Leo Solar Project

Variance Factor Analysis

Leo Solar LLC

AZA 38550

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1 List of Acronyms

AC	Alternating Current
ACEC	Area of Critical Environmental Concern
Arevia Power	Arevia Power LLC or Applicant
AZGFD	Arizona Game and Fish Department
BESS	Battery Energy Storage System
BLM	Bureau of Land Management
BOR	U.S. Bureau of Reclamation
CHAT	Crucial Habitat Assessment Tool
DC	Direct Current
DOE	U.S. Department of Energy
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FTE	Full-time Equivalent
Gen-tie	Generation Tie-Line
IPaC	IPaC
kV	Kilovolt
LCC	Landscape Conservation Cooperative
MW	Megawatt
MWac	Megawatt, alternating current
NEPA	National Environmental Policy Act
NDOW	Nevada Department of Wildlife

1 LIST OF ACRONYMS

NPS	National Park Service
NRHP	National Register of Historic Places
NWR	National Wildlife Refuge
O&M	Operations and Maintenance
PPA	Power Purchase Agreement
OSHA	Occupational Safety and Health Administration
PEIS	Programmatic Environmental Impact Statement
POD	Plan of Development
Project	Leo Solar Project
PV	Photovoltaic
PYFC	Potential Fossil Yield Classification
RDEP	Renewable Design Energy Project
REDA	Renewable Energy Development Area
RMP	Resource Management Plan
ROD	Record of Decision
ROW	Right of Way
SCADA	Supervisory Control and Data Acquisition
SEZ	Solar Energy Zone
SGCN	Species of Greatest Conservation Need
SHPO	State Historic Preservation Office
SRMA	Special Recreation Management Area
SWPPP	Stormwater Pollution Prevention Plan
TCP	Traditional Cultural Property
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

1 LIST OF ACRONYMS

VFAR	Variance Factor Analysis Report
VRM	Visual Resource Management
Western Solar Plan	Final Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States (Arizona, California, Colorado, Nevada, New Mexico, and Utah)

2 Introduction

2.1 Background

In 2012, the Bureau of Land Management (BLM) and the U.S. Department of Energy (DOE) issued the Final Programmatic Environmental Impact Statement (PEIS) for Solar Energy Development in Six Southwestern States (Arizona, California, Colorado, Nevada, New Mexico, and Utah) (Western Solar Plan). The comprehensive Western Solar Plan facilitates the permitting of solar energy development projects on public land in a more efficient, standardized, and environmentally responsible manner. The Solar Energy Program identified Solar Energy Zones (SEZs) that are well suited for utility-scale production of solar energy, as well as variance areas on BLM-administered lands that are outside of the SEZs and not otherwise excluded by the Solar Energy Program. Variance areas are potentially available for utility-scale solar energy development per the variance process, to provide flexibility. The BLM will consider right-of-way (ROW) applications for utility- scale solar energy development in variance areas on a case-by-case basis based on environmental considerations; coordination with appropriate federal, state, and local agencies and tribes; and public outreach.

Leo Solar LLC is proposing the development and operation of the Leo Solar photovoltaic (PV) power plant (Project) in a BLM-designated variance area located in Mohave County, Arizona. The Project would include the construction of a solar and battery energy storage facility on BLM-managed lands and a generation tie line (gen-tie) on a combination of federal, state, and private lands (depending on the ultimate route selected) connecting to the Mohave Substation in Clark County, Nevada. To develop the solar site, Leo Solar LLC has applied for a ROW grant with the BLM Kingman Field Office, which would provide the necessary land and access for construction, operation, maintenance, and decommissioning of the proposed solar facility and interconnection to the regional transmission network.

As part of the variance process, Leo Solar must demonstrate that the proposed facility would avoid, minimize, and/or mitigate the impacts to sensitive resources, according to standards set out by the Western Solar Plan. They must also demonstrate that the proposed Project is compatible with state and local plans, that they can acquire all required permits and authorities to implement the Project, and that any potential conflicts with sensitive resources have been assessed. This Variance Factors Analysis Report (VFAR) provides this information to the BLM for the Leo Solar ROW grant application review.

2.2 Project Description

Leo Solar is proposing the construction, operation, maintenance, and decommissioning of a 450-megawatt alternating current (MWac) PV solar power plant with a 450 MWac battery energy storage system (BESS) in a solar variance area located in Mohave County, Arizona, approximately 15 miles southeast of Bullhead City, 28 miles southwest of Kingman, and 5 miles east of the Colorado River and California state line. The Project is proposed on approximately 5,565acres of BLM-managed land[1]. See Attachment A, Figure 1.

In addition to the PV solar arrays and BESS, the proposed Project would include an operations and maintenance (O&M) area and an O&M building (50 feet by 30 feet) with a height of approximately 15 feet. The O&M building would house administrative staff, maintenance facilities, and ancillary support systems such as water treatment and component storage. The main Control Room housing the primary supervisory control and data acquisition (SCADA) system would be housed within the O&M building. A gravel parking lot would be constructed adjacent to the building, capable of holding up to 20 vehicles.

During construction, the proposed Project would also require temporary construction areas, laydown yards, and a temporary water source for dust control along access roads, gen-tie, and solar facility development areas during construction.

A preliminary Plan of Development (POD) has been submitted to BLM and provides a conceptual overview of how the Project would be constructed, operated, maintained, and decommissioned within the application area. An updated POD is included in Attachment B.

2.3 Proposed Project Technology

According to the National Renewable Energy Laboratory mapping, the expected annual mean daily solar radiation for the Project area is 7 to 7.5 kWh/m$_2$/day, a very high rate compared to other parts of the country. The proposed technology will be PV modules, which has been used on numerous BLM sites across the Southwestern U.S. and is one of the least intrusive technologies and the easiest to build. These aspects make it adaptable to different settings and implementation of the identified design features. The use of multiple, parallel rows of PV modules on single axis tracking structures would make the most efficient and flexible use of the solar resource. The proposed PV technology has a high level of reliability, low maintenance, and requires very little (or no) water during operations.

[1] The ROW application area for Leo Solar currently overlaps 367 acres of the Atlas Wind ROW application area (25,509 acres). As design progresses and the wind resource is more well defined in this area, the applicant will determine if this area of overlap is better suited for wind or solar.

The proposed Project would consist of multiple parallel rows of PV panels on single-axis tracking structures, direct current (DC) to alternating current (AC) inverters, transformers, an underground and overhead 34.5-kilovolt (kV) collection system, one or more on-site substations, and a gen-tie interconnection to the Mohave Substation. The facility would be located behind an 8-foot chain-link perimeter fence. The entire Project would be fenced, creating a single use on the acreage. Temporary construction workspace, staging areas, laydown yards, access roads, operation and maintenance area, drainage controls, and a 20-foot-wide fire break would be located within the fenced area.

2.4 Project Interconnection and Siting Considerations

The proposed action (ROW Grant) would provide the necessary land and access for the operation of the solar power plant and BESS and interconnection to the Mohave Substation, about 16 miles northwest of the Project in Clark County, Nevada. The Mohave Substation has available capacity following closure of the Mohave Power Station coal power plant.

In addition, the Project is adjacent to a Section 368 energy corridor, which is intended for use by electrical transmission lines and similar linear facilities. The Section 368 corridor serves much of the gen-tie route to the substation. See Attachment A, Figure 2. The Project is also being planned as part of a larger wind and solar development, which would allow for more consistent energy generation throughout the day.

2.5 Purpose and Need

2.5.1 Need for Renewable Energy

The United States has a greater solar energy resource potential than any other industrialized nation. The multiple benefits associated with developing this resource have been recognized repeatedly by both federal and state policy-makers. Development of solar resources reduces reliance on foreign sources of fuel, promotes national security, diversifies energy portfolios and contributes to the reduction of greenhouse gas emissions. The demand for power continues to grow in the Western United States. As older technology fossil-fuel plants reach the end of their useful lives, there is a need to replace them with clean, reliable resources. Recognizing this need, many Western states, including Arizona, have enacted legislation to encourage or mandate the development of renewable generation.

Arizona's renewable energy standard calls for 15 percent of electricity to be generated from renewable sources by 2025. The federal government has enacted legislation strongly encouraging the development of renewable energy. As part of an overall strategy to develop a diverse portfolio of domestic energy supplies for our future, the National Energy Policy of 2001 and the Energy Policy Act of 2005 (Public Law 109-58, August 8, 2005) encourage the development of renewable energy resources, which includes solar energy. Section 211 of the Energy Policy Act of 2005 encourages the approval of at least 10,000 MW of non-hydropower

renewable energy production on the public lands; this goal was met in 2012. In early 2009, the Secretary of the Interior issued Orders 3283 and 3285, making the production, development, and delivery of renewable energy top priorities for the Department of the Interior. The President's Climate Action Plan, released on June 25, 2013, sets forth a new goal for the Department of the Interior to approve 20,000 MW of renewable energy projects on the public lands by 2020. The Energy Act of 2020 requires the Secretary of the Interior to set national goals for wind, solar, and geothermal energy production on Federal land no later than September 1, 2022, to include at least 25 gigawatts of electricity from these sources.

2.5.2 Project 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 emission goals. Solar energy provides a sustainable, renewable source of power that helps reduce fossil fuel dependence and greenhouse gas emissions. Considering the entire process, from raw material sourcing through end-of-life-cycle collection and recycling, 450 MWac of additional generating capacity would produce a small fraction of the greenhouse gas emissions of a similar capacity fossil fuel plant.

Specific Project objectives are:

- Establish a solar PV power-generating facility that is of sufficient size and configuration to produce approximately 450 MWac of electricity to provide Arizona and the West a significant new source of renewable energy.
- Produce and transmit electricity at a competitive cost.
- Locate the facility in a rural area of Mohave County in proximity to the Mohave Substation.
- Minimize environmental effects by:
  - Avoiding Exclusion Areas identified in the Solar PEIS ROD
  - Using existing electrical distribution facilities, rights-of-way, roads and other existing infrastructure where practicable
  - Minimizing water use during operation
  - Reducing greenhouse gas emissions
- Using solar technology that is available, proven, efficient, and easily maintained, recyclable, and environmentally sound.

2.5.3 Power Market and Project Benefits

The Project would include a gen-tie line connecting to Mohave Substation. The interconnection would allow utilities to purchase renewable energy generated by the Project under one or more Power Purchase Agreements (PPAs) to deliver energy from a (nominal) 450 MWac generating facility.

The Project is well suited to arid environments because of the technology's low water consumption. This is a key consideration in Arizona and the Western U.S., as the population

grows, and water supplies become more constrained. PV solar technology, which converts sunlight directly into electrical energy, entails no thermal process, and therefore does not require process or cooling water to produce electricity. Water consumption during operations would consist of dust control and domestic use for on-site personnel and is between 95 and 99 percent less than concentrating solar projects that employ conventional steam turbines to generate electricity.

The Project would also create employment for Arizona residents. The Project is anticipated to create an average of 850 construction jobs at any given time, and create up to 20+ long-term full-time-equivalent (FTE) operational jobs. These jobs would in turn support many other jobs in the Arizona economy.

2.6 Variance Report Findings

The BLM considers several factors when evaluating ROW applications and associated data in solar variance areas. The focus of the solar variance process is to preliminarily evaluate a project with respect to allowable variance lands established under BLM's Solar Energy Program, to ensure the applicant is collecting the right data and evaluating that data with the right parties to assess the appropriateness of a given proposal (rather than developing a prescriptive set of measures that would be established at the programmatic level). The proposed Project will undergo environmental analysis under the National Environmental Policy Act (NEPA). Therefore, the BLM believes that this variance approach allows flexibility to adapt as data and science improve, recognizes the variability and tradeoffs associated with individual applications, and allows for protection of resources of concern.

The required components of the Leo Solar Project variance process are described in Sections 3 through 6 and include the following:

- Confirmation that the Applicant will adhere to the data collection and survey protocols required by resource agencies.
- Compliance with required preliminary meetings with public resource agencies and local governments as part of BLM’s Solar Energy Program.
- Compliance with required preliminary public and stakeholder outreach as part of BLM’s Solar Energy Program.

Based on the information provided in Sections 3 and 4 of this report, the Leo Solar Project has established preliminary compliance with the use of variance lands under BLM's Solar Energy Program. At this time, preliminary indications are that the Project will avoid, minimize, and/or mitigate, as necessary, effects to sensitive resources. To this end, the proposed Leo Solar Project is compatible with state and local plans and can acquire all required permits and authorities to implement the Project.

3 Variance Factors To Be Considered

Applicants for utility-scale solar energy development ROWs in variance areas are required to adhere to the data collection and survey protocols prescribed by resource agencies, including, but not limited to, those listed in this section. The BLM will consider a variety of factors when evaluating ROW applications and associated data in variance areas. The focus of the variance process is on collecting the right data and evaluating it with the right parties to assess the appropriateness of a given proposal. The variance factors described in this section are specific to the Leo Solar Project variance application.

Arevia Power has evaluated the proposed Project in relation to the following variance factors and has determined that the Project should be considered for variance approval due to its conformance with the Solar PEIS, Kingman Resource Management Plan (RMP), and the Western Solar Plan and the Restoration Design Energy Project (RDEP), which amended the RMP to allow solar energy development subject to the findings of a variance process. Further discussion of these factors are provided below with environmental concerns and resource conflicts presented in Section 6.

3.1 Land Availability

The availability of lands in an SEZ that could meet the applicant's needs, including access to transmission.

All SEZs in Arizona are committed to other projects, and there are no SEZs in the vicinity of the proposed Project area that can serve market demand.

3.2 Current Land Use Conformance

Documentation that the proposed project will be in conformance with decisions in current land use plan(s) (e.g., visual resource management class designations and seasonal restrictions) or, if necessary, represents an acceptable proposal for a land use plan amendment.

The proposed Project location is in the BLM Kingman Field Office planning area and is managed under the 1995 Kingman RMP, which includes 2.4 million acres of BLM lands. The Kingman RMP provides for multiple uses of lands, including minerals and energy (oil and gas) development. The Western Solar Plan and the RDEP amended the RMP to allow solar energy development subject to the findings of a variance process. Should the proposal be granted a variance, the final POD would conform with management decisions from the Western Solar Plan and RDEP, including project design features, BMPs, and appropriate mitigation.

Any change in land use determined by the Kingman RMP, such as converting the proposed Project area to a solar energy facility, would be addressed under the future NEPA analysis. Any NEPA analysis would tier to the RMP and the Solar PEIS.

The BLM's Visual Resource Management (VRM) classification system is designed to minimize the visual impacts of surface-disturbing activities and maintain scenic values for the long term. The objectives of visual resource management in the VRM classification system rank from Class I (preserve the existing character of the landscape with little to no apparent visual change) to Class IV (provide for major modifications of existing landscape character with the application of mitigation measures). These class rankings provide for different levels of management activities within an area, from very limited (Class I), to activities that may dominate the view and be the major focus of viewer attention (Class IV). The Project area and most of the gen-tie is mapped as Class IV. A small portion of the gen-tie around Colorado River crossing is in Class III; however, the alignment of the gen-tie would take advantage of existing corridors to the extent possible. See Attachment A, Figure 3.

3.3 Consistency with Landscape Conservation Objectives

Documentation that the proposed project will be consistent with priority conservation, restoration, and/or adaptation objectives in the best available landscape-scale information (e.g., landscape conservation cooperatives, rapid ecological assessments, and state and regional-level crucial habitat assessment tools [CHATs]).

Landscape Conservation Cooperatives (LCC) were established to provide science capacity and technical expertise for meeting shared natural and cultural resource priorities. These LCC collaborative partnerships leverage resources, share scientific expertise, fill needed science gaps, identify best practices, and prevent duplication of efforts through coordinated conservation planning and design. The proposed Project lies within the Desert LCC.

The Project site is mapped in the Western Association of Fish and Wildlife Agencies' CHAT. CHAT "crucial habitat" is ranked using a relative, six-level prioritization scheme, where 1 represents areas "most crucial" and 6 areas "least crucial." Crucial habitat values are neither regulatory nor do they imply specific avoidance or mitigation measures for a given area. Crucial habitat values should be interpreted as the relative probability, or risk, that a high-priority species or habitat would be encountered in a given area. The Project site is classified as a CHAT rank 6, the lowest rank. See Attachment A, Figure 4.

The Project area does not contain Audubon-designated Important Bird Areas or U.S. Fish and Wildlife Service critical habitat or riparian areas.

3.4 Programmatic Design Features

Documentation that the proposed project can meet applicable programmatic design features adopted in the Western Solar Plan ROD (See Western Solar Plan ROD, Appendix A, Section A.4.1).

The Project will be required to meet the design features in Appendix A, Section A.4 of the Western Solar Plan ROD and Appendix B of the Arizona Restoration Design Energy Project ROD and Approved Resource Management Plan Amendments. Management plans addressing programmatic design features for the Project would be prepared and implemented in conjunction with development. The Project would complete additional plans necessary to achieve the design features in the Western Solar Plan in coordination with the BLM Kingman Field Office as determined by the Project-specific NEPA process. These plans include, but are not limited to:

- Bird and Bat Conservation Plan
- Health and Safety Plan
- Stormwater Management Plan
- Site Restoration Plan
- Paleontological Resources Management Plan
- Lighting Management Plan
- Traffic Management Plan
- Noise Monitoring and Mitigation Plan
- Surface and Groundwater Protection Plan
- Fire Management and Protection Plan
- Spill Prevention and Emergency Response Plan
- Nesting Bird Management Plan
- Wildlife Relocation Plan
- Worker Environmental Awareness Program
- Decommissioning and Site Reclamation Plan
- Dust Abatement Plan
- Cultural Resources Management Plan
- Integrated Weed Management Plan
- Nuisance Animal and Pest Control Plan
- Waste Management Plan
- Hazardous Materials Management Plan
- Environmental Compliance Management Plan
- Glint and Glare Assessment, Mitigation and Monitoring Plan
- Drainage, Erosion, and Sedimentation Control Plan
- Desert Tortoise Protection and Translocation Plan
- Vegetation Management Plan

Alternative designs, design features, and mitigation measures developed during the NEPA process would be incorporated into the POD as part of the final BLM decision package. The Project's conformance with the programmatic design features are outlined in Attachment C. Section 6 also provides an overview of the potential environmental resource concerns and conflicts within the Project area and plans for avoiding or minimizing such conflicts.

3.5 Coordination with Agencies and Governments

Documentation that the applicant has coordinated with state and local (county and/or municipal) governments, including consideration of consistency with officially adopted plans and policies (e.g., comprehensive land use plans, open space plans, and conservation plans) and permit requirements (e.g., special use permits).

Section 4 provides an overview of the agency and stakeholder coordination the Applicant has conducted, or intends to conduct, for the proposed Project.

3.6 Financial and Technical Capability

Documentation of the financial and technical capability of the applicant, including but not limited to: (i) the international or domestic experience with solar projects on federal or nonfederal lands; and (ii) sufficient capitalization to carry out development, monitoring, and decommissioning, including the preliminary study phase of the project and the environmental review and clearance process.

The Project is sponsored by Arevia Power LLC (Arevia Power). Arevia Power was founded in 2015 by a team of utility-scale solar developers with 20 years' combined experience. The team includes project managers, engineers, environmental specialists, attorneys, and construction managers. Combined, they possess the financial and technical capabilities required to develop and operate solar power generating and battery storage facilities. Arevia Power led the development of the Gemini Solar Project in Clark County, NV between 2016 and 2021 in partnership with BLM. In May 2020 the Gemini Solar Project received its ROD issued by the Department of Interior on over 7,000 acres, representing one of the largest approved solar and battery projects in the U.S. at 690 MW PV plus 380MW of battery. The Gemini Solar Project is currently under construction and plans to be in commercial operations by 2023. In June 2022, Arevia Power received an investment commitment from KKR & Co. Inc and GCM to advance a solar and wind portfolio.

