may be bladed. If necessary, new roads would be compacted to ensure stability.

All equipment, permanent materials, and commodities for the Project would be transported to the site via rail and/or local highways. Any shipments by railroad would go to the nearest active railroad spur for offloading and transported by truck to the Project site. All equipment and material deliveries would utilize approved site access routes.

Truck deliveries of equipment and materials would occur throughout the life of the project, beginning with the initial notice to proceed for construction. At the onset of construction, deliveries would consist primarily of haul trucks transporting construction equipment to the site, as required. This would be followed by installation of major foundations, which would require multiple deliveries by concrete trucks. Materials for the PV array (piles, cables and tracker assembly) would also be delivered to Project site early in the construction period, during approximately the same time frame as the installation of the concrete solar array foundations. Deliveries of larger equipment such as inverters, BESS components, and substation components would most likely begin near the midpoint of the construction period. The batteries for the BESS facilities would likely be delivered last, as they require back feed power prior to installation.

## 4.5 Transmission Structure Erection Sites

Temporary transmission structure erection sites, typically 500 feet wide by 500 feet long, would be established at each transmission structure location. These areas would be cleared of vegetation. Each transmission structure would be set within an augured hole (angle structures) or concrete pier foundation (dead-end structures). The primary equipment used in setting foundations would be concrete trucks, auger rigs, pickup trucks, crane, and front-end loaders. Holes would be excavated using a truck-mounted drill rig or a standalone auger rig, if required. Poles would be delivered on a flatbed trailer and hoisted into place by a crane. The annular space between the poles and holes would

be backfilled with concrete or soil. Excavated spoil material would be spread around the temporary work areas.

## 4.6 Conductor Pulling and Tension Sites

Multiple pulling and tensions sites would be required for installing the conductors on the transmission structures. Pulling and tension sites would be approximately 75 feet wide by 500 feet long and would be located within and adjacent to the gen-tie ROW. Conductors would be strung between transmission structures with heavy-duty trucks and a telescoping boom lift. If necessary, some sections of conductors may be strung by either using a helicopter or by first 'walking' a light pulling rope between structures that is then used to pull in the heavier conductor. Cables would be pulled through one segment of the transmission line at a time. To pull cables, truck-mounted cable-pulling equipment is placed alongside the first and last towers or poles in a segment. Power pulling equipment is used at the front end of the segment, while power braking or tensioning equipment is used at the back end. The conductors are then pulled through the segment and attached to the insulators. Equipment is then moved to the next segment; the front-end pull site previously used becomes the back-end pull site for the next segment. After conductors have been pulled into place in a section, the conductor tension is increased to achieve appropriate ground clearance prior to moving to the next section.

## 4.7 Water Use

The Project would require up to 200 acre-feet (AF) for the 18-month construction period and up to approximately 20 acre-feet per year (AFY) for O&M activities. During construction, water would be needed primarily for dust suppression and soil compaction. During operation, water would be needed for panel washing, fire protection, dust control, and worker daily consumptive uses. Water would be sourced and purchased from local providers at the most local site possible and drawing that water from the locations the local entities specifically require. It is understood that there are multiple locations adjacent to the Project area where water can be accessed.

## 4.8 Industrial Wastes and Toxic Substances

The solar facility and gen-tie line would have minimal levels of materials that have been defined as hazardous under 40 CFR Part 261. Hazardous materials spill kits would be carried in vehicles for any small spills that could occur. Hazardous materials would not be disposed of onsite, released onto the ground, underlying groundwater, or any surface water. Fully enclosed containment would be provided for all refuse. All construction waste, including trash, solid waste, petroleum products, and other hazardous materials, would be disposed of at a properly licensed waste disposal facility.

## 4.9 Construction Traffic

During the construction period, typical construction traffic would consist of trucks transporting construction equipment and materials to and from the site, and management and construction employee vehicles. Most construction staff and workers would commute daily to the jobsite from within Clark County, primarily from the Laughlin area. Prior to the start of construction, the Applicant would prepare a *Traffic Management Plan* to address Project-related traffic.

Construction of the Project is expected to take up to 18 months. Daily trips during construction of the project would be generated by delivery of equipment and supplies and by construction workers commuting to the project site. The number of onsite workers expected during construction would vary over the construction period with an estimated average of up to approximately 400, and a peak of up to 500, workers each day. This would generate an average of approximately 800 daily vehicles, with a peak of up 1,000 daily trips, assuming no workers carpool. In addition, up to 100 trips per day (50 trips to the site and 50 trips leaving the site) would result from the delivery of construction equipment, materials, and water (if trucked to the site). All together, this would result in an average increase of 900 vehicle trips (or 450 roundtrips) per day, and a maximum of 1,100 vehicle trips (or 550 roundtrips) per day during construction. All project-related vehicles would be parked onsite during construction.

## 4.10 Fire Protection

Fire hazards associated with the Project would be primarily related to the use of helicopters, motorized vehicles, and equipment during construction and Project installation. If required by the BLM and BOR, a *Fire Protection Plan* would outline responsibilities, notification procedures, fire prevention measures and precautions, fire suppression equipment, initial response procedures, and post-fire rehabilitation strategies related to the Project. The goal of the plan would be to minimize the risk of Project-related fires and, in the event of fire, to provide for immediate fire suppression within the construction area.

## 4.11 Vegetation Removal, Site Clearing, Grading, and Excavation

Vegetation would be permanently cleared from roadways, BESS facilities, and where concrete foundations are used for the inverter equipment, substations, and O&M facilities. Within the solar facility, native vegetation would be left in place to the greatest extent practicable.

The cut and fill material associated with all earthwork required in the Project area are planned to be balanced onsite. Within the solar facility, some grading would be required for the Project substation, O&M area, BESS facilities, internal roads around the solar arrays, and electrical equipment pads. The amount of the grading would be limited where the panel support foundations are driven or drilled. A small graded pad could be required within each solar array to accommodate the inverter and transformer or they could be installed on driven piers. Trenching would be required for placement of collector lines, if constructed underground.

## 4.12 Gravel, Aggregate, and Concrete

Concrete would be trucked in and poured in place for equipment pads, gen-tie structures, and building foundations. Aggregate material may be used for parking areas, the project substation area, and where needed for the internal access roads. Riprap material could be required for erosion control measures. This material would be sourced from a BLM-approved source, as needed.

## 4.13 PV Solar Array Assembly and Construction

Clearance and site preparation steps for the PV solar array areas would be completed prior to construction of the arrays. Each array would contain rows of solar panels, an inverter and/or power

conversion system (PCS), and a step-up transformer. Materials for each row of PV modules would be staged next to that row. Within each area designated for a PV solar array, the construction sequence would generally proceed consecutively in the following order; this sequence would be repeated for each array:

- Install foundations for inverter units;
- Prepare trenches for underground cable within each array;
- Install underground cable, as required;
- Backfill trenches;
- Install inverter and transformer equipment;
- Install steel posts and tracker assemblies;
- Install PV modules;
- Perform electrical terminations; and
- Inspect, test, and commission equipment.