3.7 Potential Resource Conflicts

Documentation that the proposed project is in an area with low or comparatively low resource conflicts and where conflicts can be resolved (as demonstrated through many of the factors that follow).

Section 6 provides an overview of the potential environmental resource concerns and conflicts within the Project area and plans for avoiding or minimizing such conflicts.

3.8 Existing Roads

Documentation that the proposed project will optimize the use of existing roads.

Typical construction traffic would consist of trucks transporting construction equipment and materials to and from the site and vehicles of management and construction employees during

the construction period. Most construction staff and workers would commute daily to the jobsite from within Mohave County, Arizona, Clark County, Nevada, and San Bernardino County, California. All traffic would use Oatman Highway, a paved roadway, to access the site coming from the south. This will be the Project's primary access route during construction and operations. Oatman Highway, near the intersection with Boundary Cone Road north of the Project site, is within a Special Recreation Management Area (SRMA) for the Route 66 Scenic Byway and would not be used for truck traffic due to road conditions and to avoid conflicts with the SRMA designation (see Attachment A, Figure 5). New disturbances for additional access will be minimized to the degree feasible. Prior to the start of construction, the Applicant would prepare a Traffic Management Plan to minimize potential Project-related traffic impacts.

3.9 Existing Transmission Infrastructure

Documentation that the proposed project will optimize the capacity of existing and new transmission infrastructure and avoid duplication in the use of or need for existing and new transmission and transmission interconnection facilities.

The location of the proposed Project was selected to optimize existing and planned improvements to transmission and substation infrastructure. The Project will interconnect at the existing Mohave Substation in Clark County, Nevada. The Project site is located adjacent to a Section 368 energy corridor, which would be utilized for the gen-tie alignment, providing a BLM-preferred route for transmission lines to reach Mohave Substation. In areas where the gen-tie would fall outside of this Section 368 corridor, it would be routed adjacent to existing infrastructure to the extent possible to minimize new disturbance.

3.10 Project Land Use

Documentation that the proposed project will make efficient use of the land considering the solar resource, the technology to be used, and the proposed project layout.

According to National Renewable Energy Laboratory mapping, the expected annual mean daily solar radiation for the Project area is 7 to 7.5 kWh/m2/day, a very high rate compared to other parts of the country. The proposed technology will be photovoltaic modules, which have been used on numerous BLM sites across the Southwestern U.S. and is one of the least intrusive technologies and the easiest to build. These aspects make it adaptable to different settings and implementation of the identified design features. The use of multiple, parallel rows of PV modules on single-axis tracking structures would make the most efficient and flexible use of the solar resource. The proposed PV technology has a high level of reliability, low maintenance, and requires very little (or no) water during operations.

3.11 Areas Suitable for Solar Development

If applicable, documentation that the proposed project will be located in an area identified as suitable for solar energy development in an applicable BLM land use plan and/or by another related process such as the California DRECP (e.g., Development Focus Areas) or Arizona Restoration Design Energy Project (e.g., Renewable Energy Development Areas).

The RDEP is a BLM Arizona initiative to identify lands across Arizona that may be suitable for the development of renewable energy. The RDEP identifies Renewable Energy Development Areas (REDAs) that include disturbed sites and identifies SEZs for Arizona. Examples of disturbed sites include landfills, retired agricultural lands, and abandoned mines and lands with low resource sensitivity and few environmental conflicts. While the Leo Solar Project is not located on RDEP-nominated disturbed land on BLM-administered land, the applicant reviewed available SEZ lands and considered several alternative Project site locations in the general vicinity of the Mohave Substation. The proposed site was selected due to its high solar resource potential and low potential for significant adverse environmental impacts, among other factors. Potential environmental resource concerns and impacts are described further in Section 6 of this report. The DRECP applies to land within California, and therefore, would not be applicable to Project.

3.12 Special Circumstances

If applicable, special circumstances associated with an application such as an expansion or repowering of an existing project or unique interagency partnership.

The proposed Project is intended to interconnect at the Mohave Substation, in Clark County, Nevada, which has available capacity following closure of the Mohave Power Station coal power plant. In addition, the Project is adjacent to a Section 368 energy corridor, which is intended for use by electrical transmission lines and similar linear facilities. The Section 368 corridor serves much of the gen-tie route to the substation. The project is also being planned as part of a larger wind and solar development, which would allow for more consistent energy generation throughout the day.

3.13 Opportunities for Optimal Siting

If applicable, opportunities to combine Federal and nonfederal lands for optimum siting (e.g., combining BLM-administered land with adjacent previously disturbed private lands).

The solar facility will be constructed on BLM-administered land and the Project's gen-tie will convey the power to the Mohave Substation utilizing the Section 368 energy corridor to the extent possible. The gen-tie will traverse private and other lands administered by other federal and state agencies as it nears the Colorado River crossing and crosses over into Nevada prior to interconnection at the Mohave Substation. The routing of this gen-tie will take into consideration use of previously disturbed lands, potential environmental resources and impact

minimization, and impacts to residential communities that exist along the gen-tie alignment. A preferred route will be identified for this gen-tie during the environmental review process and alternatives will be presented in the NEPA document.

3.14 Contaminated or Previously Disturbed Lands

If applicable, documentation that the proposed project will be located in, or adjacent to, previously contaminated[2] or disturbed lands such as brownfields identified by the EPA's RE-Powering America's Land Initiative or State, local or Tribal authorities; mechanically altered lands such as mine-scarred lands and fallowed agricultural lands; idle or underutilized industrial areas; lands adjacent to urbanized areas or load centers; or areas repeatedly burned and invaded by fire-promoting non-native grasses where the probability of restoration is determined to be limited. Preference will be given to proposed projects that are located in, or adjacent to, previously contaminated or disturbed lands under the variance process, assuming all other factors are adequately considered.

The Project is located in Mohave County where public lands are utilized in part for other existing BLM authorized and historical land uses such as mineral leasing, grazing, and dispersed recreation. The proposed Project site is vacant land with no surface developments other than unimproved two-track roads and an existing utility corridor with transmission infrastructure. Additional ROWs crossing the Project area will be updated based on further consultation with BLM. The project is not located within an BLM special land use designations (i.e., areas of critical environmental concern [ACEC], wilderness areas, wilderness study areas). Based on information collected to date, the Project is not located within previously contaminated or disturbed lands. The site is not a brownfield site and has never been developed with any industrial or agricultural uses. The applicant will conduct a Phase I Environmental Site Assessment to inform the environmental review process and confirm the potential for contamination on the Project site.

3.15 Recreational Use and Access

Documentation that the proposed project will minimize adverse impacts on access and recreational opportunities on public lands (including hunting, fishing, and other fish- and wildlife-related activities).

No BLM designated recreational use areas are within the Project area. The closest SRMA is associated with the Route 66 National Scenic Byway near the intersection of Oatman Highway and Boundary Cone Road, northeast of the Project site (see Attachment A, Figure 5). Route 66 is also an Arizona state-designated scenic byway. These roadways provide recreational opportunities to the public and viewpoints to the Mohave Valley below. All construction traffic would use Oatman Highway, a paved roadway as the Project's primary access road, and would access the Project site coming from the south during construction and operations. The portion of

[2] EPA and other parties have or will continue to characterize and cleanup these sites to ensure they are protective for people.

Oatman Highway, near the SRMA northeast of the project site, would not be used for truck traffic due to road conditions and to avoid potential conflicts with the SRMA designation. Any potential impacts associated with construction and operational access from Oatman Highway would be considered in the NEPA analysis and Visual Resources Technical Report.

Recreation-related impacts of the proposed Project would include disturbing and excluding recreational uses on the entire 5,565-acre Project site. Existing, off-highway vehicle routes on BLM lands through the Project area may be closed to public use as a result of the proposed Project and/or restricted by the planned perimeter fence around the facility. The proposal will effectively eliminate approximately 17.1 miles of existing off-highway vehicle routes, refer to Figure 6. Of the 17.1 miles of trails, 6.52 miles exist in the Lake Havasu Field Office (LHFO) which were designated through the Bullhead Travel Management Plan (TMP) (DOI-BLM-AZ-C030-2007-0050-EA). While the Bullhead planning area is a mix of public lands administered by BLM, Fort Mohave Indian Reservation, State Lands, Arizona Department of Game and Fish, and private lands, the Bullhead TMP only applies to BLM-administered lands. Approximately 5.44 miles were designated as open and 1.08 miles were designated as closed[3]. The remaining 10.58 miles of trails are under the jurisdiction of the Kingman Field Office (KFO) and provide access to the Black Mountain. These trails have not been formally designated. The current network of existing roadways around the proposed Project area allows for continued access to surrounding areas, although sometimes this access may be through alternative routes rather than direct routes. The final Project design would identify those roads that would be closed to public access, and bypass routes may be incorporated as design features.

Hunting and other public access to the Project site would likewise be closed and restricted during construction and operation of the Project, which is expected to be approximately 30 years. There are six species that are commonly hunted in the project vicinity: Gambel's quail (*Callipepla gambelii*), white-winged dove (*Zenaida asiatica*), mourning dove (*Zenaida macroura*), mule deer (*Odocoileus hemionus*), Nelson desert bighorn sheep (*Ovis canadensis nelsoni*) and mountain lion (*Puma concolor*). Development of the Project would remove portions of habitat for the affected species and eliminate the opportunity to hunt within the Project site. Potential impacts to hunting activities and game species, specifically big-horn sheep, would be evaluated during the NEPA planning process..

[3] A designation of "open" typically means that the route is recommended open to all use for access (other than limits that may be required by law). A designation of "closed" typically means that the route is recommended for closure to all use. Physical closure for a route may include restoring the route to the degree possible to blend with surrounding landscape, as well as installation of physical barriers and signing at the original departure point, if necessary.

3.16 Wildlife Habitats and Migration Corridors

Documentation that the proposed project will minimize adverse impacts on important fish and wildlife habitats and migration/movement corridors (e.g., utilizing the Western Wildlife CHAT, administered by the Western Governor's Wildlife Council [http://www.westgov.org/wildlife/380-chat] and coordinating with state fish and wildlife agencies).

The Project site is mapped in the Western Association of Fish and Wildlife Agencies' CHAT with a ranking of 6, indicating the "least crucial" habitat. The Project site is not within an ACEC, U.S. Fish and Wildlife Service (USFWS) critical habitat, wilderness areas, or riparian areas. However, the Black Mountains ACEC is approximately three miles to the east of the Project, the Warm Springs Wilderness is approximately 1.6 miles east of the Project site on the east side of Oatman Highway, and gen-tie route Option 3 traverses the west side of the Bullhead-Bajada ACEC. There are multiple ephemeral washes onsite which drain from the Black Mountains westward towards the Colorado River. The site is outside the range of greater sage grouse but is within Sonoran desert tortoise habitat, but outside protected areas for tortoise. The gen-tie traverses Mojave desert tortoise habitat on the Nevada side of the Colorado River. Impacts on important wildlife habitats such as desert tortoise habitat is discussed in Section 3.22.

Migratory birds and raptor species are also commonly found in the Project area as the Project is situated between the Black Mountains to the east and Colorado River to the west. Facilities would be designed to minimize avian impacts and fatalities, and multi-year surveys would be conducted during the NEPA and preconstruction phase of the Project. Biological technical surveys and reports would be required to address impacts of the Project on biological resources. The Applicant would coordinate with these agencies to ensure field surveys are implemented in accordance with current agency standards and protocols. These studies also incorporate resource specialists' experience working in Arizona and Nevada with BLM, USFWS, and Arizona Game and Fish Department (AZGFD) and Nevada Department of Wildlife (NDOW). Anticipated biological studies include, but are not limited to:

- Wildlife study plan and habitat assessment
- Botanical surveys
- Desert tortoise surveys
- Eagle nesting surveys (2 years)
- Avian use surveys (2 years)
- Bat acoustic studies (1 year)
- Fall raptor migration surveys (2 years)
- Jurisdictional delineation

Biological resource management plans would also be prepared that would incorporate mitigation measures from the EIS and implementation measures to ensure the protection of special status plants and animals during construction, operation, maintenance, and decommissioning. These management plans may include, but are not limited to:

- Bird and Bat Conservation Plan
- Desert Tortoise Protection and Translocation Plan
- Wildlife Protection and Relocation Plan
- Nesting Bird Management Plan
- Vegetation Management Plan
- Integrated Weed Management Plan
- Surface and Groundwater Protection Plan
- Site Restoration Plan
- Decommissioning and Reclamation Plan

3.17 Wilderness Characteristics and Values

Documentation that the proposed project will minimize impacts on lands with wilderness characteristics and the values associated with these lands (e.g., scenic values, recreation, and wildlife habitat).

The Project site is located within three units inventoried for lands with wilderness characteristics (LWC) including Milltown, Badlands, and Boundary Cone Plain, see Attachment A, Figure 7. These LWC units were inventoried per the guidance contained in BLM Manual 6310 and were found not to contain wilderness characteristics and therefore would not be managed as LWC units in a future revision of the 1995 Kingman RMP. The 1995 Kingman RMP did not identify LWC units for management per BLM Manual 6320. Therefore, the Project would not impact currently designated or future LWC designations.

3.18 Water Impacts

Documentation that the proposed project will be designed, constructed, and operated to optimize their specific generation technology's efficiencies with respect to water impacts.

The choice of PV technology for the proposed Project would minimize the amount of water required to support the Project. The Project would require a temporary water source for fire protection systems and dust control along access roads and solar facility development areas during construction. Water sources and amounts required are unknown at this time; however, measures will be taken to ensure the minimum possible amount of water will be used during all facets of construction and operation of the Project. Any use of water would be coordinated with and permitted through the appropriate State and local authorities, including Mohave County and the Arizona Department of Water Resources, as needed.

3.19 Groundwater Withdrawals

Documentation that any groundwater withdrawal associated with a proposed project will not cause or contribute to withdrawals over the perennial yield of the basin, or cause an adverse effect on ESA-listed or other special status species or their habitats over the long term. However, where groundwater

extraction may affect groundwater-dependent ecosystems, and especially within groundwater basins that have been over appropriated by state water resource agencies, an application may be acceptable if commitments are made to provide mitigation measures that will provide a net benefit to that specific groundwater resource over the duration of the project. Determination of impacts on groundwater will likely require applicants to undertake hydrological studies using available data and accepted models.

The project will require nominal to no groundwater use during operations. An analysis of groundwater withdrawals, if any, and the development of mitigation measures will occur as part of the NEPA process.

3.20 Conservation or Mitigation Lands

Documentation that the proposed project will not adversely affect lands donated or acquired for conservation purposes or mitigation lands identified in previously approved projects such as translocation areas for the desert tortoise.

Project area is not adjacent to or otherwise near any donated or acquired conservation or mitigation lands. Therefore, no impacts are anticipated.

3.21 Cumulative Impacts

Documentation that significant cumulative impacts on resources of concern should not occur as a result of the proposed project (i.e., the exceedance of an established threshold such as air quality standards).

Based on the POD, the BLM will likely prepare an Environmental Impact Statement per the requirements of NEPA to disclose the effects of the Project and any alternatives to the proposed action the public. This will include a full analysis of potential cumulative impacts associated with the Proposed Action. At this time, no adverse and unavoidable cumulative impacts are expected. Many impacts (e.g., air quality emissions, noise, etc.) would be temporary, mainly occurring during construction. Once operational, the cumulative issues of concern would likely include visual impacts, water usage in the Project area, cultural and Tribal resources, and overall loss of public lands for multiple uses, including OHV use and hunting. The adjacent Atlas Wind Project would be considered in the cumulative analysis in the NEPA document.

3.22 Desert Tortoise Concerns

If applicable, documentation on evaluation of desert tortoise impacts based on the variance process protocol for desert tortoise.

The Project site is within the range of the Sonoran desert tortoise (*Gopherus morafkai*), which is a candidate species for listing as endangered or threatened. There is no USFWS-mapped critical habitat for this species. A hybrid of the Sonoran desert tortoise and the Mojave desert tortoise is present in the Black Mountains to the east of the Project. On the Nevada side of the Colorado

River, the Project's gen-tie may traverse potential habitat of Mojave desert tortoise (*Gopherus agassizii*), which is listed as federally threatened.

BLM's adopted variance protocol for desert tortoise applies to applications in priority desert tortoise connectivity habitat. Designated desert tortoise conservation areas are excluded from the BLM's Solar Energy Program. These areas include critical habitat for desert tortoise and specially designated areas such as BLM-designated ACECs that specifically identify desert tortoise as one of the Relevant and Important Values, National Parks, National Recreation Areas, and National Wildlife Refuges (NWRs). The Project site does not contain any of these designations; however, gen-tie Option 3 traverses the west side of the Bullhead-Bajada ACEC, which has identified desert tortoise as one of its relevant and important values.

In addition, the USFWS has identified certain other areas that may be important for desert tortoise connectivity (i.e., priority desert connectivity habitat). The Project site is not located within mapped priority desert connectivity habitats; however, portions of the gen-tie routes traverse connectivity habitat for Mojave desert tortoise on the Nevada side of Colorado River.

The Project will be required to conduct biological surveys in support of NEPA compliance, and mitigation measures will be implemented as needed to minimize impacts to desert tortoise. This may include, for example, preconstruction surveys, tortoise relocation, exclusion and installation of tortoise fencing and biological monitoring of onsite activities.

3.23 Greater Sage-Grouse Concerns

If applicable, documentation on evaluation of greater sage-grouse impacts based on the variance process protocol for greater sage-grouse.

The Project site is not within the range of greater sage grouse. The Project would have no impact to this species.

3.24 Potential Adverse Impacts to National Park System Resources

If applicable, documentation on evaluation of impacts to National Park Service (NPS) units and other special status areas under NPS administration as defined in the variance process protocol for resources and values of units of the NPS.

The National Park System units nearest to the Project site are:

- Lake Mead National Recreation Area, 19 miles north
- Old Spanish National Historic Trail, 28 miles northwest
- Mojave National Preserve, 29 miles west

Due to the distance from these units (see Attachment A, Figure 8), and the nature of the Project as a renewable energy facility, there is no potential for impacts related to air pollution, including fine particulate loading or reduced visibility in VRM Class I and II areas; no increase

to the vulnerability of sensitive cultural sites and landscapes, or loss of historical interpretative value; no change to the frequency or magnitude of floods or water quantity or water quality; no reduction in habitat quality and integrity or wildlife movement or migration corridors; no increased isolation or mortality of key species; and no fragmentation of natural landscapes.

An analysis of the diminishment of cultural landscape qualities, if any, and the development of mitigation measures will occur as part of the NEPA process.

4 BLM, Agency, Tribal, and Stakeholder Coordination

The federal lead agency for the project is BLM and the primary local government authority is Mohave County. In addition to the BLM's variance approval and ROW grant authorization, energy generation uses in the Project area will also require either a Special Use Permit or a zone change to add an E (Energy Overlay) zone from Mohave County prior to development.

The applicant has committed to regular and consistent communications with federal, state, and local authorities throughout the design, planning and development process. The applicant has also committed to adhere to officially adopted plans, policies, and permit requirements. No inconsistencies with local or State plans have been identified. A review of the meetings and outreach conducted to date is provided in the sections that follow.

4.1 Preliminary BLM Application Review Meeting

Several meetings have been conducted with BLM, both in person and via conference call. Preliminary meetings included conference calls on October 4, 2021, November 4, 2021, January 20, 2022, and February 14, 2022, and an onsite meeting on May 11, 2022.