Cable trenches within the arrays would contain electrical conductors for low-voltage power collection and fiber optic cables for equipment communication. Trenches would vary between 2 to 5 feet wide and 2 to 5 feet deep depending on the number of conductors and voltage of equipment, as necessary to comply with applicable electrical codes. Trench excavation would be performed with conventional trenching equipment and excavated soil would be placed adjacent to the trench and used as backfill once installation is complete.

The assembled solar equipment would be installed on steel posts to which steel tracker assemblies would be attached. The structural steel posts may be galvanized to mitigate corrosive soils, as needed. Trucks would be used to transport the PV modules to the solar facility. Final solar array assembly would require small cranes, tractors, and forklifts.

### 4.14 Site Stabilization, Protection, and Reclamation

Appropriate erosion and dust-control measures would be implemented for both the solar facility and the gen-tie facilities to prevent fugitive dust and increased erosion around the construction site, and to comply with Clark County dust control requirements. The Applicant would prepare a *Site Rehabilitation and Restoration Plan* which would document erosion and dust-control measures to be implemented. This would include soil stabilization measures to prevent soil from being eroded by stormwater runoff, establishment of temporary laydown areas on level ground, avoiding blading in laydown areas, and minimizing and controlling dust generated during construction by applying water and/or BLM- and BOR-approved palliatives.

Soil stabilization measures would include best management practices (BMPs) to protect the soil surface by covering or binding soil particles. Depending on the site preparation technique, organic matter could be worked into the upper soil layers or mulched onsite and redistributed into the fill (except under equipment foundations, trenches, and roadways) to aid in dust control. The construction contractor would also develop and implement an erosion control plan for the Project and incorporate measures required by regulatory agency permits and contract documents, as well as other measures selected by the contractor. Project-specific BMPs would be designed by the contractor to protect the soil surface from erosion.

# 5.0 OPERATIONS AND MAINTENANCE

## 5.1 Gen-Tie Operations and Maintenance

The proposed gen-tie line would operate continuously throughout the life of the Project. Following construction, activities associated with the gen-tie line would be restricted to inspection and occasional maintenance and repair. Gen-tie access roads would not be regularly maintained, but may be bladed as needed to provide access to transmission structures for maintenance activities.

Additional gen-tie line O&M activities may include insulator washing, periodic air inspections, repair or replacement of lines, replacement of insulators, repainting tower or pole identification markings or corroded areas, and responding to emergency situations (e.g., outages) to restore power (infrequent/as needed).

## 5.2 Solar Facility Operations and Maintenance

The O&M activities for the solar facility would include regular monitoring, periodic inspections, and any needed maintenance. It is anticipated that up to five full time-equivalent (FTE) positions would be required during O&M for the Project. This workforce would include administrative and management personnel, operators, and security and maintenance personnel. Typically, up to three staff would work during the day shift (sunrise to sunset) and the remainder during the night shifts and weekends.

During the first year of operation, inspections would be more frequent to address identified post-construction issues. Periodic routine maintenance would include monthly, quarterly, semi-annual, and annual inspections and service. Major equipment maintenance would be performed approximately every 10 to 15 years.

Solar panel washing would be conducted periodically (likely on foot, all-terrain vehicle/utility task vehicle, and by hand) as needed to improve power generation efficiency. Dust would be controlled and minimized by applying water and palliatives. The water requirements would be provided by transporting water by truck to a large onsite water tank and/or from wells. Water demand for panel washing and human use during O&M activities would not exceed 20 AFY. A small water treatment system may be installed to provide deionized water for panel washing.

O&M would require the use of vehicles and equipment including crane trucks for minor equipment maintenance. Additional maintenance equipment would include forklifts, manlifts, and chemical application equipment for controlling invasive species, noxious weeds, and other incompatible vegetation[1]. Pick-up trucks would be used daily onsite. No heavy equipment would be used during normal operations.

Vegetation within the solar blocks would be maintained to allow for safe operation of the solar facilities during O&M. Where necessary, vegetation would be trimmed as needed using mowers and/or string trimmers, or as approved through an *Integrated Weed Management Plan* prepared for the Project, as required by the BLM (BLM 2007, 2016). Herbicides would be used to control invasive

[1] Incompatible vegetation is defined in this document as plants under, above, and near power lines and associated facilities that could disrupt the safe, reliable, and continuous delivery of electricity to utility customers.

species and noxious weeds, if required. Pest control may also be required, including control of rodents and insects inside of O&M facilities.

Safety precautions and emergency systems would be implemented as part of the design and construction of the Project to ensure safe and reliable operation. Administrative controls would include classroom and hands-on training in O&M procedures, general safety items, and a planned maintenance program. These would work with the system design and monitoring features to enhance safety and reliability. The Project would also have a *Spill Prevention and Emergency Response Plan,* which would address potential emergencies including chemical releases, fires, and injuries. All employees would be equipped with communication devices (i.e., cell phones, and/or walkie-talkies) to contact first responders in the event of an emergency.

The primary wastes generated during O&M activities would be nonhazardous solid and liquid wastes. Limited quantities of hazardous materials would be used and stored at the solar facility. The BESS would contain lithium-ion batteries that need replacement periodically, and the used batteries would need to be disposed of according to local, State, and federal regulations. Nonhazardous wastes produced by O&M activities would include defective or broken electrical materials, empty containers, typical refuse generated by workers and small office operations, and other miscellaneous solid wastes. The types of wastes generated by the Project and their estimated quantities will be addressed in the *Health and Safety Plan* that would be developed for the Project. The *Spill Prevention and Emergency Response Plan* prepared by the Applicant would address waste and hazardous materials management, including BMPs related to storage, spill response, transportation, and handling of materials and wastes. Waste management would emphasize the recycling of wastes where possible and would identify the specific landfills that would receive wastes that cannot be recycled.

### 5.3 Vegetation Treatment

The 2008 *Integrated Vegetation Management Handbook* (H-1740-2; BLM 2008b) states the BLM's approach to vegetation management is to improve biological diversity and ecosystem function, as well as to promote and maintain native plant communities that are resilient to disturbance and invasive species. An Integrated Vegetation Management (IVM) approach that uses industry-standard BMPs (American National Standards Institute 2012; Miller 2013)—while maintaining compliance with the North American Electric Reliability Corporation Reliability Standard FAC-003-4—is promoted in conjunction with applicable BLM practices associated with approved utility corridor management plans. The IVM approach systematically selects, implements, and monitors different types of vegetation treatment methods in order to manage plant communities and achieve established objectives. This management approach uses a variety of methods including manual, mechanical, and chemical (i.e., herbicide) treatments to promote sustainable plant communities that are compatible with the intended use of the utility ROW and to discourage or prevent the establishment of incompatible vegetation that may pose increased fire or other safety hazards in the ROWs.

## 6.0 DECOMMISSIONING

Following the useful life of the Project, Project components would be decommissioned and removed from the ROW. Prior to dismantling or removing equipment, staging areas would be delineated within

the solar facility and along the gen-tie line, as appropriate. All decommissioning activities would be conducted within designated areas, which are anticipated to be within the boundaries of existing easements and ROWs.

All decommissioning of transmission structures, electrical devices, equipment, and wiring/cabling would be conducted in accordance with local, State, and federal law. Any electrical decommissioning would follow applicable safety procedures for de-energizing, isolating, and disconnecting electrical devices, equipment and cabling, and all necessary permits would be obtained prior to these activities.

# 7.0 DESIGN FEATURES

The Project would include a number of design features to reduce or avoid adverse impacts on any sensitive resources evaluated in the National Environmental Policy Act (NEPA) document that would be prepared for the Project. As discussed in the BLM *NEPA Handbook* (BLM 2008a), design features are typically developed as the impact analysis is being conducted and often include standard operating procedures, stipulations, and BMPs.

The Applicant would also prepare a number of management plans to support the environmental analysis and BLM approval and issuance of a ROW grant and ground lease. Plans may include, but are not limited to, *Decommissioning and Site Reclamation Plan, Dust Control Plan, Spill Prevention and Emergency Response Plan, Hazardous Materials Plan, Health and Safety Plan, Fire Protection Plan, Integrated Weed Management Plan, Drainage Plan, Traffic Management Plan, and Worker Environmental Awareness Program.*

# 8.0 GOVERNMENT AGENCIES INVOLVED

The primary federal, State, and local government agencies involved in the environmental review and permitting of the Project are discussed below. Coordination with additional agencies and local jurisdictions may be needed as the Project progresses.

## 8.1 Bureau of Land Management

Under NEPA, the BLM would be the lead federal agency for the Project, which falls within the Southern Nevada District Office. The BLM would be responsible for approving the lease of approximately 2,268 acres of land for the solar facility. The BLM would also be responsible for reviewing the application for grant of a ROW for the portion of the gen-tie line located on BLM-managed lands (see Section 3.2).

As the lead Federal agency, the BLM would also be responsible for compliance with Section 106 of the National Historic Preservation Act ([NHPA] 36 CFR Part 800) and government-to-government consultation with Tribes that have an interest in the Project area as well as compliance with the Endangered Species Act ([ESA] 16 U.S.C. §§ 1531–1544, as amended).

## 8.2 Bureau of Reclamation

Under NEPA, the BOR would act as a cooperating agency for the Project. The BOR would be responsible for approving the lease of approximately 350 acres of land for the solar facility.

## 8.3 U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (Corps) is responsible for regulating compliance with Section 404 of the Clean Water Act (CWA) concerning potential impacts on waters of the United States (WOUS).

## 8.4 U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service (USFWS) is responsible for the administration of the ESA. A Biological Evaluation would be prepared to assess the potential effects of the Project on any ESA-listed species and to determine the level of consultation with USFWS that would be required. The BLM would also invite USFWS to be a cooperating agency on the Project.

## 8.5 Nevada Division of Environmental Protection

The Nevada Division of Environmental Protection (NDEP) is dedicated to preserving and enhancing the environment of the State of Nevada to protect public health, sustain healthy ecosystems, and contribute to a vibrant economy. They oversee potential impacts to land, water, and air quality, as well as environmental cleanup efforts. NDEP would oversee permits for air quality and water wells, as needed, during the course of the Project.

## 8.6 Nevada Department of Transportation

The Nevada Department of Transportation (NDOT) is tasked with ensuring all transportation-related projects meet state and federal requirements concerning applicable laws. While the Project area does not fall within a NDOT-administered ROW, it is anticipated an encroachment permit for construction activities may be required.

## 8.7 Nevada Department of Wildlife

The Nevada Department of Wildlife (NDOW) is the state agency responsible for the restoration and management of fish and wildlife resources, and the promotion of boating safety. NDOW's mission is to protect, conserve, manage and restore wildlife and its habitat for the aesthetic, scientific, educational, recreational, and economic benefits to citizens of Nevada and the United States.

Pursuant to NRS 701.600 through 701.640 any owner/applicants of proposed energy projects must file a notice (application) and provide an initial fee to the NDOW for evaluation of the project ad part of the Energy Planning and Conservation Fund and the Fund for the Recovery of Costs. The application and initial fee is to be submitted to NDOW concurrently with application submittal to any other (local, State or Federal) government agency in the State of Nevada. Projects which are already in progress but still have documents pending for review by NDOW will also need to apply and provide funding. All

unused fees will be returned upon completion of project review or if the application is withdrawn in advance of completion.

### 8.8 Nevada Public Utilities Commission

The Nevada Public Utilities Commission (PUCN) is a regulatory agency that ensure investor-owned utilities comply with laws enacted by the Nevada Legislature. These duties include:

- Provide for fair and impartial regulation of public utilities.
- Provide for the safe, economic, efficient, prudent, and reliable operation and service of public utilities.
- Balance the interests of customers and shareholders of public utilities by providing public utilities with the opportunity to earn a fair return on their investments while providing customers with just and reasonable rates.

Nevada Revised Statute (NRS) 704.865 provides that a person other than a local government constructing a utility facility in Nevada must obtain a Utility Environmental Protection Act (UEPA) permit from the PUCN. The permit is issued by the PUCN once all other relevant permits have been obtained by the developer.

### 8.9 Local Compliance

In accordance Clark County Department of Air Quality (Clark County 2021), a dust control permit for each county would be required for this Project. A Special Use Permit may also be required by Clark County.

## 9.0 RESOURCE VALUES AND ENVIRONMENTAL CONCERNS

An environmental analysis and NEPA-compliant document would be prepared for this Project to evaluate the potential impacts of the proposed Project and related activities. The NEPA document would identify the primary resource values that may be impacted by the proposed Project, including air quality, biological resources, cultural resources, lands and realty, noise, recreation resources, special area designations, transportation and travel management, visual resources, water resources, and wilderness areas/lands with wilderness characteristics. As the NEPA process progresses, this section would be revised to summarize the potential environmental consequences of the No Action and Proposed Action alternatives evaluated in the NEPA document. In consultation with BLM and BOR, a number of design features would be incorporated into the Proposed Action to reduce and/or avoid resource impacts (see Design Feature discussion in Section 7.0).

### 9.1 Biological Resources

Protected biological resources would be identified during the Project planning phase and addressed in a Biological Evaluation prepared according to BLM standards. An initial assessment of the biological

resources that are known to be present or could potentially be present in the Project area is provided below.