4.2 Agency, Stakeholder, and Public Outreach

The applicant has developed an agency, stakeholder, public outreach plan for the project and to date has coordinated with the BLM, several Tribes as described in Section 4.3, and federal and state agencies. Additional coordination will continue in 2023 ahead of the BLM's issuance of the Notice of Intent to initiate the NEPA environmental review process. A list of agencies and stakeholders Arevia has, or intends to engage with includes, but is not limited to:

Federal Agencies and Stakeholders

- Department of Defense, U.S. Army Corps of Engineers (USACE)
- Department of the Interior, USFWS
- Department of the Interior, NPA
- U.S. EPA
- U.S. Bureau of Reclamation (BOR)
- Federal Aviation Administration

State of Arizona Agencies and Stakeholders

- Arizona Corporation Commission
- Arizona State Lands Department
- Arizona Department of Agriculture

- Department of Environmental Quality
- Department of Transportation
- AZGFD
- Arizona Historic Preservation Office (SHPO)
- Arizona congressional delegation
- Local/regional utility providers
- Local/regional NGOs focused on resource conservation, outdoor recreation, etc.

State of Nevada Agencies and Stakeholders

- Department of Transportation
- Department of Wildlife
- Division of Environmental Protection
- Division of Water Resources
- Department of State Lands
- Division of Forestry
- Public Utilities Commission of Nevada
- State Fire Marshal
- Nevada SHPO
- Nevada congressional delegation

Local Agencies and Stakeholders - Arizona

- Mohave County
- City of Bullhead City
- Chambers of Commerce
- Local/regional NGOs focused on resource conservation, outdoor recreation, etc.
- Local/regional utility providers

Local Agencies and Stakeholders - Nevada

- Clark County
- Town of Laughlin
- Chambers of Commerce
- Local/regional NGOs focused on resource conservation, outdoor recreation, etc.
- Local/regional utility providers

Tribal Governments

- Chemehuevi Indian Tribe
- Colorado River Indian Tribes
- Fort Mojave Indian Tribe
- Hopi Tribe
- Hualapai Tribe
- Moapa Band of Paiute Indians
- Navajo Nation
- Pueblo of Zuni
- Yavapai-Prescott Indian Tribe

Agency meetings conducted to date are summarized in Table 1 below. Note that the topics of discussion during these meetings have also including the adjacent Atlas Wind Project and associated gen-tie alignments to facilitate the Projects' interconnection at the Mohave Substation in Clark County, Nevada.

Table 1: Meeting Summary with Federal and State Resource and Regulatory Agencies

Meeting Date	Meeting Participants	Meeting Summary
July 27, 2022	Jeff Servoss, USFWS	Informal consultation phone call to discuss high level evaluation of project area and potential T&E species that may be affected by the project area. Species discussed include: • Yellow-billed cuckoo-Upland forage in mesquite bosques. Not likely. • SW Willow flycatcher-habitat in riparian zone. Outside project area. • Bonytail Chub-habitat in riparian zone. Outside project area. • Yuma Ridgway's Rail-habitat in riparian zone. Outside project area. • Northern Mexican Gartersnake-Not likely any habitat on site. Not on issue. More of an issue around Havasu Refuges., per FWS. • Razorback sucker-habitat in riparian zone. Outside project area. Discussed planned avian use surveys, eagle surveys, and bat monitoring.
July 28, 2022	Elizabeth Johnston, AZGFD Joelle Acton, BLM Maria Nicoletti, BLM	Initial conference call consultation to discuss high level evaluation of the project area and potential species that would require surveys. Survey for the following species were discussed: eagles, bats, FWS discussion results, avian use studies, tortoise surveys and botanical surveys. AZGFD will provide a letter of project evaluation and survey requirements.
August 30, 2022	Elizabeth Johnston, AZGFD Joelle Acton, BLM Tiffany Sprague, AZGFD Dee Kephart, AZGFD	Email correspondence from Elizabeth that included the project evaluation, environmental review tool report and eagle summary.

Meeting Date	Meeting Participants	Meeting Summary
October 27, 2022	Samuel Bohannon, USACE – Sacramento District	Applicant provided overview of the projects and associated gen-tie that would be required. Reviewed gen-tie alignments being considered. Discussed permitting pathways for the crossing of the Colorado Rivers and for impacts to waters of the U.S. Discussed schedule for obtaining permits, requirements for application, and timing of application submittal.
November 3, 2022	Therese Carpenter, USACE – Los Angeles District	Applicant provided overview of the projects and associated gen-tie that would be required. Reviewed gen-tie alignments being considered. Therese indicated that the LA District would take the lead for the USACE permitting as the majority of the project area would be in Arizona and she would coordinate with Samuel Bohannon for the gen-tie portion in Nevada. Discussed schedule for obtaining permits, requirements for application, and timing of application submittal.
November 7, 2022	Ellery Stahler and Charlie Donahue, Nevada Division of State Lands	Applicant provided overview of the projects and associated gen-tie that would be required. Reviewed gen-tie alignments being considered. Discussed the process to facilitate state lands review and approval to factor into overall schedule for the projects. NDSL indicated it would be important to get State Parks and NDOW to review Arevia's application as well to determine if there are any constraints with land and water conservation designations along the route. Discussed schedule for obtaining authorization, requirements for application, and timing of application submittal.
November 18, 2022	Cynthia Flores and Anna Pinnell, U.S. BOR	Applicant provided overview of the projects and associated gen-tie that would be required. Reviewed gen-tie alignments being considered. Discussed engineering requirements for Colorado River crossing and crossing of BOR-managed lands with a transmission line and associated access roads. Discussed technical reports that would be required, schedule for obtaining authorization, requirements for application, and timing of application submittal. BOR mentioned the need for authorization prior to conducting any geotechnical testing or surveys on BOR land.
November 29, 2022	Elizabeth Johnston, AZGFD Joelle Acton, BLM	Conference call to discuss methodologies and design of avian use surveys, eagle surveys, raptor migration studies, desert tortoise and bat monitoring. Recommended a follow-up call in Jan/Feb 2023.

Meeting Date	Meeting Participants	Meeting Summary
January 12, 2023	Lisa Kremer, Clark County, Nevada	Applicant provided overview of the projects and associated gen-tie that would be required. Reviewed gen-tie alignments being considered. Clark County indicated that the Applicant would need to provide letter of request with map for the entire project, proposed easement route, purpose and need, and technical standards to justify the width of easement requested. Discussed schedule for obtaining authorization, requirements for application and methods to determine easement fee, and timing of application submittal. The County also mentioned the Avantus project and making sure these projects do not affect that project.

4.3 Tribal Outreach

The applicant began conducting Tribal outreach in late 2021/early 2022 and communicated with the following Tribes by providing an initial introduction of the project and forum to solicit initial feedback:

- Chemehuevi Indian Tribe
- Colorado River Indian Tribes
- Fort Mojave Indian Tribe
- Hopi Tribe
- Hualapai Tribe
- Moapa Band of Paiute Indians
- Navajo Nation
- Pueblo of Zuni
- Yavapai-Prescott Indian Tribe

Following that initial outreach, some Tribes including the Hopi Tribe, Navajo Nation, Moapa Band of Paiute Indians, Pueblo of Zuni and Yavapai-Prescott Indian Tribe expressed no further interest in the project.

Of this list only the Fort Mohave Indian Tribe, Colorado River Indian Tribes, Hualapai Tribe, and Chemehuevi Indian Tribe expressed interest in further coordination and project updates. The Fort Mohave Indian Tribe and Hualapai Tribe requested formal Section 106 consultation with the Bureau of Land Management, Kingman Field Office.

Tribal outreach consisted of monthly communications by email and telephone with primarily the Tribal Historic Preservation Offices and cultural representatives. Several meetings with these Tribal organizations were held by the applicant as outlined in Table 2 and will continue as the project progresses.

Table 2: Meeting Summary with Tribal Governments

Meeting Date	Meeting Participants	Meeting Summary
January 25, 2022	Colorado River Indian Tribes	• Applicant provided project overview PowerPoint presentation via virtual meeting. • Discussion topics included the company background and the project's location on ancestral lands and close sacred mountains and areas of cultural significance to the Tribe. • Tribal participants included the Realty department, Attorney General Office, Tribal Historic Preservation Office, Elders Cultural Committee Chair, and Environmental Legal Consultant
May 9, 2022	Fort Mojave Indian Tribe	• Applicant provided project overview via Powerpoint presentation during an in-person meeting. • Discussion topics included the project's location on ancestral lands and close to sacred mountains and areas of cultural significance to Tribes, sensitive visual landscape, density of artifacts from other projects in the area, status of Class III inventory report, and known trails of cultural significance in the area and Avi Kwa Ame National Monument legislation. • Tribal participants included Cultural Director, Cultural Manager, and Archaeologist.
May 11, 2022	Hualapai Tribe BLM	• Applicant provided a project overview via handout during a site visit coordinated by BLM Kingman Field Office at the request of the Tribe. • Discussion topics included Atlas Wind MET Towers location and Leo project location on ancestral lands and close to sacred mountains and areas of cultural significance to Tribes, sensitive visual landscape, the density of artifacts from other projects in the area, status of Class III inventory report, and known trails of cultural significance in the area. • Tribal participants included: Tribal Historic Preservation Officer, Cultural Technician, and Ethnobotanist.
November 9, 2022	Fort Mohave Indian Tribe	• Applicant provided company and project overviews during an in-person meeting. • Discussion topics included the project's location on ancestral lands and close to sacred mountains and areas of cultural significance to the Tribe. Working with Tribes with previous projects, partnership opportunities, and the Tribe's energy and economic development interests. • Tribal participants included: Vice Chairman, Tribal Energy Consultant, and Outside General Counsel. •

Meeting Date	Meeting Participants	Meeting Summary
January 9, 2023	Colorado River Indian Tribes	• Applicant provided project overview via Powerpoint presentation. • Discussion topics included the project's location on ancestral lands and close to sacred mountains and areas of cultural significance to Tribes, sensitive visual landscape, density of artifacts from other projects in the area, status of Class III inventory report, and known trails of cultural significance in the area.

5 Land Use Disclosures

5.1 Rights-of-Way

Refer to Table 3 for a list of ROWs within the Project site. Most notably there is a Mohave Electric Cooperative 230 kV transmission line that traverses the northern portion of the Project site from east to west, which will be avoided by design. A BLM Section 368 corridor lies to the east of the Project area and would be utilized for a portion of the gen-tie. Refer to Attachment A, Figure 2.

Table 3: Rights-of-Way within Project Site

Customer Name	Serial Number	Commodity Type	Field Office	Status
South Point Energy CTR LLC	030798	Oil & Gas Facilities	Lake Havasu Field Office	Expires 12/31/2048
Calpine Construction Finance Co LP	03079801	Oil & Gas Facilities	Lake Havasu Field Office	Expired 6/15/2001
Mohave Electric Coop	030151	Other Energy Facilities	Lake Havasu Field Office	Expires 2/23/2028
Mohave Electric Coop	038246	Fiber Optic Facilities	Lake Havasu Field Office	Expires 12/31/2049
El Paso Natural Gas Co	019297	Oil & Gas Facilities	Lake Havasu Field Office	Expires 12/31/2043
DOE WTN Area Power ADM	030299	Other Energy Facilities	Lake Havasu Field Office	Expires 1/1/9999
AZ Electric Power Coop	030307	Other Energy Facilities	Lake Havasu Field Office	Expires 1/26/2028
Transwestern Pipeline Co	025453	Oil & Gas Facilities	Lake Havasu Field Office	Expired 11/1/2021
El Paso Natural Gas Co	032406	Oil & Gas Facilities	Lake Havasu Field Office	Expires 5/10/2034
Transwestern Pipeline Co	02545301	Oil & Gas Facilities	Lake Havasu Field Office	Expired 11/13/1993
Atlas Wind LLC	038433	Wind Energy Facilities	Kingman Field Office	Application Received 9/16/2021

5.2 Mining Claims

Based on a review of publicly available data and an EnviroMINE report dated April 6, 2023, there are no known mining claims or oil and gas leases on the Project site.

5.3 Grazing Allotments

There are no known grazing allotments within the Project site. The BLM has not authorized grazing within the Project area and grazing impacts are not anticipated.

5.4 Range Improvements

There are no known range improvements planned or currently being implemented on the Project site.

6 Potential Resource Concerns, Impacts, and Mitigation

If a variance is approved for the proposed Project, an environmental analysis and NEPA-compliant document would be prepared to evaluate the potential impacts of the proposed Project and related activities. The NEPA document would identify environmental resources 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 updated to summarize the potential environmental consequences of the Proposed Action and action alternatives evaluated in the NEPA document. In consultation with BLM, design features would be incorporated into the Proposed Action to reduce and/or avoid resource impacts, in addition to relevant best management practices, resource management plans, and standard operating procedures.

Based on Project information collected to date, potential conflicts with resources of concern are expected to be low for the proposed Project as described in the subsections that follow. Coordination with stakeholder agencies and Tribes is in progress. Similarly, biological, cultural and paleontological literature reviews and survey efforts are being planned to obtain more specificity on the Project's baseline environmental conditions and potential resource concerns and conflicts.

There are no conflicting mineral claims, oil or gas leases, active grazing allotments or leases on the site, BLM-designated special recreational management areas or recreation sites within the Project site. As a result, further discussion of these resource topics has been omitted from the more detailed discussion below.

6.1 Land Use

The Project site is primarily undeveloped lands, surrounded by electric transmission infrastructure. The Project is not located on land designated as a REDA. There is an existing Mohave Electric Cooperative 230 kV electric transmission line within the northern portion of the Project area, running in an east-west direction across the site, which will be avoided by design. Notifications required by the BLM would be provided to individuals or other parties that may be affected by the proposed Project, including existing BLM ROW authorization holders to inform them that an application has been filed and request their comments pursuant to 43 CFR 2807.14. Approval of a solar development facility would preclude the development of the land for other future uses. The existing transmission line ROW will be avoided by the Project and, as a result, no land use conflicts are expected to occur.

6.2 Specially Designated Areas and Lands with Wilderness Characteristics

"Specially designated areas" include mapped habitat areas for BLM sensitive species as well as ACECs. The project area is within BLM Category 3 habitat for the Sonoran desert tortoise. The nearest ACEC is the Black Mountains Ecosystem Management ACEC, approximately three miles to the east. The ACEC would not be affected by the Project. Gen-tie Option 3 would traverse the west side of the Bullhead-Bajada ACEC, which is located approximately 8.5 miles northwest of the Project site.

The Project site is not in a designated Wilderness or within a Wilderness Study Area. See Attachment A, Figure 9. The Warm Springs Wilderness is east of the site, on the opposite side of Oatman Highway. The Wilderness Area would not be directly affected by the project, though indirect impacts related to construction noise, traffic, and long-term changes in the scenic value of the region may occur. As required by BLM Manual 6340, the NEPA analysis would examine impacts Wilderness Areas and measures would be taken to protect the character and values of Wilderness Areas. The applicant would complete a Traffic Impact Study, baseline noise surveys, and a visual resources technical study with visual simulations and impacts would be analyzed as part of the NEPA environmental review process. A Lighting Plan, Traffic Management Plan, and Noise Control Plan would be developed as part of the POD to minimize impacts to nearby ACECs and Wilderness areas.

6.3 Wild Horses and Burros

The Project site is within the Black Mountain Herd Management Area for burros. This Herd Management Area covers approximately 108,000 acres. Forage is allocated in this area for burros. The amount of forage available for burros would be reduced potentially impacting the appropriate management level. Fences would create focal points where burros would be funneled potentially increasing the number of vehicle/burro collisions in the project area. See Attachment A, Figure 10. The potential for such impacts would be analyzed further during the environmental review process and mitigation would be developed to minimize impacts on the local herd.

6.4 Wildland Fire

The Project site is located in areas designated as very-low to moderate risk of wildfire (Arizona Department of Forestry and Fire Management, 2023). The Project proposes a 10-foot-wide firebreak constructed and maintained around or within the perimeter of the solar facility boundary to prevent a wildfire from entering or escaping the site. Construction of the fire break would require the removal of all vegetation through disking or the use of a grader. The

firebreak would not be constructed within the high banks or established channels of ephemeral washes. Additional impacts associated with wildland fire would be analyzed during the environmental review process and a Fire Management Plan would be developed as part of the POD to minimize the potential for wildland fire as a result of the Project.

6.5 Public Access and Recreation

Existing roads on BLM lands through the Project area that are publicly accessible may be closed to public use under the proposed Project and/or restricted by the planned perimeter fence around the facility. The proposal will effectively eliminate approximately 4.6 miles of existing off-highway vehicle routes. The current network of existing roadways around the proposed Project area allows for continued access to surrounding areas, although sometimes this access may be through alternative routes rather than direct routes. The final Project design would identify those roads that would be closed to public access, and bypass routes may be incorporated as design features to maintain access around the Project area.

The proposed site is vacant land with no surface developments other than a utility corridor and multiple local unimproved two-track roads utilized to access the facilities within the Section 368 transmission corridor and utilized by off-road vehicles. There are no managed recreational facilities within or adjacent to the Project site.

The proposed Project would introduce a new solar facility and transmission line which would be visible to OHV users and those traveling the national and state-designated Route 66 National Scenic Byway. Unimproved two-track roads and trails may have to be closed and rerouted around the solar facility and alternate access established. In addition, a visual resources assessment would be conducted during the environmental review process to assess the potential for visual impacts from surrounding lands and nearby ACECs and wilderness areas.

6.6 Military and Civilian Aviation

The Project proponent would coordinate with the BLM, the Department of Defense, and civilian airspace managers early in the Project planning process to identify any potential conflicts with overhead airspace use. None of the solar facilities being planned for the Project are expected to exceed 200 feet in height or pose a safety hazard to military or civilian flights due to height. The nearest airports are Eagle Airpark, 7 miles to the west, and Sun Valley-Bison-Fort Mohave Airport, 6.5 miles to the northwest.

6.7 Soil Resources and Geologic Hazards

Soils on the Project site are typical of alluvial fan terraces that are derived from the Black Mountains. Three main soil types make up the majority of soils in the study area. They are, in order of abundance:

1. **Chuckawalla-Riverbend complex, 2 to 15 percent slopes:** The Riverbend series consists of very deep, excessively drained soils that formed in stratified fan alluvium. Riverbend soils are on fan terraces and fan remnants and have slopes of 2 to 15 percent. The mean annual precipitation is about 4 inches, and the mean annual air temperature is about 73 degrees F. The Chuckawalla series consists of very deep, well drained soils formed in stratified mixed alluvium. Chuckawalla soils are on fan terraces and have slopes of 0 to 15 percent. These series are a well to excessively drained, very to extremely gravelly loam to silty-loam and sandy-loam soils. Calcium carbonate content is up to 25 percent and the soil is very slightly to strongly saline
2. **Huevi very gravelly loam, 2 to 15 and 10 to 40 percent slopes:** Huevi soils are very to extremely gravelly sandy loams. Huevi soils are well-drained alluvial substrates typically found on fan terraces.
3. **Rositas, superstition family and torriorthents soils, 1 to 60 percent slopes:** The Rositas series consists of very deep, somewhat excessively drained soils formed in sandy eolian material. Rositas soils are on dunes and sand sheets. Slope ranges from 0 to 30 percent with hummocky or dune micro relief. These soils formed in sandy eolian material. The Superstition series consists of very deep, excessively drained soils that formed in sandy eolian deposits. Superstition soils are on dunes and have slopes of 0 to 10 percent.