### 9.1.1 Biotic Communities

The Project is located within the Mojave Basin and Range Level III Ecoregion and the Arid Valleys and Canyonlands Level IV Ecoregion (Bryce et al. 2003). The Arid Valleys and Canyonlands ecoregion includes steep canyons and bench lands below 2,000 feet elevation, as well as floodplains near the Colorado River. This is one of the hottest and driest ecoregions in Nevada, receiving only two to seven inches of rainfall per year. Rocky colluvial soils cover eroded slopes; deeper soils occur on benches and alluvial fans. Vegetation is a sparse, but diverse, shrub cover that includes creosote bush (*Larrea tridentata*), white brittlebush (*Encelia farinosa*), white bursage (*Ambrosia dumosa*), mesquite (*Prosopis* sp.), palo verde (*Parkinsonia* sp.), and occasional Sonoran desert elements, such as ocotillo (*Fouquieria splendens*). Along the Colorado River, non-native salt cedar (*Tamarix ramosissima*) is replacing native riparian vegetation, such as Fremont cottonwood (*Populus fremontii*) and willow (*Salix* sp.) (Bryce et al. 2003).

### 9.1.2 Wildlife

Wildlife species that are likely to occur in the Project area include western whiptail lizard (*Aspidoscelis tigris*), zebra-tailed lizard (*Callisaurus draconoides*), black-tailed gnatcatcher (*Polioptila melanura*), black-throated sparrow (*Amphispiza bilineatus*), LeConte's thrasher (*Toxostoma lecontei*), loggerhead shrike (*Lanius ludovicianus*), mourning dove (*Zenaida macroura*), turkey vulture (*Cathartes aura*), black-tailed jackrabbit (*Lepus californicus*), and white-tailed ground squirrel (*Ammospermophilus leucurus*).

### 9.1.3 Threatened and Endangered Species

The USFWS Information for Planning and Consultation (IPaC) decision support system was accessed to obtain a species list for the Project on June 11, 2021. There are two federally listed species with the potential to occur in the project area: the southwestern willow flycatcher (*Empidonax trailii extimus)* and the Mojave desert tortoise (*Gopherus agassizii*).

The southwestern willow flycatcher (*Empidonax trailii extimus)* is listed as federally endangered and requires riparian habitat, which is not present in the project area, but is available along the Colorado River, approximately 4 miles east of the project area.

The USFWS listed the population of the Mojave desert tortoise as endangered on August 4, 1989 (*Federal Register* 54:32326), as a result of a dramatic loss of habitat and species population. The State of Nevada has listed the desert tortoise as a fully protected species and has also designated the species as its official state reptile. As part of the listing, critical habitat was designated in 1994, which consists of areas that contain habitat vital to the survival and reestablishment of the species. Disturbance of critical habitat requires a consultation with the USFWS under Section 7 of the ESA.

The Project area occurs entirely within desert tortoise habitat and is located near a designated USFWS Critical Habitat Unit for the species. The Paiute-Eldorado Critical Habitat Unit is located approximately 0.25 miles from the edge of the project area. Due to the project area's distance from this Critical Habitat Unit, risk is anticipated to be lower for desert tortoise.

### 9.1.4 Critical Habitats

There are no critical habitats that have been designated or proposed under the ESA in the Project area.

### 9.1.5 BLM Sensitive Species

The Mojave desert tortoise may occur in the Project vicinity. The Mojave desert tortoise is currently listed as endangered under the ESA, is a BLM-designated sensitive species, and is listed as a Nevada threatened reptile. The Mojave desert tortoise is managed on federal lands within the Southern Nevada District through a Programmatic Biological Opinion (PBO; 08ENVS00-2019-F-0153). Under the PBO, appropriate conservation measures are implemented on a project-by-project basis to help ensure the current and future viability of Mojave desert tortoise populations.

The potential presence of other BLM-designated sensitive species would be evaluated through coordination with the BLM and onsite surveys conducted during the Project planning phase.

### 9.1.6 Special Status Species

The Nevada Natural Heritage Program (NNHP) database was queried to obtain a list of special status species that have the potential to occur in the vicinity of the proposed Project area. Table 3 lists the species that have medium to high potential to occur within 5 miles of the proposed Project area by the NNHP.

**Table 3. Sensitive Species with the Potential to Occur in the Project Area (NNHP, State of Nevada, and BLM designated)**

| Common Name | Scientific Name | Status |
|---|---|---|
| Mohave desert tortoise | *Gopherus agassizii* | NNHP Y, ESA E<br>BLM S, NV TR |
| Canyon bat | *Parastrellus Hesperus* | NNHP W, BLM S |
| Mexican free-tailed bat | *Tadarida brasiliensis* | NNHP W, BLM S<br>NV PM |
| Phainopepla | *Phainopepla nitens* | NNHP Y, BLM S |
| Yuma Ridgway's Rail | *Rallus obsoletus yumanesis* | NNHP Y, BLM S<br>NV EB |

| Common Name | Scientific Name | Status |
|---|---|---|
| Razorback sucker | *Xyrauchen trxanus* | NNHP Y, BLM S<br>NV EF |

*Source*: NNHP 2017.

[a] Status definitions: CE=Critically Endangered, EB=Endangered Bird, N=Native, PM=Protected Mammal, S=Sensitive, TR=Threatened Reptile, W=Watch List, Y=At Risk, BLM=Bureau of Land Management, ESA=Endangered Species Act, NNHP=Nevada Natural Heritage Program, NV=Nevada

## 9.2 Vegetation and Protected Native Plants

General vegetation in the region consists mainly of Sonora-Mojave Creosote bush / White Bursage Desert Scrub. The BLM and the State of Nevada have protections for cactus and yucca species.

## 9.3 Noxious and Invasive Species

The BLM and State also regulate and manage invasive plant species. Construction activities are known to contribute to the introduction and spread of noxious weeds and invasive plant species. Construction vehicles and equipment can transport seeds from outside the Project area, and disturbed soils are prone to colonization by invasive annuals that may outcompete native species. Standard BMPs that would be implemented by the Applicant to prevent the introduction and spread of noxious and invasive plant species during construction would include treating noxious and invasive species infestations prior to construction and ensuring that vehicles and construction equipment that enter the site are free of soil and plant material.

Surface disturbance during construction of the Project would permanently remove native vegetation; the Project area would be managed under an *Integrated Weed Management Plan* to ensure that disturbed soils are not colonized by noxious and invasive species. Once construction activities are completed, temporarily disturbed areas would be re-contoured and re-vegetated with a BLM-approved native seed mix under a *Restoration and Revegetation Plan*.

## 9.4 Cultural Resources

The proposed project is situated on federal land managed by the BLM. It requires federal permitting and thus constitutes an undertaking pursuant to 36 CFR § 800.16(y). As such, it is subject to compliance with Section 106 (54 U.S.C. § 306108) of the National Historic Preservation Act (54 U.S.C. § 300301, et seq.) and its implementing regulations (36 CFR Part 800). The BLM is identified as the lead federal agency responsible for Section 106 compliance.

### 9.4.1 Preliminary Cultural Assessment

Given the nature of the present undertaking, its area of potential effects ([APE] sensu 36 CFR § 800.16[d]) is best discussed in terms of direct and indirect effects. The direct APE includes all land wherein project-related ground disturbance could occur, potentially affecting historic properties (sensu 36 CFR § 800.16[l][1]), if any exist therein. The indirect APE consists of a circumferential buffer zone,

within which project-related activities may adversely affect the integrity of historic properties through visual, olfactory, auditory, vibrational, or atmospheric impacts. This preliminary cultural assessment only considers the direct APE, as the indirect APE has yet to be defined by the BLM for this undertaking.

A review of the Nevada Cultural Resources Inventory System (NVCRIS) indicates that several cultural resource inventories are completed within and around the Project Area. A total of 52 cultural resource inventories have been completed within one mile of the project area, 21 of which overlap with the project area. As a result of these inventories, 124 sites have been previously recorded within one mile of the project area.
A review of NVCRIS revealed eight previously recorded archaeological sites and three architectural resources within gen-tie route. Sites consist of historic transmission lines, roads, and can scatters. Five of the previously recorded sites have been recommended ineligible for the NRHP, the eligibility status of the remaining three resources is unknown. The three architectural resources consist of historic transmission lines, two of which have been recommended eligible for the NRHP. The third is ineligible for the NRHP.

Once the direct APE has been completely and adequately surveyed in accordance with all applicable statutes and protocols, an archaeologist would use the survey data to identify sites, historic structures, features, districts, objects, or Traditional Cultural Properties (TCPs) within the direct APE that are listed or eligible for listing in the NRHP. Such resources are referred to as historic properties. Archaeologists who meet or exceed the U.S. Secretary of the Interior's (SOI) professional qualifications and are permitted by the ASM will be required to determine whether any historic properties within the project area are likely to be adversely affected by the proposed undertaking. This assessment would need to include field visits to sites within the indirect APE to evaluate the potential for indirect effects. The studies should ultimately result in an anticipated finding of effect and, if adverse effects are anticipated, provide a basis for making preliminary management recommendations for any historic properties within the direct and indirect APEs.

### 9.4.2 Tribal Consultation and Potential Concerns

The BLM has a unique government-to-government relationship with Native American tribes. This relationship is founded on provisions of the U.S. Constitution, federal treaties, federal statutes, and executive orders that require the agency to consult, as part of federal undertakings, with tribes who recognize an historical, spiritual, or religious connection with or interest in a particular place or region. The BLM's government-to-government consultation with tribes is performed in compliance with Secretarial Order No. 3317, which outlines the Department of the Interior's policy on tribal consultation.

Research indicates that the nearest tribe is the Fort Mohave Indian Tribe, whose reservation is located approximately 3.5 miles southeast of the proposed project along the Colorado River.

## 9.5 Lands and Realty

The 2,618-acre solar facility occurs entirely on BLM and BOR lands. The Project falls within the BLM Southern Nevada District Office and the BOR Lower Colorado Basin Office. The gen-tie line will require BLM and BOR ROW for route connecting the solar field on BLM and BOR land to the first structure on

private land, up to approximately 6 miles (31,680 feet) in length and 200 feet wide (up to 146 acres). The gen-tie line would also require a 200-foot-wide easement on privately owned lands for up to 3 miles (72 acres).

## 9.6 Air Quality/Climate Change/Greenhouse Gases

The project is located within EPA Region 9 within the Clark County air basin. The Department of Air Quality and Environmental Management is the air pollution control agency for all of Clark County, Nevada. Established by the Clark County Board of County Commissioners in 2001, the Department of Air Quality administers a variety of programs to ensure that the quality of the air in Clark County meets healthful, regulatory standards (Clark County Air Quality Regulations include the Clean Air Act of 1977 and amendments, NRS 321.001, 40 Code of Federal Regulations (CFR) Subpart C, 42 USC 7408–7409).

Emissions from the project would be regulated in accordance with Clark County Air Quality Regulations Rule 6, Section 12, which contains rules and guidance for emissions from any stationary source that has a "potential to emit a regulated air pollutant that is equal to or greater than the thresholds."

Section 94 of the Clark County Air Quality Regulations regulates permitting and dust control for construction projects. Clark County requires projects with soil disturbing of greater than (or equal to) 0.25 acre to apply for a Dust Control Permit prior to the start of construction-related activities. The Dust Control Permit will require a project-specific Dust Mitigation Plan. The purpose of the Fugitive Dust Plan is to outline the procedures and methods for reducing construction-related dust during project activities. Dust control will include County-specified Best Management Practices as outlined within the Dust Control Handbook.

The Project will require a Dust Control Permit and a Fugitive Dust Plan with appropriate control measures incorporated, as described in the County Construction Activities Dust Control Handbook. Since the project area is over 50 acres in area, a soils analysis will be required using the appropriate American Society for Testing and Materials (ASTM) test.

## 9.7 Noise

The Project area is positioned in a location that would isolate the solar facility from sensitive noise receptors. There are no sensitive noise receptors within the Project area; the nearest residences are located approximately 3.5 miles southeast. Construction activities would produce a short-term increase in noise at the site boundary over the existing ambient noise levels.

## 9.8 Visual Resources

The term "visual resources" refers to the composite of basic terrain, geologic, and hydrologic features; vegetative patterns; and built features that influence the visual appeal of a landscape. Visual impacts are defined as the change to the visual environment resulting from the introduction of modifications to the landscape. The Project area lies within the Basin and Range physiographic province, which is characterized by steep, narrow, isolated mountain ranges—generally on a north-south axis—separated by wide, flat, sediment-filled valleys or basins (EPA 2013).

The BLM uses the Visual Resource Management (VRM) System to classify and manage visual resources on lands under its jurisdiction. The VRM System involves inventorying scenic values, establishing management objectives for those values through the resource management planning process, and then evaluating proposed activities to determine whether they conform to the management objectives (BLM 1984). The BLM's VRM System incorporates scenic quality, viewer sensitivity, and visual distance zones to identify overall visual resource inventory (VRI) classes. These classes (I, II, III, and IV) represent the relative value of the existing visual landscape, as well as the visual resource baseline from which to measure impacts that a proposed project may have on these values.

In its planning process, the BLM weighs visual and competing resource values to allocate the VRM classes with associated management class objectives for a given area's visual setting. The lands within the Project area are managed as VRM Class III. The objective of VRM Class III is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

Potential visual impacts from the Project would depend on an analysis of visual dominance, scale, and contrast to determine the degree that the Project would attract attention and to assess the relative change in character as compared to the existing characteristic landscape and its inherent scenic quality. The amount of visual contrast created is directly related to the amount of attention that is drawn to a feature in the landscape and, consequently, the visual impacts.

## 9.9 Water Resources

Based on data from the National Hydrography Dataset, the Project area does not cross any perennial or intermittent waters but crosses several unnamed ephemeral waters. The Project area is not located within the 100-year FEMA floodplain (Zone A).