The soils are excessively drained conglomerates comprised of various sizes of material. The terraces have been incised or eroded by rain events to create arroyos that flow west-southwest toward the Colorado River basin. Evidence of caliche soils were observed during a site visit conducted for the Habitat Assessment described in Section 6.1.18. Caliche soils exhibit harden-white mineral deposits that consist of calcium carbonate. Caliche soils can create a dense, impermeable layer that contributes to rainfall run-off and localized flooding events.

Slopes greater than 5 percent would be avoided as part of the solar development unless otherwise authorized by BLM. Any new access roads required on BLM-managed lands within the Project area would be designed and constructed per the BLM's Gold Book standards and BLM Manual 9113, Sections 1 and 2. Soil conditions within the Project area are expected to be largely conducive to the development of solar infrastructure. A detailed geotechnical investigation would be conducted to minimize geologic hazards and may include standard penetration test borings and other geotechnical testing methods at Project facilities to visually characterize the geologic and soil conditions and to obtain samples for laboratory testing. In-situ electrical resistivity tests and bulk samples for thermal resistivity testing may be performed at some locations. An erosion and sediment control plan and dust abatement plan would be developed as part of the POD and implemented as part of the SWPPP to minimize the potential for soil loss as a result of water or wind erosion within the Project area.

6.8 Water Resources

6.8.1 Surface Waters and Groundwater

The Project is located within the Mohave watershed and Lake Mohave groundwater basin. Natural site drainage in the Project area is to the west to the nearby Colorado River. Streamflow in the Lake Mohave Drainage Basin is ephemeral and is generated in the Black Mountains to the east of the Project in response to summer and winter storms. There are no identified perennial drainages on the site; however, ephemeral drainages may be present on parts of the site. There are no wetlands or riparian areas in the proposed Project area. Further analysis will be conducted concurrent with the NEPA process to determine if any waters of the U.S. are present. If present and impacted by the Project, the appropriate permits would be obtained from the U.S. Army Corps of Engineers prior to development.

Watershed and drainage analysis and calculations, as well as watershed protection and erosion control design drawings, would be prepared for the Project area during the engineering and civil design phase of the Project. A SWPPP would be prepared to meet Arizona Department of Environmental Quality and EPA requirements for site drainage, erosion, sedimentation, and other stormwater runoff related issues.

The choice of PV technology for the proposed Project would minimize the amount of water required to support the Project. The Project would require a temporary water source for fire protection systems and dust control along access roads and solar facility development areas during construction. The project will require nominal to no groundwater use during operations. An analysis of groundwater withdrawals, if any, and the development of mitigation measures will occur as part of the NEPA process. Water sources and amounts required are unknown at this time; however, measures will be taken to ensure the minimum possible amount of water will be used during all facets of construction and operation of the Project. Any use of water would be coordinated with and permitted through the appropriate State and local authorities, including Mohave County and the Arizona Department of Water Resources, as needed.

The Project is not expected to cause an adverse effect on Endangered Species Act (ESA)-listed or other special status species or their habitats over the long term or to affect groundwater dependent ecosystems. The Project is within the Lake Mohave Groundwater Basin where depth to groundwater varies widely from a minimum of 4 feet below ground surface to a maximum of 428 feet below the ground surface (Arizona Department of Water Resources, 2023). In most locations the average depth to groundwater is approximately 90 feet below ground surface and considered too deep to affect surface ecosystems.

6.8.2 Floodplains

Floodplain mapping is provided in Flood Insurance Rate Map Panel 04015C5100J (effective June 7, 2022). Most of the project site is in Zone X, outside the 100-year floodplain. Zone A, indicating a 1 percent chance of flood hazard is present within approximately 806 acres of the Project site.

See Attachment A, Figure 11. An assessment of flood hazards will be completed in conjunction with engineering design and in support of the environmental review process.

6.9 Air Quality and Climate

Construction activities would consist of vegetation mowing; limited grading; installation of access roads and fencing; panel and electrical system installation, including drilling of boreholes and trenching for electrical wires; and related activities.

The project will develop a dust abatement plan with the Project's POD, and conform to all local, state, and federal regulations governing emissions during the construction phase. The plan and best management practices may include:

- Minimizing grading and vegetation removal.
- In areas where vegetation removal and/or grading is required, delaying the process of vegetation removal to the maximum time required before module installation.
- Limiting vehicle speed on roads to 15 mph.
- Applying water to disturbed soil areas using water trucks to control dust and maintain proper moisture levels for soil compaction.
- Minimizing over application of water to prevent runoff and ponding.
- Suspending excavation and grading during periods of high wind.
- Covering all trucks hauling soil or other loose material in and out of the project site.
- Using gravel or aggregate where access roads meet paved roads to limit offsite disturbance and prevent mud and dirt track-out.

Long term operation and maintenance of the facility are not expected to produce dust or noxious emissions. The addition of solar-derived energy to the regional market will lessen the demand for fossil fuel-derived electricity, which are a contributor to global climate change.

6.10 Visual Resources

The BLM's VRM classification system is designed to minimize the visual impacts of surface-disturbing activities and maintain scenic values for the long term. The objectives of visual resource management in the VRM classification system rank from Class I (preserve the existing character of the landscape with little to no apparent visual change) to Class IV (provide for major modifications of existing landscape character with the application of mitigation measures). These class rankings provide for different levels of management activities within an area, from very limited (Class I), to activities that may dominate the view and be the major focus of viewer attention (Class IV). The Project site is within the lowest VRM classification, Class IV. Small portions of two of the gen-tie route options near the Colorado River crossing are in Class III; however, the alignment of the gen-tie has not been determined yet and would take advantage of existing corridors to the extent possible. See Attachment A, Figure 3.

The Historic Route 66 lies approximately 1.6 miles to the east of the Project site. This historic route is managed as a Type 1 National Back Country Byway and is also a state-designated scenic byway. These designations are given to routes that have high scenic, historic, archaeologic, or other public interest values. This particular byway was designated on February 8, 1993, by the BLM State Director and represents one of the last and best-preserved segments of the original U.S. 66, one of America's first transcontinental highways.

A baseline visual resources report with simulations from key observation points would be prepared as part of the NEPA process to determine mitigation that could be implemented to reduce the visual impacts of the Project.

6.11 Noise

Noise at the Project area would be limited to initial construction, maintenance, and decommissioning activities. The day-to-day operation of the solar facility is expected to generate only low levels of noise. Noise reduction measures would be implemented during construction or during activities that generate noise levels above local thresholds. Additional mitigation would be implemented if any noise-sensitive receptors are identified.

6.12 Socioeconomics

An economics report and socioeconomics impact study would be prepared as part of the environmental review process. The Project would invest $350 million in the local area during the construction period. This investment would support jobs, local economic activity, and tax revenues. In addition to the jobs and spending directly required, both indirect and induced economic activity would occur because of building the facility. Examples of indirect activity include supplying industries such as welding and construction vehicle repair. Induced activity results from increases in local wages and salaries include spending on restaurants, retail goods, and childcare. Construction would support up to 1,000 jobs for two years. Total labor income, including benefits and payroll taxes, is estimated to be over $100 million per year for the 2 years. The Project would pay a range of taxes during construction, including sales, property, payroll, and vehicle.

The facility is planned to operate for 30 years. Operations and maintenance of the facility will generate permanent jobs for 20 to 30 employees.

6.13 Environmental Justice

Analysis of environmental justice impacts, and development of potential mitigation measures, would occur as part of the NEPA process. The Project site is not located in the immediate vicinity of any communities that would be impacted by construction or operation of the facility. The nearest population center is approximately three miles west, within Census Tract 04015955000 in the Mohave Valley. According to the U.S. Environmental Protection Agency's

Environmental Justice Screening and Mapping Tool, this Census Tract has a Demographic Index of 49 compared to the Arizona statewide average. The Demographic Index is based on the average of two demographic indicators, low income and people of color. An index of 49 indicates the area's demographics are close to the average for Arizona, without a disproportionate concentration of low income or people of color.

6.14 Transportation

The potential for transportation impacts associated with the proposed Project would be assessed as part of a traffic impact study and developed in coordination with the Arizona Department of Transportation and Mohave County during the environmental review process. The project site is accessible from Oatman Highway, a paved road. Oatman Highway will be the project's primary access route during construction and operations and construction would utilize this roadway coming from the south. Truck traffic from the north would not be possible given the road conditions and to reduce impacts to the SRMA northeast of the Project site. New access road disturbances will be minimized to the degree feasible. No paved roadways would be impacted by the Project. Impacts to dirt roads or trails crossing the site will be evaluated in the NEPA document.

6.15 Hazardous Materials and Waste

The primary wastes generated at the Project site during construction, operation and maintenance would be nonhazardous and liquid wastes. Small quantities of hazardous materials may be present or used onsite to facilitate construction and operation of the project. Such materials could include hazardous materials present within lead acid and alkaline batteries and fuels, oils, and lubricants for equipment. While use of hazardous materials and generation of hazardous waste is expected to be minimal, the Project would prepare and implement a Health and Safety Plan, Hazardous Materials and Waste Management Plan, as well as a Spill and Emergency Response Plan. Stipulations and requirements would be in place to notify the BLM in the event of a release of hazardous substances or petroleum products. These plans would be prepared in conjunction with the POD, and in compliance with all applicable state and federal regulations for the storage and disposal of any hazardous material, including oil and fuel.

6.16 Health and Safety

A Phase I Environmental Site Assessment would be prepared by the applicant to identify any potential sources of contamination on the Project site and mitigation measures would be developed to ensure public and worker health and safety as necessary during the environmental review process. The Project would require all construction and operation subcontractors to operate under a health and safety program that is approved by OSHA and

BLM industry standards. A Health and Safety Plan would be developed in conjunction with the POD.

6.17 Ecological Resources

6.17.1 Habitat Overview

The study area is situated on the western slopes of the Black Mountains Range dominated by rolling, incised alluvial slopes at elevations ranging from 500 to 2,000 feet above sea level. The study area is an arid environment that receives 5.98 inches of rain on average per year (USclimatedata, 2023). The area is situated between the Sonoran and Colorado Desert. Creosote scrub (*Larrea tridentata)* dominates the bajadas (foothills) with deeply incised slopes deeply. Open, vacant BLM land exists to the north, east and south. Low-density development and farmlands are situated to the west of the study area, along the Colorado River basin.

The Project borders the Black Mountains Ecosystem Management ACEC. Lake Havasu National Wildlife Refuge is approximately 1 mile southwest of the Project area along the Colorado River. The Project site does not contain any lands donated or acquired for conservation or mitigation lands or any NPS units or areas.

The Applicant conducted a site visit in December 2022 and prepared a habitat assessment of the Project area to identify vegetation communities and the potential for special-status wildlife and plant species to occur on the Project site. Anthropogenic disturbance within the study area was found to consist primarily of two track dirt roads and transmission lines. Feral burros are abundant in the study area. During the December 2022 habitat assessment site visit, approximately 12 feral burros were observed in the study area. Additional disturbance adjacent to the study area includes a landfill, shooting range, and a major transmission line. Low density development and agricultural fields are common to the western and northern edges of the study area. A summary of the habitat assessment and potential for special status species is provided in the subsections that follow.

6.17.2 Vegetation

According to Southwest Regional Gap Analysis Project (SWReGAP 2004) data, 13 vegetation land cover types are found within the study area. The Sonora-Mojave Creosotebush-White Bursage Desert Scrub cover type is ubiquitous throughout the study area and comprises approximately 98% of the land cover. The second most common land cover is the Sonoran mid-elevation desert scrub. Both vegetation types are described below.

Sonora-Mojave Creosotebush-White Bursage Desert Scrub (S069)

This ecological system forms the vegetation matrix in broad valleys, lower bajadas, plains and low hills in the Mojave and lower Sonoran deserts. This desert scrub is characterized by a sparse to moderately dense layer (2-50% cover) of xeromorphic microphyllous and broad-leaved shrubs with abundant bare ground. *Larrea tridentata* and *Ambrosia dumosa* are typically dominants, but many different shrubs, dwarf-shrubs, and cacti may be codominant or form

typically sparse understories. Associated species may include *Atriplex canescens, Atriplex hymenelytra, Encelia farinosa, Ephedra nevadensis, Fouquieria splendens, Lycium andersonii,* and *Opuntia basilaris*. The herbaceous layer is typically sparse but may be seasonally abundant with ephemerals. Herbaceous species such as *Chamaesyce* spp., *Eriogonum inflatum, Dasyochloa pulchella, Aristida spp., Cryptantha* spp., *Nama* spp., and *Phacelia* spp. are common. (SWReGAP, 2004).

Sonoran Mid-Elevation Desert Scrub (S129)

This transitional desert scrub system occurs along the northern edge of the Sonoran Desert in an elevational band along the lower slopes of the Mogollon Rim/Central Highlands region between 750-1,300 m. Stands occur in the Bradshaw, Hualapai, and Superstition mountains among other desert ranges and are found above Sonoran Paloverde-Mixed Cacti Desert Scrub and below Mogollon Chaparral. Sites range from a narrow strip on steep slopes to very broad areas such as the Verde Valley. The climate is too dry for chaparral species to be abundant, and freezing temperatures during winter are too frequent and prolonged for many of the frost-sensitive species that are characteristic of the Paloverde Mixed-Cacti Desert Scrub such as *Carnegia gigantea, Parkinsonia microphylla, Prosopis* spp., *Olneya tesota, Ferocactus* sp. and *Opuntia bigelovii*. Substrates are generally rocky soils derived from parent materials such as limestone, granitic rocks or rhyolite. The vegetation is typically composed of an open shrub layer *of Larrea tridentata, Ericameria linearifolia*, or *Eriogonum fasciculatum* with taller shrub such as *Fourqueria splendens, Canotia holacantha* (limestone or granite) or *Simmondsia chinensis* (rhyolite). The herbaceous layer is sparse. (SWReGAP, 2004).

6.17.3 Wildlife

Reptiles

Sonoran desert tortoise (*Gopherus morafkai*), is a candidate species for listing as endangered or threatened and is listed as a BLM sensitive species. The Project is within the range of the Sonoran desert tortoise and within BLM Category 3 habitat for this species, which requires limiting tortoise habitat and population declines to the extent possible with mitigation measures. There is no USFWS-mapped critical habitat for this species. A hybrid of the Sonoran desert tortoise and the Mojave desert tortoise is present in the Black Mountains east of the Project site. The gen-tie routes also traverse Mojave desert tortoise habitat on the Nevada side of the Colorado River.

BLM's adopted variance protocol for desert tortoise applies to applications in priority desert tortoise connectivity habitat. Designated desert tortoise conservation areas are excluded from the BLM's Solar Energy Program. These areas include critical habitat for desert tortoise and specially designated areas such as BLM-designated ACECs that specifically identified desert tortoise as one of the Relevant and Important Values, National Parks, National Recreation Areas, and National Wildlife Refuges. The Project site does not contain any of these designations. Gen-tie Option 3 traverses the west side of the Bullhead-Bajada ACEC, which is approximately 8.5 miles northwest of the Project site.

In addition, the USFWS has identified certain other areas that may be important for desert tortoise connectivity (i.e., priority desert connectivity habitat). While the Project site is not located within mapped priority desert connectivity habitats, the gen-tie route (depending on the route selected) has the potential to traverse connectivity habitat on the Nevada side of the Colorado River.

The Project will be required to conduct biological surveys in support of NEPA compliance, and mitigation measures will be implemented as needed to minimize impacts to desert tortoise. This may include, for example, preconstruction surveys, relocation of desert tortoise outside of the project area, biological monitoring of onsite activities and installation of tortoise exclusion fencing.

Gila monster (*Heloderma suspectum*) is a species of greatest conservation need (SGCN) in Arizona with documented occurrence(s) within 10 miles of the study area. This species ranges from extreme southern Nevada and Utah into California, Arizona, New Mexico, southward into Mexico. It thrives in mountain foothills and washes and although the study area is at the edge of the species' range it could provide appropriate habitat. Determination of presence of this species would occur through incidental observations of live/dead species during desert tortoise presence/absence surveys.

Eagles and Raptors

Western burrowing owl (*Athene cunicularia hypugaea)* ranges widely in the western United States with both wintering and possibly breeding habitat in the study area where it has been documented from within ten miles of the study area boundary. Optimum habitat for the species is characterized by short vegetation and the presence of small mammal burrows. Typical habitats include open grasslands, prairies and plains, as well as open ruderal areas such as vacant lots or near human habitation. Most of the study area could provide potential habitat. *Athene cunicularia hypugaea* is also a BLM sensitive species. Determination of presence of this species would occur through incidental observations such as burrowing owl burrows, feathers, pellets or aural/visual bird sightings during desert tortoise presence/absence surveys.

Ferruginous hawk (*Buteo regalis)* has potential habitat within the study area based on predictive modeling. The species inhabits open areas such as arid and semi-arid grasslands and deserts and is found in much of southwestern and central western United States. In northwestern Arizona it is considered a year-long resident. The open habitat of the study area could provide habitat for the species. Potential ferruginous hawk occurrences would be documented through aerial raptor surveys of the study area and a two mile buffer.

Peregrine Falcon *(Falco peregrinus anatum)* is widespread but its historic numbers have been greatly reduced. The species inhabits a wide variety of open habitats and within the study area could be found along the Colorado River corridor or in the rugged Black Mountains. It has been documented from within ten miles of the project area. *Falco peregrinus anatum* is also a BLM sensitive species. Potential peregrine falcon occurrences would be documented through aerial raptor surveys of the study area and a two-mile buffer.

Two eagle species, **Golden Eagle** (*Aquila chrysaetos)* and **Bald Eagle** (*Haliaeetus leucocephalus)* are known from within 10 miles of the study area. *Haliaeetus leucocephalus* is a species of concern for the USFWS and both species are protected by the Bald and Golden Eagle Protection Act and are BLM sensitive species. The Colorado River corridor represents the best potential habitat for *Haliaeetus leucocephalus. Aquila chrysaetos,* by contrast, potential habitat in craggy and mountainous Black Range east of the study area may be present. Both species forage widely and thus could be found traversing the study area. Potential eagle occurrences would be documented through aerial raptor surveys of the study area and a five mile buffer.

Riparian Birds

Three federally listed avian species are on the Arizona Game & Fish Environmental Online Review list. These include yellow-billed cuckoo (*Coccyzus americanus),* Southwestern willow flycatched *(Empidonax traillli extimus),* and Yuma Ridgway's rail (*Rallus obsoletus yumanensis).* All three species have been documented from within ten miles of the study area. Two species, yellow-billed cuckoo and Southwestern willow flycatcher are found on the Information for Planning and Consultation (IPaC) list and are discussed above. Yuma Ridgway's rail is federally listed as endangered. According to NatureServe (2023) the species inhabits freshwater marshes containing dense stands of common cattail and tule along margins of shallow ponds with stable water levels (Matthews and Moseley 1990). Habitat for these species is found primarily or solely along the Colorado River. Based on the current gen-tie alignments, potential habitat for these listed species does not appear to present and direct impacts to the habitat of these listed species is unlikely.

Bats

Based on the Arizona Game and Fish Environmental Online Review, there are 11 bat species with the potential to utilize the study area or the immediate surroundings. Potential bat foraging habitat is, most likely, situated in the Colorado River Basin, area where prey species are in abundance. However, roosting sites in the nearby mountainous Black Mountains and mine sites in the area are likely. The species listed below are not an exhaustive list of potential bat species that may be present. The study area will be assessed for bat habitat and two years of bat acoustic sampling within the area will provide meaningful data to determine actual bat use in the area in order to adequately address these species through the NEPA planning process in order to reduce potential impacts to an acceptable level.