## 9.10 Clean Water Act/Section 404 Compliance

The Corps is responsible for regulating compliance with Section 404 of the CWA concerning potential impacts to WOUS. The Corps regulates activities that discharge dredged or fill materials into jurisdictional WOUS and issues permits for these discharges under Section 404 of the CWA. Based on the Navigable Waters Protection Rule (effective June of 2020), there are no WOUS within the Project area due to a lack of perennial and intermittent features.

## 9.11 Clean Water Act/Section 402 Compliance

The NDEP is the permitting authority for CWA Section 402 stormwater permitting and regulation for discharges that enter Nevada "Surface Waters" or a Municipal Separate Storm Sewer System (MS4) leading to surface waters and are associated with construction activities that will ultimately disturb one or more acres of non-tribal land in Nevada. Coverage under the Section 402 stormwater permitting, as well as any of the Construction General Permit (CGP) requirements (e.g., SWPPP, associated stormwater control measures, stormwater inspections of a routine frequency) would likely be required for this Project.

## 9.12 Ground Water

The Project would require up to 200 AF of water during the 18-month construction period and up to approximately 20 AFY for O&M activities. Early coordination with NDEP would assist in determining the appropriate permit needed if the construction of a groundwater well is necessary. Water would likely be sourced and purchased from local providers at the most local site possible and drawing that water from the locations the local entities specifically require. It is understood that there are multiple locations throughout the Project area where water can be accessed.

## 9.13 Wilderness Characteristics

The Project area is located approximately 5 to 7 miles south of the Bridge Canyon Wilderness Area and the Spirit Mountain Wilderness Area and approximately 1 mile north of the Dead Mountains Wilderness Area, located in San Bernardino County, California. There are no known lands with wilderness characteristics or designated wilderness areas in or adjacent to the Project area.

## 9.14 Hazardous Materials

A preliminary desktop review using available online resources was conducted for the Project area and vicinity. According to the EPA's NEPAssist tool and EPA EnviroMapper, there are no known hazardous waste/material sites within the vicinity of the Project (USEPA 2021).

## 9.15 Special Land Use Designations

The Project solar facility is sited on variance lands and lands with greater than 5% slope as identified in the Solar PEIS. The BLM will evaluate this application and initiate the variance process as identified in Instruction Memorandum NV-SNDO-2020-001. The Paiute – El Dorado Valley Area of Critical Environmental Concern (ACECs) is about 0.25 miles northwest and west of the proposed Project. This ACEC was developed and is managed to preserve critical habitat for the desert tortoise.

Additionally, the BLM-managed lands crossed by the Project are part of the Laughlin Special Recreation Management Areas (SRMA). This SRMA focuses on off-highway vehicle (OHV) use. There are permits in place in the SRMA for high-speed truck/buggy/UTV/motorcycle/quad races and endurance /obstacle events throughout the year. Some of these events can occur for multiple days. The Laughlin motorcycle and OHV race course identified in the PBO are located between 0.1 and 0.25 miles to the north and west of the proposed Project.

# 10.0 REFERENCES


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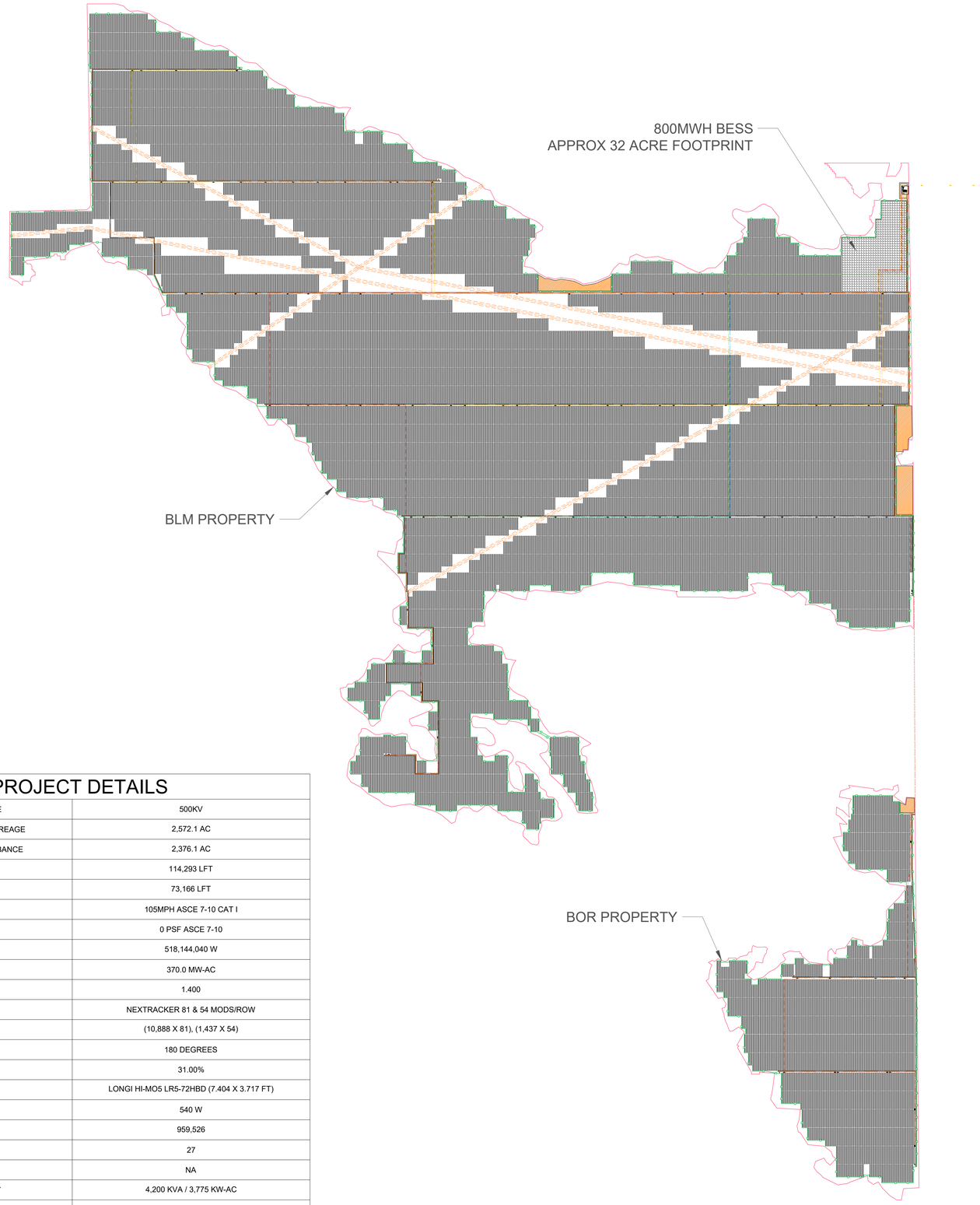
# Appendix A – Project Design Plans




## PROJECT DETAILS

| | |
|---|---|
| INTERCON. VOLTAGE | 500KV |
| PROPERTY BOUNDARY ACREAGE | 2,572.1 AC |
| FENCED LIMIT OF DISTURBANCE | 2,376.1 AC |
| FENCE LENGTH | 114,293 LFT |
| ROAD LENGTH | 73,166 LFT |
| WIND LOAD | 105MPH ASCE 7-10 CAT I |
| SNOW LOAD | 0 PSF ASCE 7-10 |
| DC CAPACITY | 518,144,040 W |
| AC CAPACITY | 370.0 MW-AC |
| DC:AC RATIO | 1.400 |
| STRUCTURE | NEXTRACKER 81 & 54 MODS/ROW |
| TRACKER ROWS | (10,888 X 81), (1,437 X 54) |
| AZIMUTH | 180 DEGREES |
| GCR | 31.00% |
| MODULE | LONGI HI-MO5 LR5-72HBD (7.404 X 3.717 FT) |
| MODULE CAPACITY | 540 W |
| MODULE QUANTITY | 959,526 |
| STRING SIZE | 27 |
| INVERTER | NA |
| INVERTER CAPACITY | 4,200 KVA / 3,775 KW-AC |
| INVERTER QUANTITY | 98 |

## LEGEND

| | |
|---|---|
| | NEXTRACKER ROW (81 MOD) |
| | NEXTRACKER ROW (54 MOD) |
| | 6' CHAIN LINK FENCE + 1' WIRE |
| | CENTRAL INVERTER SKID |
| | ACCESS ROAD |
| | WETLAND, 50' SETBACK |
| | FEMA 100YR / REGULATORY FLOODWAY |
| OH OH OH | EXISTING OVERHEAD TRANSMISSION |
| OH OH OH | PROPOSED PROJECT TRANSMISSION |
| | EXCLUSION ZONES |
| | INVERTER BLOCK BOUNDARY |
| AC AC AC | UNDERGROUND MV COLLECTIONS |
| | PROPERTY BOUNDARY |
| | TRANSMISSION LINE POLE |
| | LAYDOWN & STAGING AREAS |

**SEAL:**

PRELIMINARY

**CONFIDENTIALITY STATEMENT**



**ENGINEERING MANAGER:**

MK Solar Operations LLC
matt@mksolarops.com

**OWNER/DEVELOPER:**

**PROJECT:**

ANGORASOLAR
35.097, -114.711
LAUGHLIN, NV

**REVISIONS**

| # | DESCRIPTION | DATE |
|---|---|---|
| - | CONCEPTUAL LAYOUT | 13APR2021 |
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**SHEET NO.**

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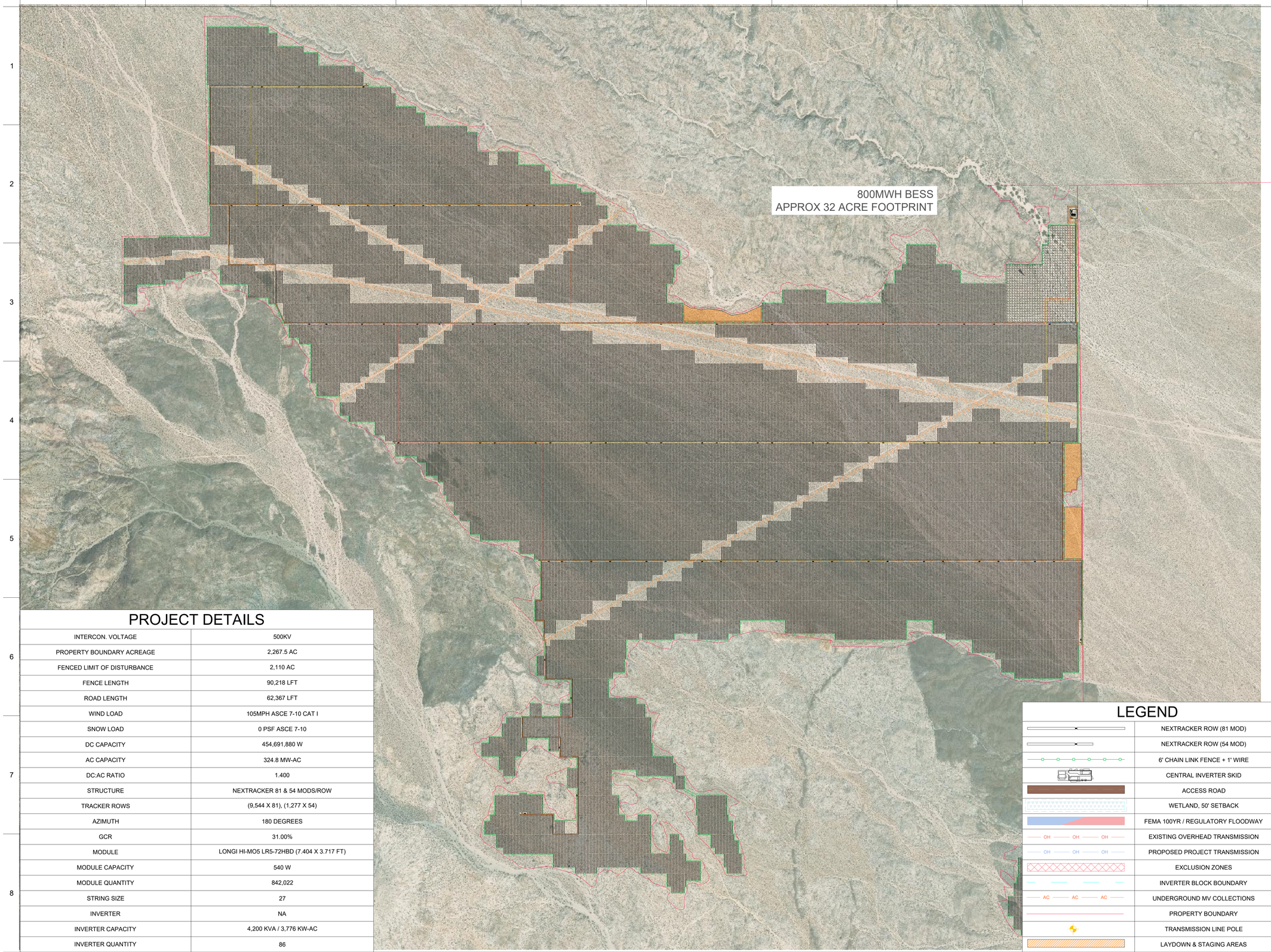