- Pale Townsend's big-eared bat *(Corynorhinus townsendii pallescens),* a USFWS species of concern and BLM sensitive species documented within ten miles of the study area.
- Spotted bat (*Euderma maculatum),* a USFWS species of concern and BLM sensitive species with potential habitat in the study area based on a predictive model.
- Greater western bonneted bat *(Eumops perotis californicus),* a USFWS species of concern and BLM sensitive species documented within ten miles of the study area.
- Allen's Lappet-browed bat *(Idionycteris phyllotis),* a USFWS species of concern and BLM sensitive species documented within ten miles of the study area.

- Western red bat *(Lasiurus blossevillii), a* species with potential habitat in the study area based on a predictive model.
- Western yellow bat *(Lasiurus xanthinus), a* species with potential habitat in the study area based on a predictive model.
- California leaf-noes bat *(Macrotus californicus),* a USFWS species of concern and BLM sensitive species documented within ten miles of the study area.
- Arizona myotis *(Myotis occultus),* a USFWS species of concern and BLM sensitive species with potential habitat in the study area based on a predictive model.
- Cave myotis *(Myotis velifer),* a USFWS species of concern and BLM sensitive species with potential habitat in the study area based on a predictive model.
- Yuma myotis *(Myotis yumanensis),* a USFWS species of concern with potential habitat in the study area based on a predictive model.
- Brazilian free-tailed bat *(Tadarida brasiliensis),* identified as a species of greatest conservation need documented within ten miles of the study area.

6.17.4 Species of Economic and Recreation Importance

The Arizona Game and Fish Environmental Online Review identified a list of six species of economic importance known from the study area vicinity. These species include Gambel's quail (*Callipepla gambelii),* white-winged dove *(Zenaida asiatica),* mourning dove (*Zenaida macroura*), mule deer (*Odocoileus hemionus*), Nelson desert bighorn sheep (*Ovis canadensis nelsoni*) and mountain lion (*Puma concolor)*. The aforementioned species are not BLM sensitive. However, species such as big-horn sheep in the Kingman area have documented population declines and should be evaluated during the NEPA planning process to minimize impacts to potential corridors and/or nearby wintering/lambing areas. The nearby Black Mountain ACEC also borders the Project area, which is designated specifically for bighorn sheep habitat.

6.17.5 Arizona Native or Protected Vegetation

Based on the Arizona Game and Fish Environmental Online Review four sensitive vascular plants were identified and are described below. Additionally, the Black Mountain ACEC to the east of the project is documented habitat for the Cerbat beard-tongue, a BLM sensitive species. A floristic survey for these plant(s) and any other sensitive plant species would be required to satisfy the NEPA planning process in order to identify presence, extent and suitable mitigation measures to minimize impacts.

- Freckled milkvetch *(Astragalus lentiginosus* var. *ambiguous)* is a species of greatest conservation need in Arizona. According to NatureServe (2023) it is "Endemic to Arizona, known only from Peach Springs and Chloride, Mohave county." The plant grows on open hillsides of limestone or granite and known occurrence(s) are documented from within ten miles of the study area. Potential habitat is found within the study area, most likely on bedrock outcrops in the eastern portion.
- Golden cholla *(Cylindropuntia echinocarpa)* is a species of greatest conservation need in Arizona ranging from Nevada to California, Arizona, and adjacent Mexico. According to Flora of North America (Pinkava 1993) the species inhabits desert

grasslands, juniper and oak-juniper woodlands, flats, bajadas and canyons in sandy, loam, and alluvial to gravelly substrates in both the Mojave and Sonoran Deserts. Potential habitat is found within the study area, particularly on the broad bajadas and toeslopes of the desert mountains.

- Johnson's fishhook cactus *(Echinomastus johnsonii)* is a species of greatest conservation need in Arizona known from California, Nevada, Utah, and Arizona. According to Flora of North America (Zimmerman and Parfitt 1993) the species inhabits Mojave desert scrub and the upper edge of Sonoran desert scrub on rocky slopes and gravelly hills. Potential habitat could be found throughout the study area.
- Cerbat beardtongue *(Penstemon bicolor* ssp. *roseus)* is a USFWS species of concern and BLM sensitive species. It ranges from Mojave County, Arizona to San Bernardino County, California, and Clark and Nye counties in Nevada. The species inhabits rocky calcareous, granitic, or volcanic soils in washes, roadsides, scree at outcrop bases, rock crevices, or similar places receiving enhanced runoff, in the creosote-bursage, blackbrush, and mixed-shrub zones. Potential habitat could be found throughout the study area.

6.17.6 Cacti, Yucca and Protected Native Plants

Many native plants, particularly cactus and yucca species, are protected by the states of Arizona and Nevada. In Arizona protected plants fall into four categories (Arizona Revised Statutes Title 3. Agriculture § 3-903 and University of Arizona, 2010):

- Highly Safeguarded – These plants are threatened for survival or are in danger of extinction. Protection includes not only the plants themselves, but their plant parts such as fruits, seeds and cuttings. A few examples of species in this category are saguaro (*Carnegiea gigantea*), Arizona willow (*Salix arizonica*), and some agave and cacti (Agavaceae and Cactaceae families).
- Salvage Restricted – This large group of plants are subject to damage and vandalism. This is a large list of species with 32 plant families represented, the largest being numerous species of cacti.
- Salvage Assessed – This much smaller group of plants have enough value if salvaged to support the cost of salvaging. This list includes desert willow (*Chilopsis linearis*), palo verde (*Cercidium* spp.), ironwood (*Olneya tesota*), smoke tree (*Psorothamnus spinosus*) and several mesquite species (*Prosopis* spp.).
- Harvest Restricted – Also a smaller group, these plants are protected due to the fact that they are subject to excessive harvesting because of the intrinsic value of products made with their wood or fiber. Included in this group are bear grass (*Nolina microcarpa*), yucca (*Yucca* spp.), ironwood and mesquite.

Three species of cacti and several Arizona protected species were observed within the study area during the habitat assessment and site visit. To reduce impacts and potential mitigation measures and also to comply with Arizona's Native Plant Protection statute cacti and Arizona

protected species possible avoidance and minimization measures may include marking cacti with high visibility flagging and avoided whenever possible during project development. Where disturbance is unavoidable, cacti and other protected species may be salvaged and replanted in the area. Permits for impacting cacti and other protected species at the project site must be obtained in advance from the state of Arizona and BLM.

The Project site is mapped in the Western Association of Fish and Wildlife Agencies' CHAT with a ranking of 6, indicating the "least crucial" habitat. The site avoids any ACEC or U.S. Fish and Wildlife Service critical habitat or riparian areas. No wetlands or water bodies are present, apart from ephemeral drainages, and the site is outside of protected areas for desert tortoise and outside the range of greater sage-grouse. Species that may be impacted include burrowing owls, golden eagles, and bats, in addition to tortoises.

Surveys for potential species will be conducted to support the NEPA analysis during the appropriate seasonal windows to detect presence/absence. Impacts on important wildlife habitats and migration/movement corridors, if any, would be assessed in the NEPA analysis and appropriate mitigation determined such as those described above.

6.18 Cultural, Tribal, and Historic Resources

6.18.1 Class I Cultural Resources Inventory

A Class I (records search) cultural resources inventory of the Project area and a surrounding 1-mile buffer area was completed on February 16, 2023, at the Arizona State Museum, the BLM Kingman Field Office and the Lake Havasu Field Office. The records search identified 14 prior investigations within the study area, of which four intersect the project area as identified in Table 4. These studies appear to comprise less than 13 percent of the project area, and it is unclear how much of this sample was surveyed to current standards per SHPO standards. A more precise estimate of prior survey acreage is unknown as it appears that studies from the 1970s did not always delineate survey areas when recording cultural resources.

Table 4: Cultural Resource Studies within a 1-Mile Buffer of the Project Area

Identifier	Year
84-002.ASU	-
46B.DM	-
1999-546.ASM	1999
1999-546.ASM	1999
1999-16.ASM	1999
2005-365.ASM	2005
2018-116.ASM	2018

Identifier	Year
1989-185.ASM	1989
1997-283.ASM	1997
1997-270.ASM	1997
1995-89.ASM	1995
2003-20.ASM	2003
2019-444.ASM	2019
2019-456.ASM	2019

Archaeological sites have been identified with the immediate proximity of the Project and there are several cultural landscape features known to be present in the area (specifically petroglyphs and trails). Within the Project area and a surrounding 1-mile buffer, 47 cultural resources were identified, with 21 of those resources being within the Project area as identified in Table 5.

For the sites within the Project area, 19 of the resources are prehistoric, while two are unknown. Seven are lithic scatters, seven are prehistoric trails with associated lithic scatters, three are prehistoric quarries, one is a trail with an associated intaglio, one is a sherd and lithic scatter, and two are unknown.

In the 1-mile buffer zone, there are 26 sites, 14 of which are flaked stone scatters, six are prehistoric quarries, three are prehistoric trails with associated lithic scatters, two are lithic scatters with associated features, and one is a sherd and lithic scatter.

Table 5: Cultural Resources within a 1-Mile Buffer of the Project Area

Site	Year(s) Recorded	Description	Proximity to Project Area
AZ:L:2:18	1989	Prehistoric quarry area and rock ring	Inside
AZ:L:2:20	1989	Prehistoric flaked stone scatter - primary reduction	Outside
AZ:L:2:21	1989	Prehistoric desert pavement quarry	Outside
AZ:L:2:24	1989	Prehistoric desert pavement quarry	Inside
AZ:L:2:25	1989	Prehistoric flaked stone scatter	Outside
AZ:L:2:26	1989	Prehistoric desert pavement quarry	Outside
AZ:L:2:56	1995	Prehistoric sherds and flaked stone scatter	Outside
AZ:L:2:57	1995	Prehistoric rock features, trail and flaked stone scatter	Outside
AZ:L:2:61	1995	Prehistoric flaked stone scatter	Inside
AZ:L:2:66	1996	Prehistoric trail with flaked stone scatter	Inside
AZ:L:2:67	-	-	Inside

Site	Year(s) Recorded	Description	Proximity to Project Area
AZ:L:2:68	1998	Prehistoric intaglio and trail segment	Inside
AZ:L:2:69	-	-	Inside
AZ:L:2:73	1997	Prehistoric sherds and flaked stone scatter	Inside
AZ:L:2:74	1997	Prehistoric flaked stone scatter	Outside
AZ:L:2:75	1997	Prehistoric flaked stone scatter	Inside
AZ:L:2:82	1999	Prehistoric flaked stone scatter	Outside
AZ:L:2:83	1999	Prehistoric flaked stone scatter	Outside
AZ:L:2:84	1999	Prehistoric trail and isolated flaked stone artifacts	Outside
AZ:L:2:85	1999	Prehistoric flaked stone scatter – secondary reduction	Inside
AZ:L:2:86	1999	Prehistoric trail with flaked stone scatter	Inside
AZ:L:2:87	1999	Prehistoric flaked stone scatter	Inside
AZ:L:2:88	1999	Prehistoric flaked stone scatter	Inside
AZ:L:2:89	1999	Prehistoric quarry	Inside
AZ:L:2:90	1999	Prehistoric flaked stone scatter	Inside
AZ:L:2:91	1999	Prehistoric flaked stone scatter	Inside
AZ:L:2:92	1999	Prehistoric trail with flaked stone scatter	Inside
AZ:L:2:93	1999	Prehistoric trail with flaked stone scatter	Inside
AZ:L:2:94	1999	Prehistoric trails with flaked stone scatter	Inside
AZ:L:2:95	1999	Prehistoric trail with flaked stone scatter	Inside
AZ:L:2:96	1999	Prehistoric trail and isolated flaked stone artifacts	Inside
AZ:L:2:97	1999	Prehistoric flaked stone scatter	Outside
AZ:L:2:98	1999	Prehistoric quarry	Outside
AZ:L:2:99	1999	Prehistoric flaked stone scatter	Outside
AZ:L:2:100	1999	Prehistoric trail with flaked stone scatter	Outside
AZ:L:3:3	1973	Prehistoric flaked stone scatter	Outside
AZ:L:3:4	1973	Prehistoric flaked stone scatter	Outside
AZ:L:3:5	1973	Prehistoric rock feature and flaked stone scatter	Outside
AZ:L:3:6	1973	Prehistoric quarry	Outside
AZ:L:3:8	1977	Prehistoric flaked stone scatter	Outside
AZ:L:3:14	1977	Prehistoric rock ring and flaked stone scatter	Outside

Site	Year(s) Recorded	Description	Proximity to Project Area
AZ:L:3:15	1977	Prehistoric flaked stone scatter	Outside
AZ:L:3:16	1977	Prehistoric quarry	Outside
AZ:L:3:17	1977	Prehistoric quarry	Outside
AZ:L:3:40	1997	Prehistoric flaked stone scatter	Outside
AZ:L:3:42	1997	Prehistoric flaked stone scatter	Outside
AZ:L:3:44	1999	Prehistoric flaked stone scatter	Outside

For the 21 sites inside the Project area, four of them, AZ:L:2:18, AZ:L2:66, AZ:L:2:68 and AZ:L:2:73 were recommended as eligible for listing in the National Register of Historic Places (NRHP). Thirteen of these sites, AZ:L:2:75, AZ:L:2:85, AZ:L:2:86, AZ:L:2:87, AZ:L:2:88, AZ:L:2:89, AZ:L:2:90, AZ:L:2:91, AZ:L:2:92, AZ:L:2:93, AZ:L:2:94, AZ:L:2:95, AZ:L:2:96, were recommended as not eligible for listing in the NRHP. The remaining four sites, AZ:L:2:24, AZ:L:2:61, AZ:L:2:67, AZ:L:2:69, are unevaluated for the NRHP and should be treated as NRHP eligible resources until a determination is made by the BLM.

A full Class I cultural resources inventory study is currently in progress and will be provided to the BLM under separate cover. To minimize impacts to prehistoric, Tribal, and historic resources, a Class III cultural inventory and report would be conducted for the Project in support of NEPA compliance. The results of the Class I file and literature search will shape the methods and extent of pedestrian cultural surveys on the Project site and site recordation efforts. Consultations with the SHPO and Tribes would also occur in compliance with Section 106 of the National Historic Preservation Act. Survey data collected and associated reports will be incorporated as part of the final NEPA analysis and approval process.

6.18.2 Tribal Resources and Native American Concerns

The American Indian Religious Freedom Act of 1978 requires all federal agencies to consider the effect of their actions on traditional Native American religious and cultural values and practices. Traditional Cultural Properties (TCPs) are a separate class of cultural resources. They are places that have cultural values that transcend, for instance, the values of scientific importance that are normally ascribed to cultural resources such as archaeological sites and may or may not coincide with archaeological sites.

The Fort Mojave Indian Reservation is less than two miles west of the Project site. The applicant began its tribal outreach program for the Leo Solar project in late 2021 and early 2022 and has met and communicated with local Tribes, including the Fort Mojave Indian Tribe, Colorado River Indian Tribes, Hualapai Tribe, and Chemehuevi Indian Tribe over the last year. A summary of those meetings is included in Section 4.

As part of the Section 106 and NEPA processes, the BLM Kingman Field Office would conduct government-government consultation with the identified Tribes to consider the effects of the

Project on traditional Native American religious and cultural values and practices including TCPs, determine if any TCPs occur within or near the Project area and whether these TCPs would be potentially impacted by the Project, and evaluate means to avoid, minimize, or mitigate adverse effects.

The applicant has initiated a Class I file search and literature review and will complete a Cultural Resources Inventory of the proposed Project area. Inventories will be used by the BLM, in conjunction with Tribal consultations, to determine whether resources of cultural or religious significance to the tribes are identified within the Project Area. If such resources are identified within the Project Area, construction activities will be designed to avoid those areas to the extent feasible, with the aim of resulting in no impacts. If such resources cannot be avoided, the BLM may require mitigation which would be discussed in partnership with tribal entities.

6.19 Paleontological Resources

The state geologic map was consulted to determine the potential for, and possible extent of paleontological resources within the proposed Project area, and to establish a general impression of the fossil sensitivity within the Project area and its surrounding environment. Based on geologic understanding of a particular area, the BLM provides a Potential Fossil Classification (PFYC) rating for geological units and their potential to produce fossils (BLM, 2022). These are summarized as:

- Class 1: Very Low
- Class 2: Low
- Class 3: Moderate/Undetermined
- Class 4: High
- Class 5: Very High

The PFYC used by BLM has identified most of the Project area as PFYC Class 4, which has a high potential to produce fossils. See Attachment A, Figure 12. To further evaluate the potential for the project to impact significant fossils, the applicant would conduct a paleontological records search and pedestrian survey of the project footprint as part of the technical studies to support the NEPA process which would provide BLM a basis for developing mitigation measures commensurate with the paleontological sensitivity of the Project area.

7 Supporting Documentation

7.1 Biological Resources Supporting Documents

The Arizona Game and Fish Department's Environmental Online Review Tool was utilized to determine the potential for special status species within the Project area. A copy of the report generated is provided in Attachment D. This report was generated for both the Leo Solar Project and Atlas Wind Project concurrently, and since the time of the report, the boundaries of the sites have changed and may be illustrated differently than in the maps provided in Attachment A, which reflect the current site boundaries.

7.2 Cultural Resources Supporting Documents

A Class I file search was conducted by ASM Affiliates in the BLM Kingman Field Office and Lake Havasu Field Office, as well as the Arizona State Museum. Due to the sensitive nature of the Class I inventory and site records, Attachment E has been provided to BLM under separate cover to protect the cultural sensitivity of the information.

8 References

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Arizona State Legislature. 2022. Arizona Revised Statutes, Title 3. Agriculture § 3-903, Protected group of plants; botanical names govern; categories of protected plants; power to add or remove plants; and annual hearing. Arizona Revised Statutes (azleg.gov). Site accessed August 11, 2022.

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U.S. Geological Survey Nation Gap Analysis Program. 2005. Southwest Regional GAP Analysis Project – Land Cover Descriptions. RS/GIS Laboratory, College of Natural Resources, Utah State University.

Zimmerman and Parfitt. 1993. Flora of North America. Oxford University Press. November 4, 1993.

Attachment A: Figures

Figure 1: Project Location and Land Management

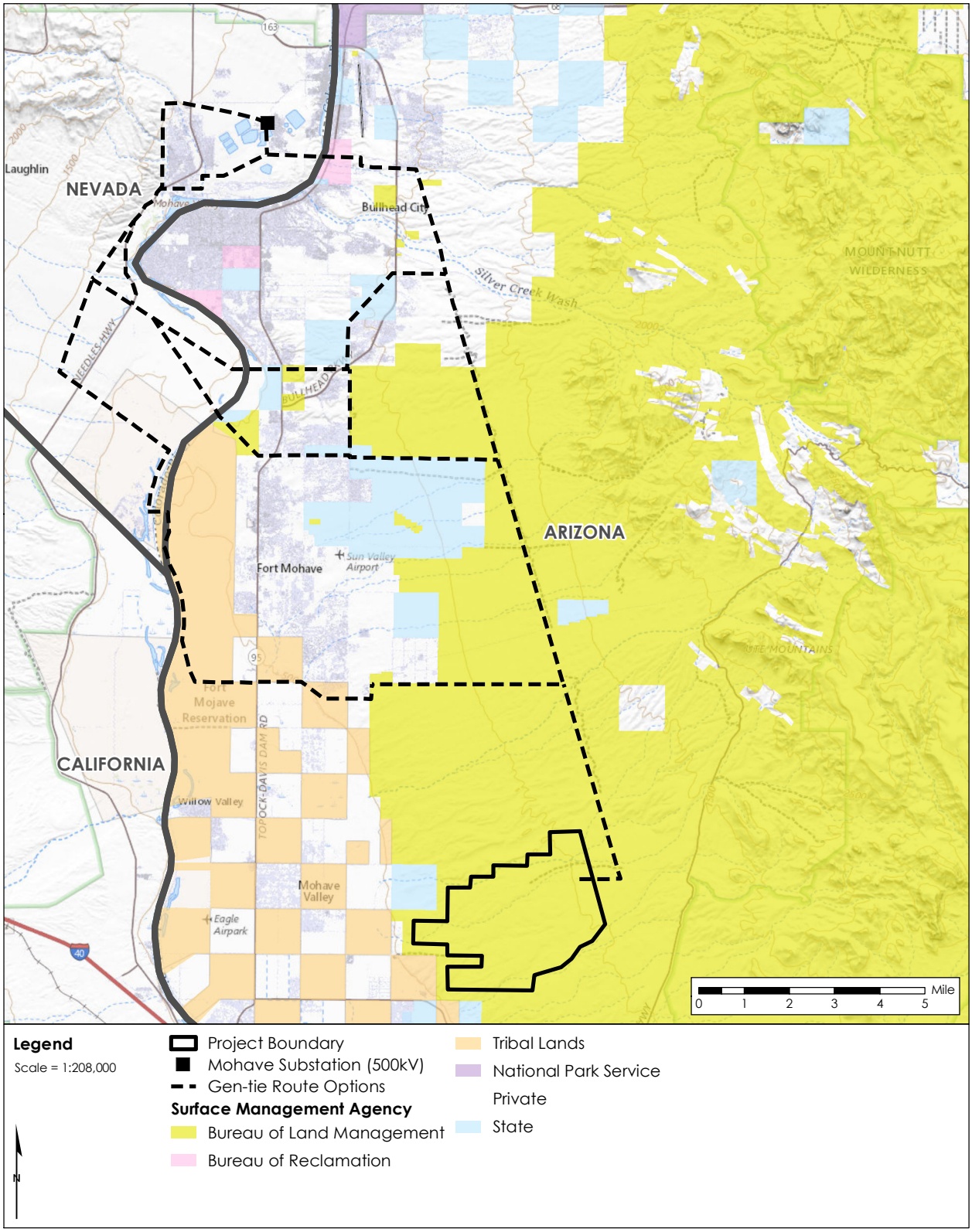


Figure 2: Existing and Proposed Transmission

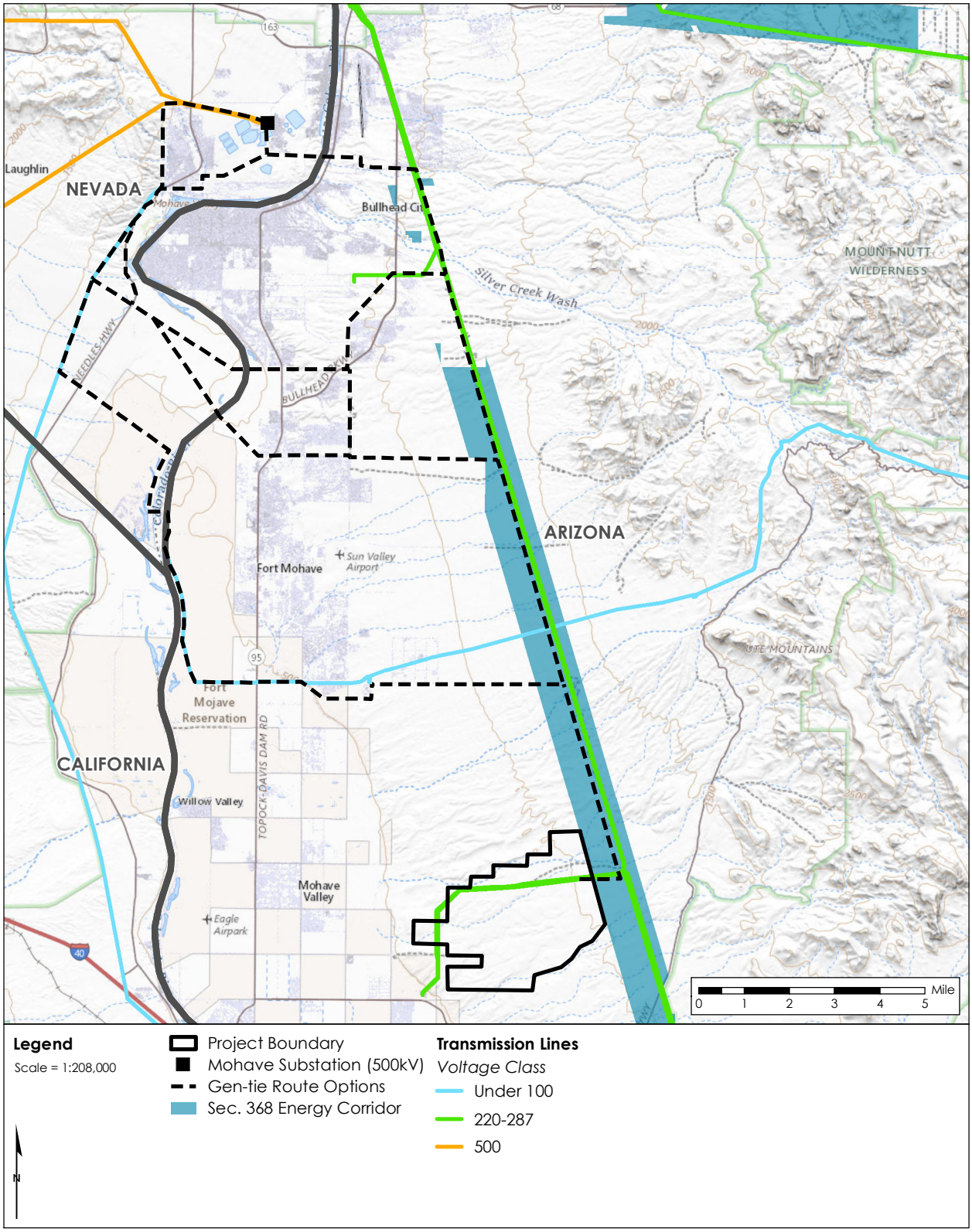


Figure 3: Visual Resource Management Classes

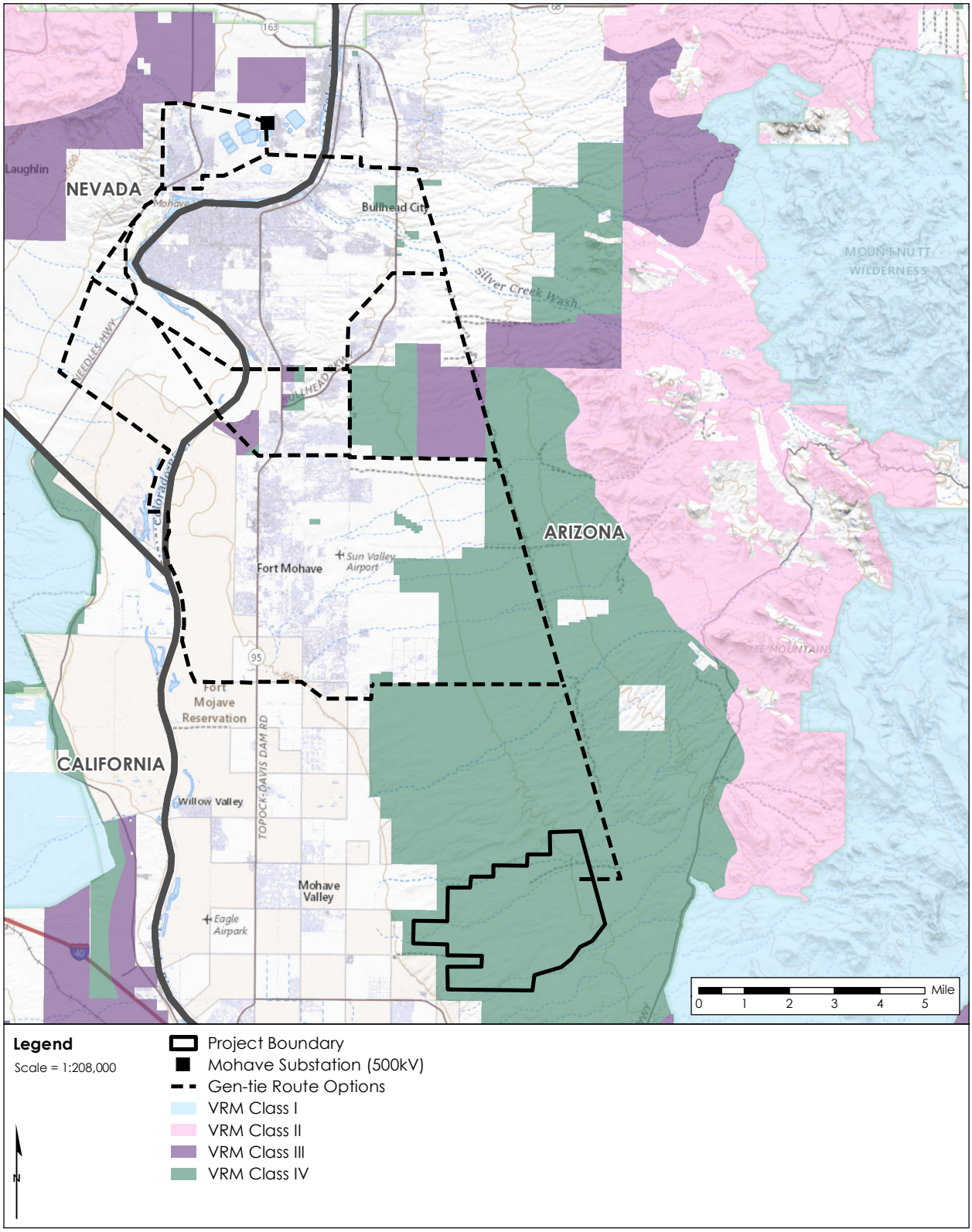


Figure 4: Biological Resource Issues

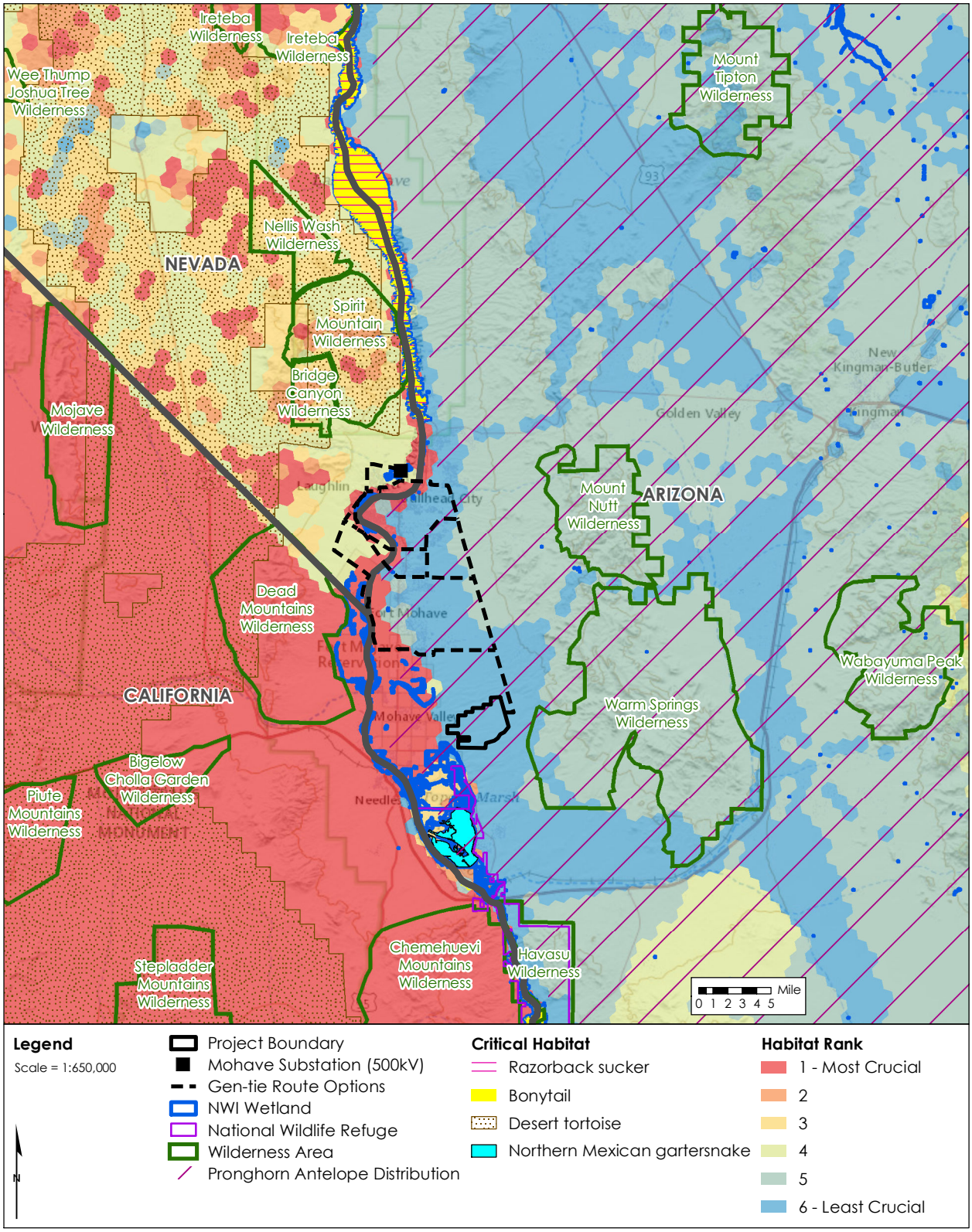


Figure 5: Special Recreation Management Area and National Scenic Byway

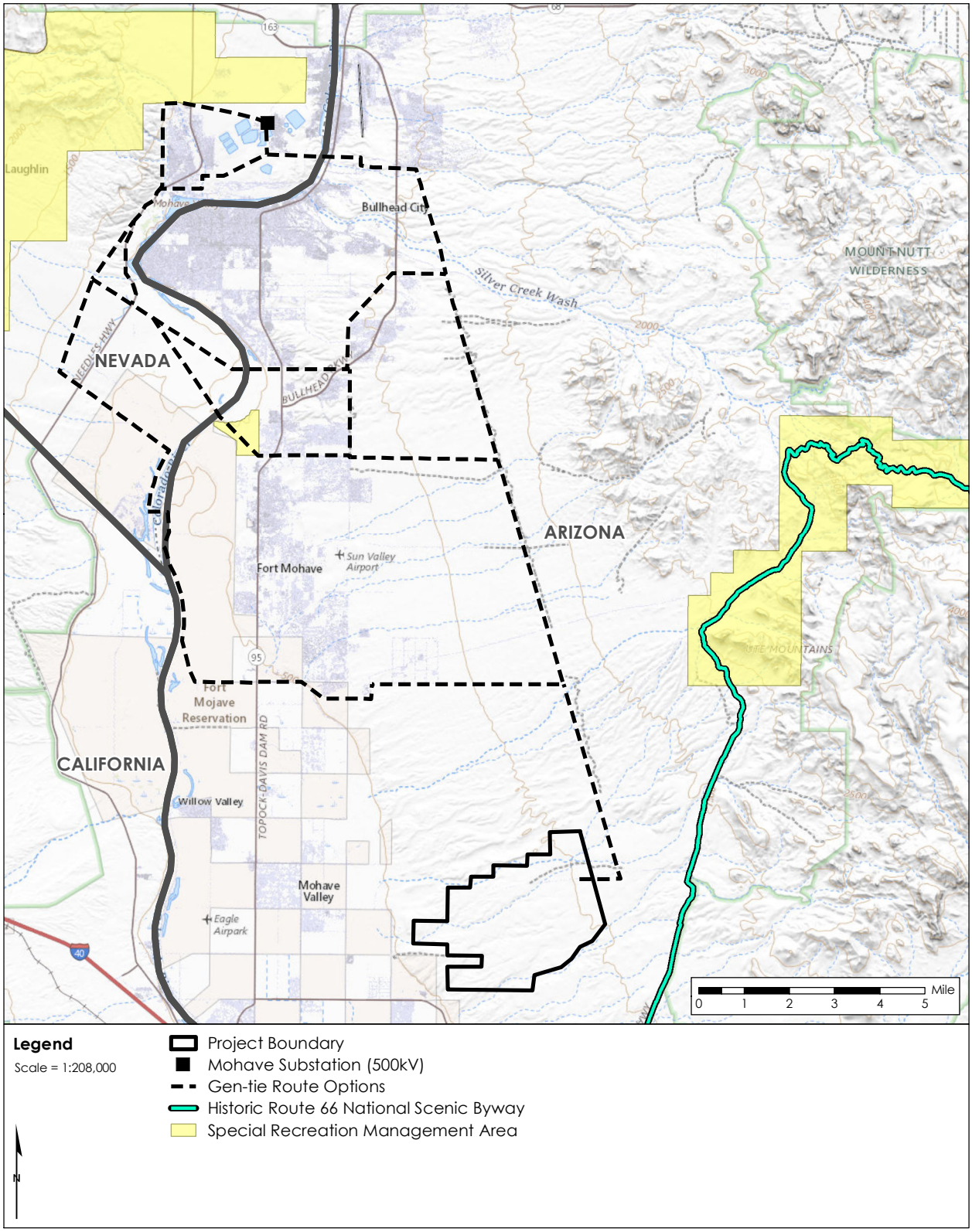
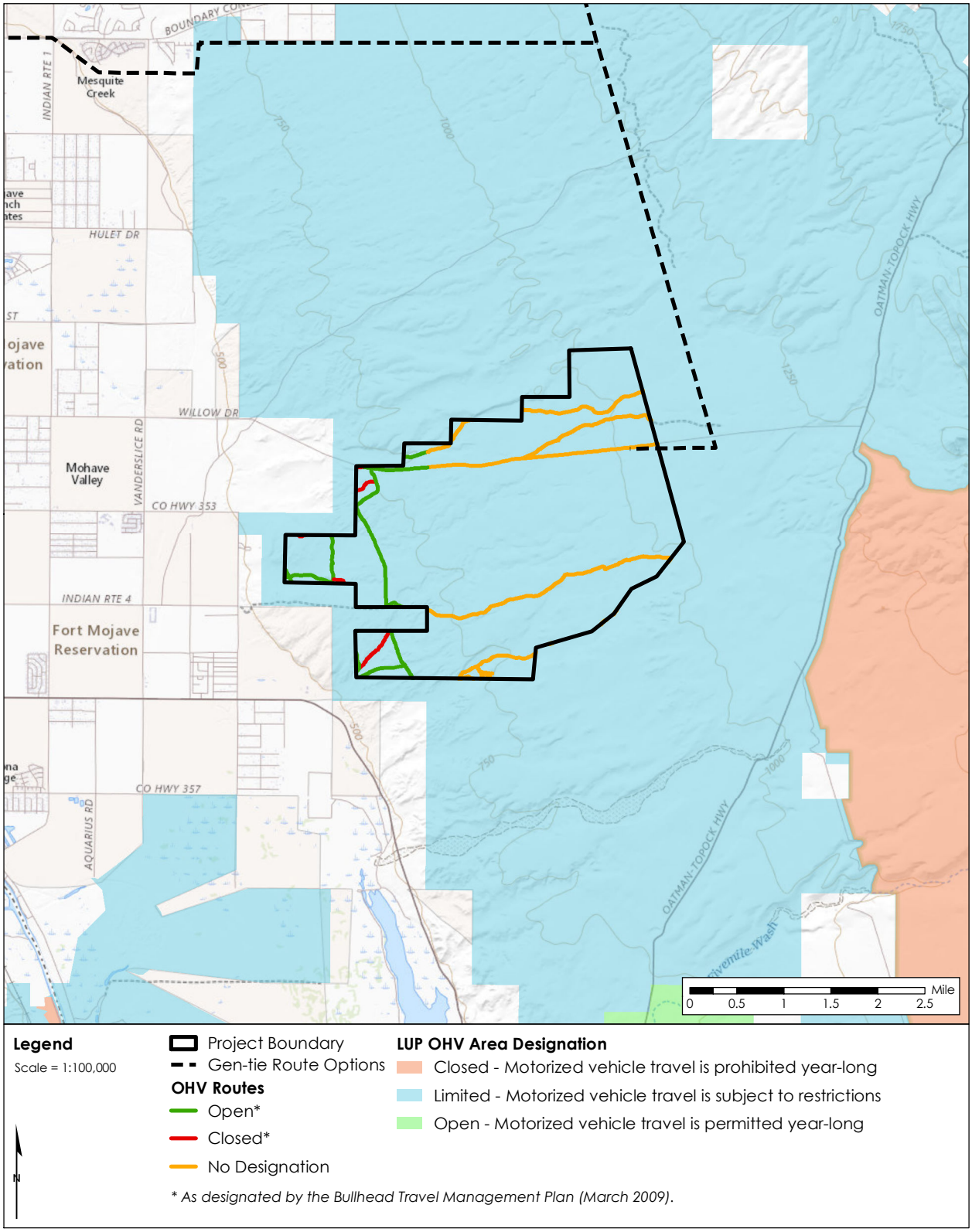