## PROJECT DETAILS

| | |
|---|---|
| INTERCON. VOLTAGE | 500KV |
| PROPERTY BOUNDARY ACREAGE | 2,267.5 AC |
| FENCED LIMIT OF DISTURBANCE | 2,110 AC |
| FENCE LENGTH | 90,218 LFT |
| ROAD LENGTH | 62,367 LFT |
| WIND LOAD | 105MPH ASCE 7-10 CAT I |
| SNOW LOAD | 0 PSF ASCE 7-10 |
| DC CAPACITY | 454,691,880 W |
| AC CAPACITY | 324.8 MW-AC |
| DC:AC RATIO | 1.400 |
| STRUCTURE | NEXTRACKER 81 & 54 MODS/ROW |
| TRACKER ROWS | (9,544 X 81), (1,277 X 54) |
| AZIMUTH | 180 DEGREES |
| GCR | 31.00% |
| MODULE | LONGI HI-MO5 LR5-72HBD (7.404 X 3.717 FT) |
| MODULE CAPACITY | 540 W |
| MODULE QUANTITY | 842,022 |
| STRING SIZE | 27 |
| INVERTER | NA |
| INVERTER CAPACITY | 4,200 KVA / 3,776 KW-AC |
| INVERTER QUANTITY | 86 |

## LEGEND

| |
|---|
| NEXTRACKER ROW (81 MOD) |
| NEXTRACKER ROW (54 MOD) |
| 6' CHAIN LINK FENCE + 1' WIRE |
| CENTRAL INVERTER SKID |
| ACCESS ROAD |
| WETLAND, 50' SETBACK |
| FEMA 100YR / REGULATORY FLOODWAY |
| EXISTING OVERHEAD TRANSMISSION |
| PROPOSED PROJECT TRANSMISSION |
| EXCLUSION ZONES |
| INVERTER BLOCK BOUNDARY |
| UNDERGROUND MV COLLECTIONS |
| PROPERTY BOUNDARY |
| TRANSMISSION LINE POLE |
| LAYDOWN & STAGING AREAS |

SEAL:

PRELIMINARY



ENGINEERING MANAGER:

MK Solar Operations LLC
matt@mksolarops.com

OWNER/DEVELOPER:

PROJECT:

ANGOFA SOLAR
35.097, -114.711
LAUGHLIN, NV

**REVISIONS**

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| - | CONCEPTUAL LAYOUT | 13APR2021 |
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PLOT DATE: 13APR2021

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SHEET TITLE:

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BLM

SHEET NO.

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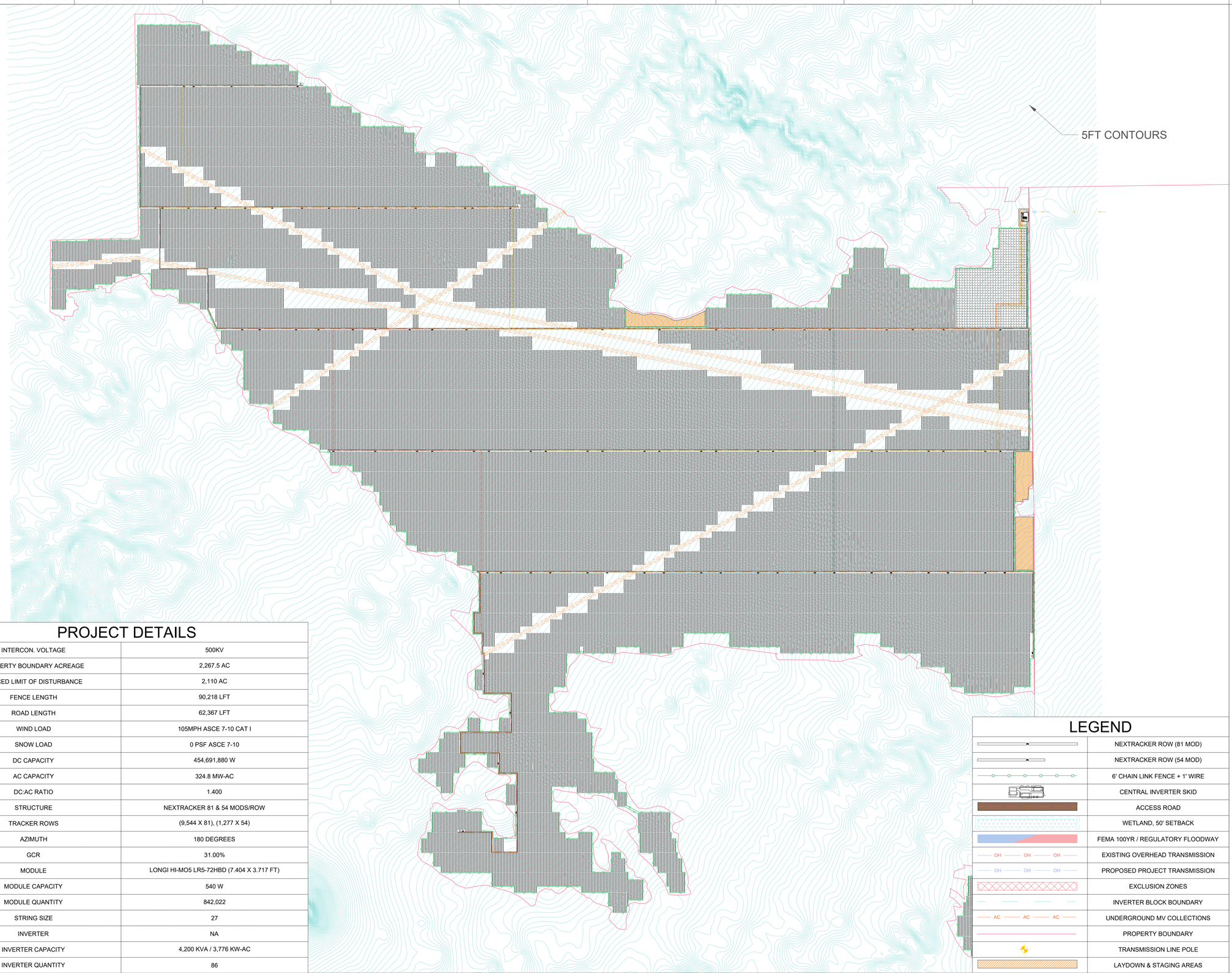


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## LEGEND

| |
|---|
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| NEXTRACKER ROW (54 MOD) |
| 6' CHAIN LINK FENCE + 1' WIRE |
| CENTRAL INVERTER SKID |
| ACCESS ROAD |
| WETLAND, 50' SETBACK |
| FEMA 100YR / REGULATORY FLOODWAY |
| EXISTING OVERHEAD TRANSMISSION |
| PROPOSED PROJECT TRANSMISSION |
| EXCLUSION ZONES |
| INVERTER BLOCK BOUNDARY |
| UNDERGROUND MV COLLECTIONS |
| PROPERTY BOUNDARY |
| TRANSMISSION LINE POLE |
| LAYDOWN & STAGING AREAS |

SEAL:

PRELIMINARY

**CONFIDENTIALITY STATEMENT**



ENGINEERING MANAGER:

MK Solar Operations LLC
matt@mksolarops.com

OWNER/DEVELOPER:

PROJECT:

ANGORASOLAR
35.097, -114.711
LAUGHLIN, NV

**REVISIONS**

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| PROJECT NO: | DRN | CHK | APP | START DATE |
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**PLOT DATE:** 13APR2021

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OPEN REVISION

SHEET TITLE:

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SHEET NO.

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