Figure 6: Off-Highway Vehicle (OHV) Areas



** As designated by the Bullhead Travel Management Plan (March 2009).*

Figure 7: Lands with Wilderness Characteristics

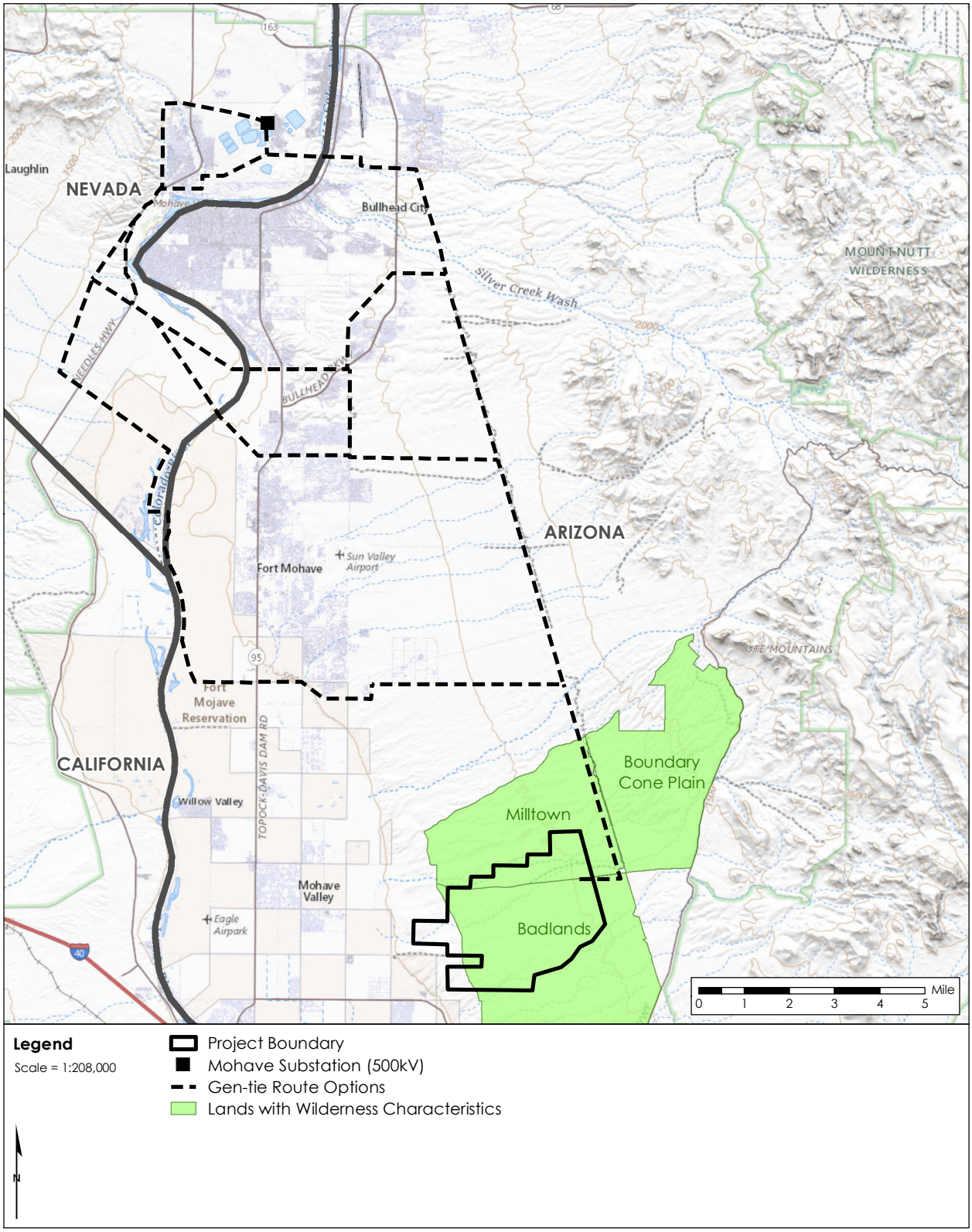


Figure 8: National Park Service Lands

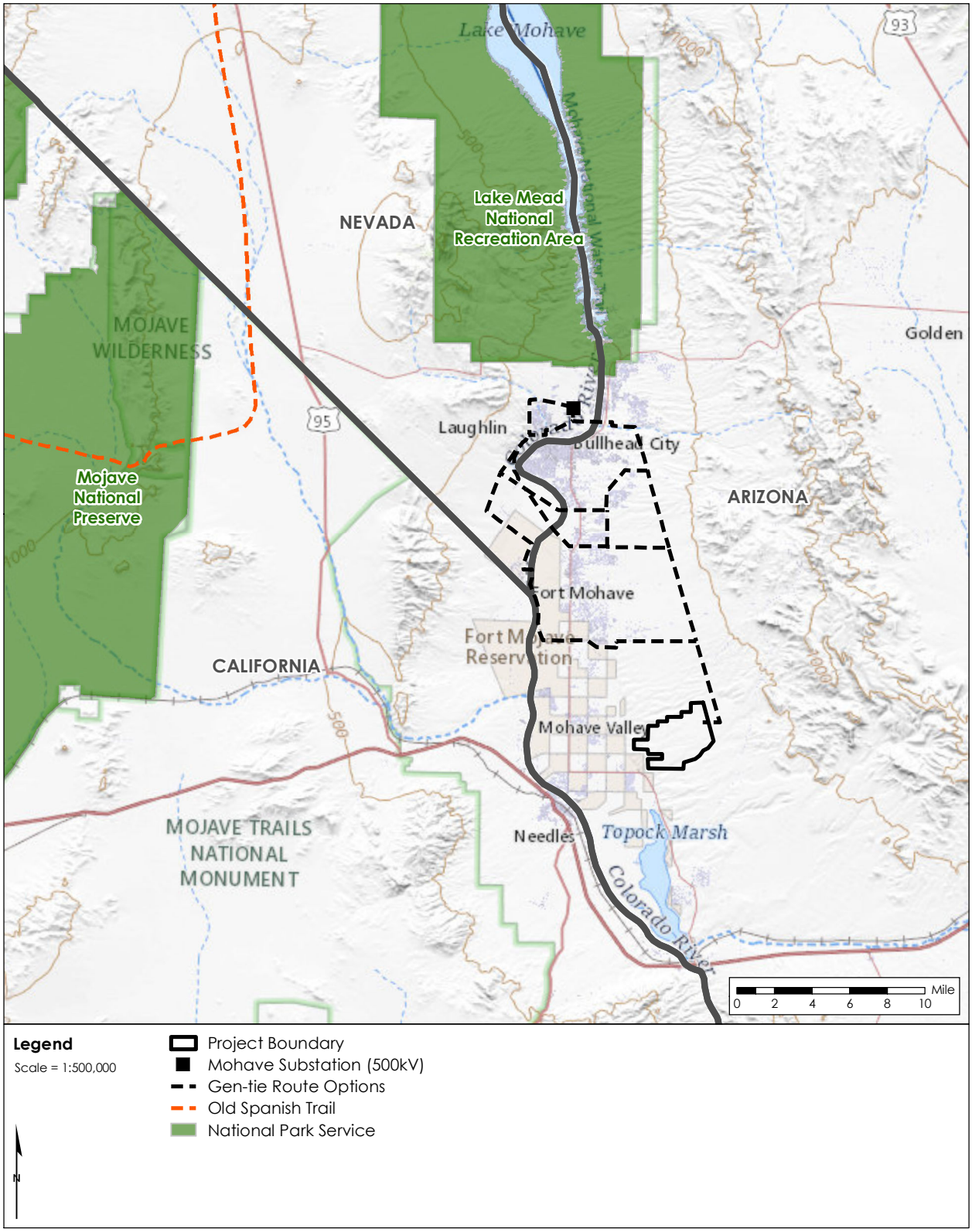


Figure 9: Wilderness Areas

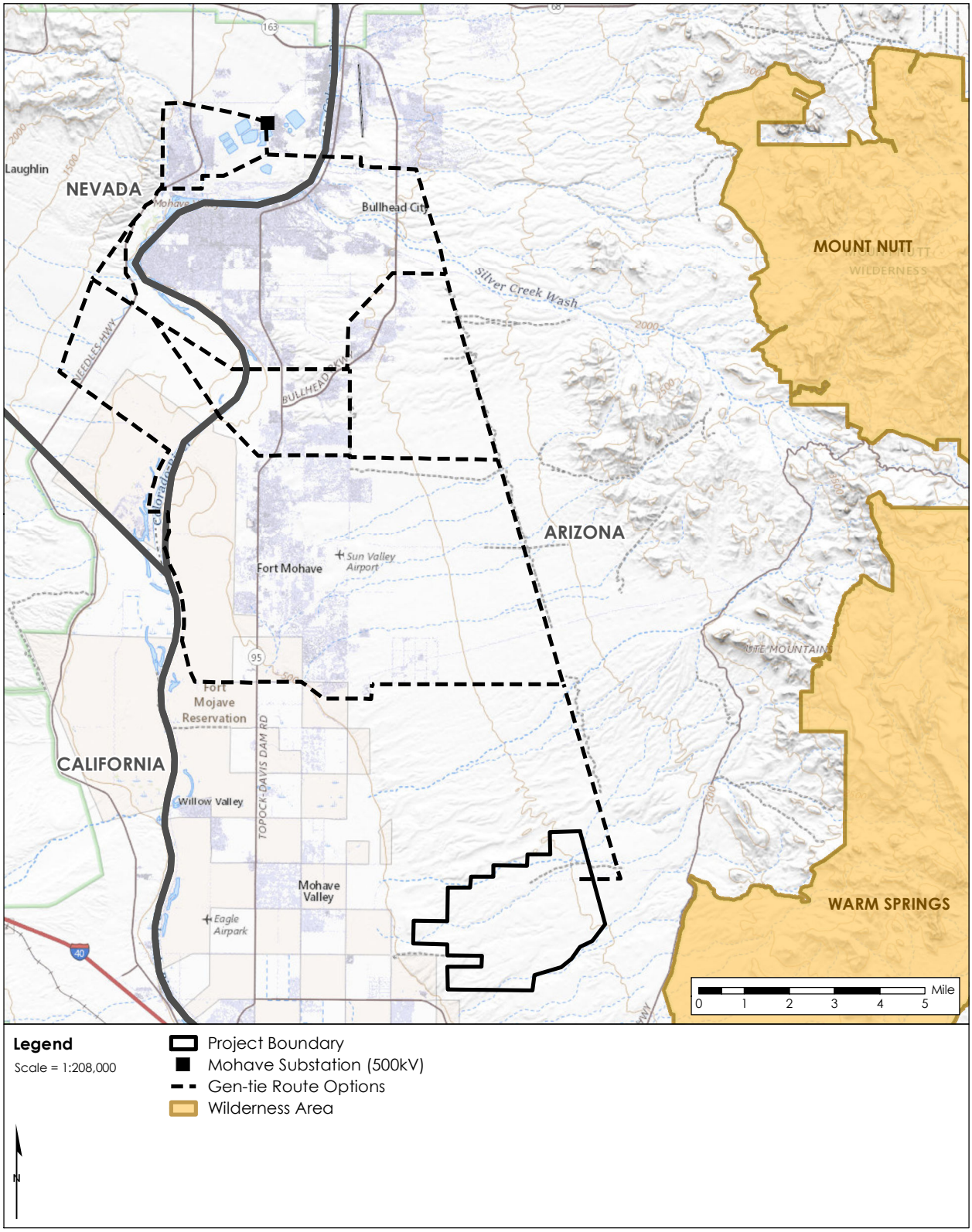


Figure 10: Wild Horse and Burro Herd Areas

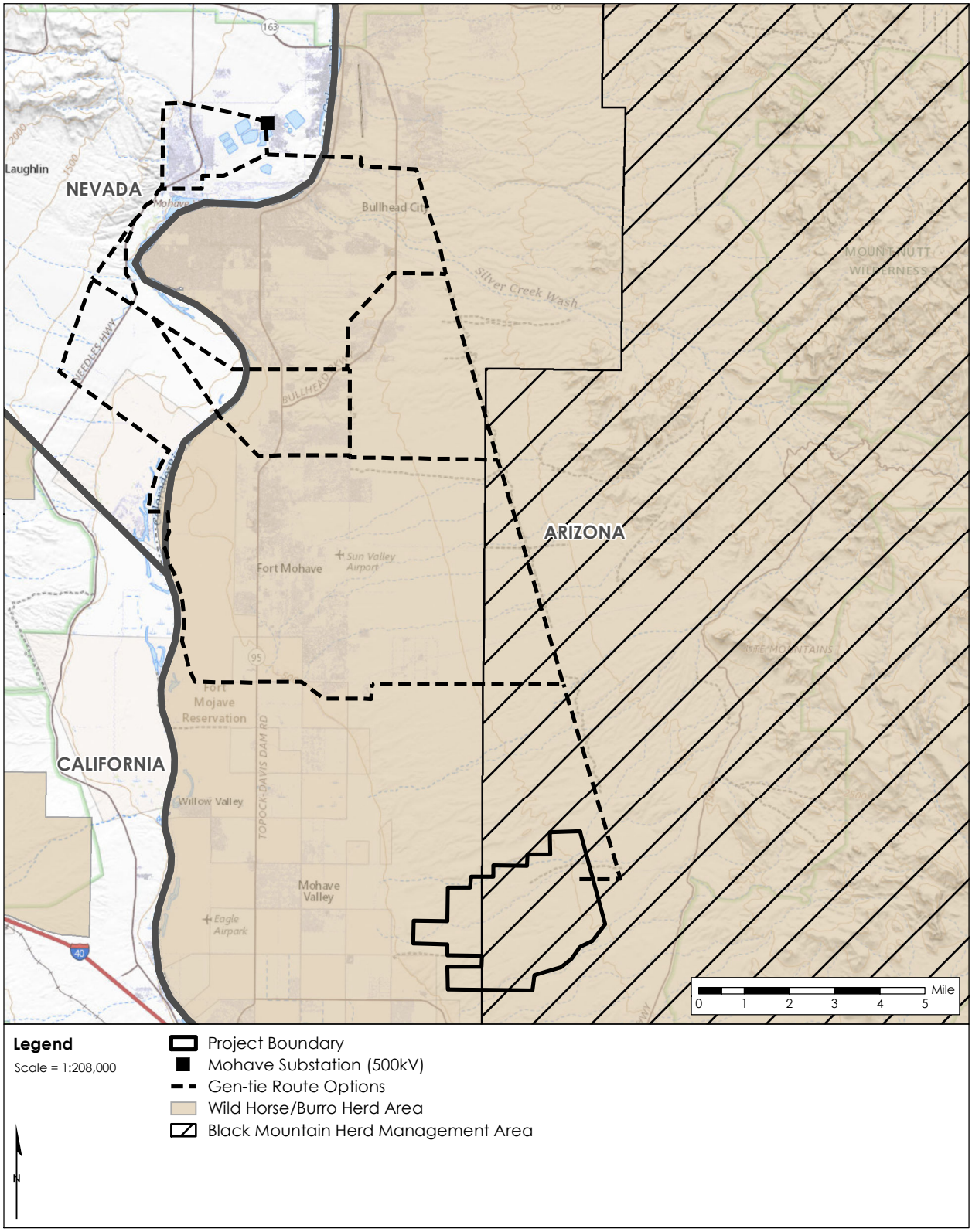


Figure 11: Flood Zones

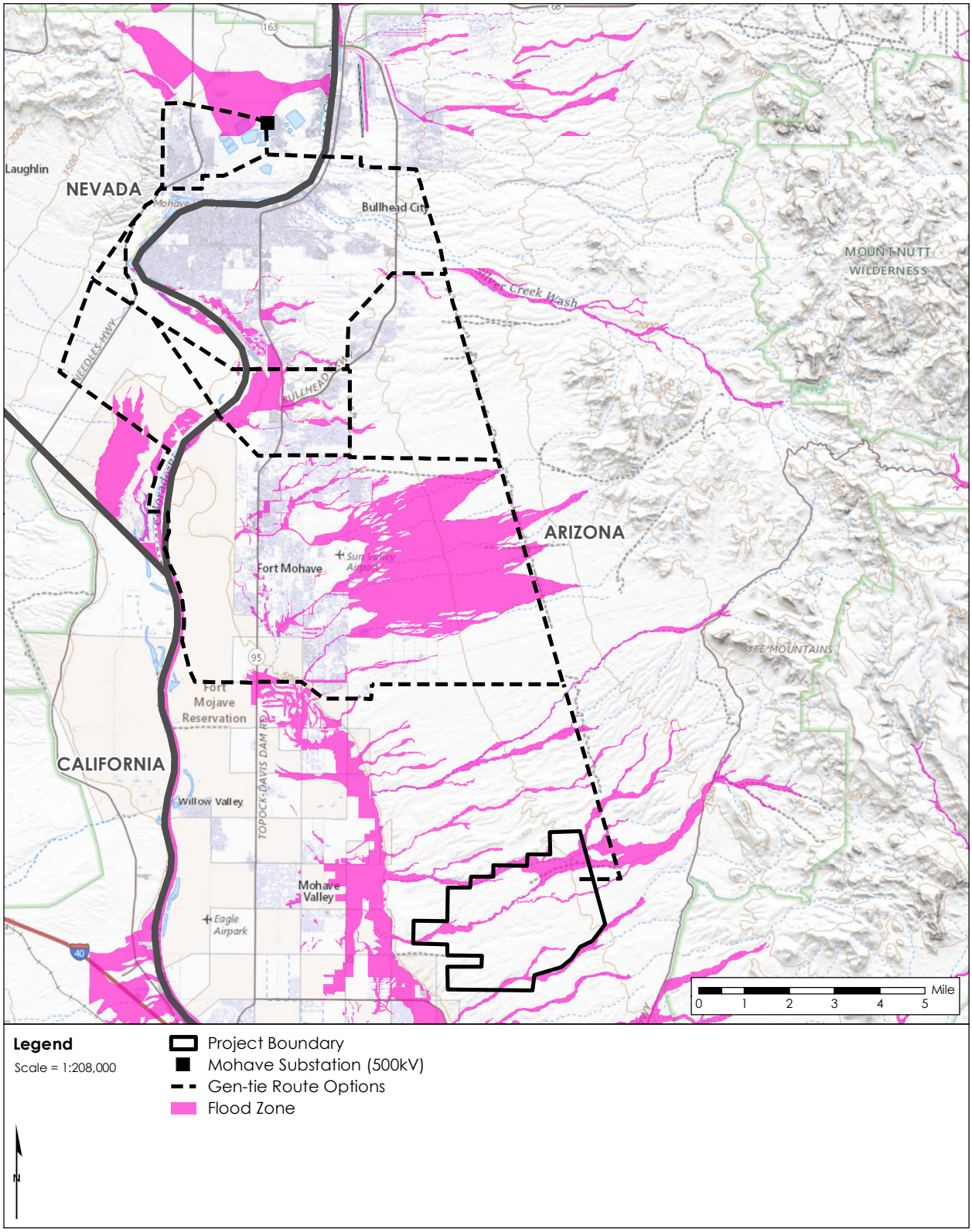
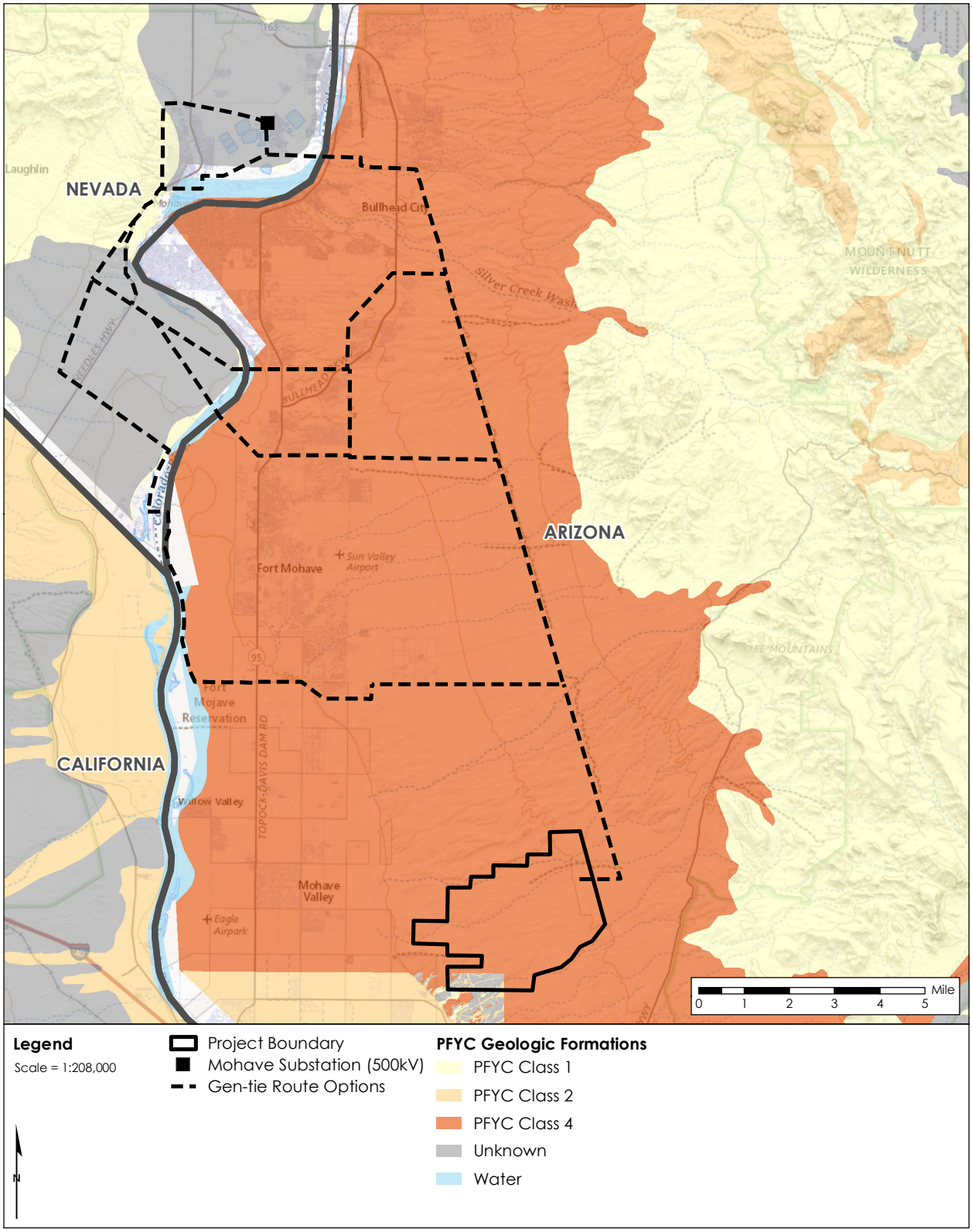


Figure 12: Potential Fossil Yield Classifications



ATTACHMENTS

Attachment B: Plan of Development

Leo Solar Project

Plan of Development

Prepared for

U.S. Department of the Interior

Bureau of Land Management

Kingman Field Office

Submitted by

Leo Solar LLC

c/o Arevia Power

April 2023

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1 PROJECT DESCRIPTION

1.1 Introduction

1.1.1 Facility Description, Planned Uses, and Generation Output

Leo Solar, LLC (Applicant) plans to construct, own, operate, and decommission the Leo Solar Project (Project), consisting of up to a nominal 450-megawatt (MW) alternating current (MWac) solar photovoltaic (PV) power generating facility and 450 MW Battery Energy Storage System (BESS) on Bureau of Land Management (BLM)-administered land located in Mohave County, Arizona. The Project is located south of Bullhead City east of where the Arizona, California, and Nevada state borders meet in the Mohave Valley.

This Plan of Development (POD) is prepared in support of an application by the Applicant to the BLM for authorization of a right-of-way (ROW) grant on federal lands for the construction, operation, and decommissioning of the solar facility, generation tie-line (gen-tie), and associated ancillary facilities. The Project would be constructed using PV solar modules mounted on single-axis, horizontal tracker structures on approximately 5,492 acres of BLM land.

The project area is situated on the west side of a BLM-designated Section 368 energy transmission corridor (Western-Wide Energy Corridor 41-46), which would be utilized for a portion of the gen-tie. The ROW application contains a larger area than required for the solar facility to allow for adjustments in the facility layout to maximize wind output and minimize environmental impacts based on the environmental analysis conducted as part of the National Environmental Policy Act (NEPA) review process. The Project would generally be comprised of solar arrays, new and improved access roads, underground electrical collector lines, an onsite substation, fiber optic communications equipment, interconnecting substation additions, operation and maintenance (O&M) facilities, temporary construction staging areas, and other ancillary facilities.

The power produced by the Project would be conveyed to the electrical transmission system with an approximately 21.5- to 31.2-mile-long (length is dependent on route options), up to 500-kilovolt (kV) gen-tie connecting the solar facility in Arizona to the existing 500 kV Mohave Substation in Clark County, Nevada southwest of Laughlin, Nevada. The Mohave Substation is part of the El Dorado electric transmission system, which is jointly owned by Southern California Edison (SCE), Los Angeles Department of Water and Power (LADWP), and NV Energy. The Applicant would submit an Interconnection Application to SCE as the Operating Agent for the El Dorado transmission system.

Average annual energy production from a 450 MWac project equates to the annual daytime electricity needs of approximately 175,000 households. Solar electric power is produced during daylight hours when electricity demand is highest which will be coupled battery energy storage technology in order to improve the customer's energy product. The Project would generate greenhouse gas-free electricity that would offset approximately 645,000 metric tons of carbon dioxide and other emissions that would result from producing an equivalent amount of electricity from fossil fuel-fired electric generators.

1.1.2 Applicant's Proposed Schedule

The BLM would be the lead federal agency for approving the Project and would issue a ROW grant authorizing use of BLM-administered lands for Project construction, operation, maintenance, and decommissioning. The Project site is within a "variance area" for solar power development, as defined in the Record of Decision (ROD) prepared for the Final Programmatic Environmental Impact Statement (EIS) for Solar Energy Development in Six Southwestern States (Solar PEIS). Utility-scale solar energy development projects in variance areas are permitted subject to site-specific conditions. The Project would constitute a federal undertaking and would be required to comply with NEPA and other applicable federal, state, and local laws. Preparation of an Environmental Impact Statement (EIS) is expected to be the appropriate level of analysis. The completion of the NEPA process and issuance of a ROD is targeted for the third quarter of 2025. Table 1 Applicant's Proposed Schedule provides the Applicant's proposed schedule.

Prior to any activity on the site, required resource management plans would be developed and approved, and regulatory and permit conditions would be integrated into the final construction compliance documents. Project construction would begin once all applicable approvals and permits have been obtained. Construction is expected to take approximately 18 months and would include the major phases of mobilization, access road grading and site preparation, installation of drainage and erosion controls, solar array installation, and gen-tie construction. Once construction is completed, the Project would be in operation for at least 30 years with the possibility of a subsequent repowering for additional years of operation.

Table 1 Applicant's Proposed Schedule

Activity	Target Date
NEPA Notice of Intent	3rd Quarter 2023
BLM Permitting/NEPA (EIS) Process Complete	2nd Quarter 2025
Construction Commencement	4th Quarter 2025
Start-up and Testing	2nd Quarter 2027
Commercial Operation	3rd Quarter 2027

1.2 Purpose and Need for the Project

1.2.1 Need for Renewable Energy

The United States has a greater solar energy resource potential than any other industrialized nation. The multiple benefits associated with developing this resource have been recognized repeatedly by both federal and state policymakers. Development of solar resources reduces reliance on foreign sources of fuel, promotes national security, diversifies energy portfolios and contributes to the reduction of greenhouse gas emissions. The demand for power continues to grow in the Western United States. As older technology fossil-fuel plants reach the end of their useful lives, there is a need to replace them with clean, reliable resources. Recognizing this need, many Western states, including Arizona, have enacted legislation to encourage or mandate the development of renewable generation.

Arizona's renewable energy standard calls for 15 percent of electricity to be generated from renewable sources by 2025. The federal government has enacted legislation strongly encouraging the development of renewable energy. As part of an overall strategy to develop a diverse portfolio of domestic energy supplies for our future, the National Energy Policy of 2001 and the Energy Policy Act of 2005 (Public Law 109-58, August 8, 2005) encourage the development of renewable energy resources, which includes solar energy. Section 211 of the Energy Policy Act of 2005 encourages the approval of at least 10,000 MW of non-hydropower renewable energy production on public lands; this goal was met in 2012. In early 2009, the Secretary of the Interior issued Orders 3283 and 3285, making the production, development, and delivery of renewable energy top priorities for the Department of the Interior. The President's Climate Action Plan, released on June 25, 2013, sets forth a new goal for the Department of the Interior to approve 20,000 MW of renewable energy projects on the public lands by 2020. The Energy Act of 2020 requires the Secretary of the Interior to set national goals for wind, solar, and geothermal energy production on Federal land no later than September 1, 2022, to include at least 25 gigawatts of electricity from these sources.

1.2.2 Project 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 emission goals. Solar energy provides a sustainable, renewable source of power that helps reduce fossil fuel dependence and greenhouse gas emissions. Considering the entire process, from raw material sourcing through end-of-life-cycle collection and recycling, 450 MWac of additional generating capacity would produce a small fraction of the greenhouse gas emissions of a similar capacity fossil fuel plant.

Specific Project objectives are:

- Establish a solar PV power-generating facility that is of sufficient size and configuration to produce approximately 450 MWac of electricity in order to provide Arizona and the West a significant new source of renewable energy.

- Produce and transmit electricity at a competitive cost.
- Locate the facility in a rural area of Mohave County in proximity to the Mohave Substation.
- Minimize environmental effects by:
    - Avoiding Exclusion Areas identified in the Solar PEIS ROD;
    - Using existing electrical distribution facilities, ROWs, roads, and other existing infrastructure where practicable
    - Minimizing water use during operation
    - Reducing greenhouse gas emissions
- Use solar technology that is available, proven, efficient, and easily maintained, recyclable, and environmentally sound.

1.2.3 Power Markets and Project Benefits

The Project would include a gen-tie line connecting to Mohave Substation. The interconnection would allow utilities to purchase renewable energy generated by the Project under one or more Power Purchase Agreements (PPAs) to deliver energy from a (nominal) 450 MWac generating facility.

The Project is well suited to arid environments because of the technology's low water consumption. This is a key consideration in Arizona and the Western U.S., as the population grows, and water supplies become more constrained. PV solar technology, which converts sunlight directly into electrical energy, entails no thermal process, and therefore does not require process or cooling water to produce electricity. Water consumption during operations would consist of dust control and domestic use for on-site personnel and is between 95 and 99 percent less than concentrating solar projects that employ conventional steam turbines to generate electricity.

The Project would also create employment for Arizona residents. The Project is anticipated to create an average of 850 construction jobs at any given time and create up to 20+ long-term full-time-equivalent (FTE) operational jobs. These jobs would in turn support many other jobs in the Arizona economy.

1.3 General Facility Description, Design, and Operation

1.3.1 Overview

The Project would be designed in accordance with federal, state, and industrial standards, including American Society of Mechanical Engineers standards, National Electrical Safety Code, International Energy Conservation Code, International Building Code, Uniform Plumbing Code, Uniform Mechanical Code, National Fire Protection Association, and Occupational Safety and Health Administration regulations. This section describes the Project location as well as the technical components of the Project.

1.3.2 Project Location, Land Ownership, and Jurisdiction

The Project site is located in Mohave County, Arizona, approximately 15 miles southeast of Bullhead City, 28 miles southwest of Kingman, and 5 miles east of the Colorado River/California state line. Oatman Highway is located along the eastern edge of the site.

The Project is located entirely on federal lands administered by the BLM under the 1995 Kingman Resource Management Plan. The Project site is located within a variance area for solar power generation under the 2012 Approved Resource Management Plan Amendments/ROD for Solar Energy Development in Six Southwestern States. **Error! Reference source not found.** illustrates the solar development area and gen-tie alignments. Note gen-tie route Option 1 was removed from consideration due to ROW constraints.

Several gen-tie routing options are under consideration with the longest route being approximately 31.2 miles in length. Using the longest gen-tie route as a conservative estimate, the gen-tie would require approximately 756 acres of ROW and may cross multiple jurisdictions, including BLM, Arizona State Lands Department, Bureau of Reclamation, National Park Service, Nevada Division of State Lands, and Clark County, as well as private lands in Arizona and Nevada. Section 1.3.8 provides more information on the location and specific land ownership for the proposed gen-tie options.

1.3.3 Legal Land Description

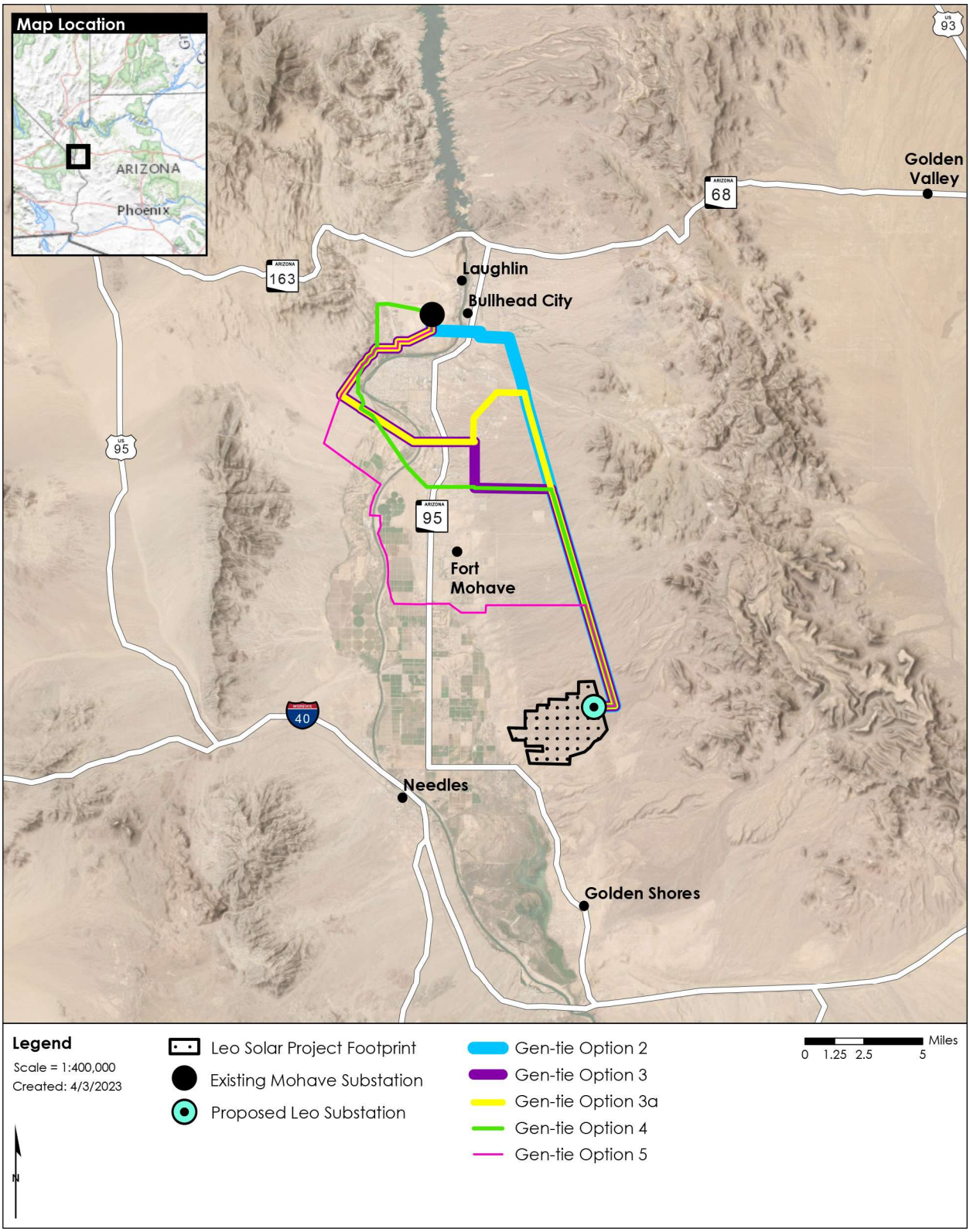
The Project is located on the property identified in Appendix A, located within the Gila and Salt River Base and Meridian in Arizona and within the Mount Diablo Base and Meridian in Nevada. Specific township/range and section information is shown Appendix A.

1.3.4 Nearby Land Uses

The Project is situated between the Colorado River to the west and the Black Mountains to the east. Undeveloped open land surrounds the Project area and the proposed Atlas Wind Project footprint lies to the north of the Project area. A checkerboard of Arizona state lands and Fort Mohave reservation lands lies to the west of the Project. Land uses include a mix of agriculture, open space, and residential uses, with the closest residential area located approximately 1 mile to the west of the Project's western boundary.

The gen-tie routing options traverses a similar mix of land uses, including agricultural and residential uses, open space lands, as well as recreation and visitor serving land uses closer to the Colorado River shoreline.

Figure 1 Project Location



1.3.5 Total Acreage and General Dimensions

Table 2 provides a summary of the anticipated Project components and associated disturbance acreages.

Table 2 Estimated Disturbance Areas for Project Components

Disturbance Type	Acres of Disturbance	Notes
Permanent Disturbance		
Solar Facility	5,492	450 MWac PV solar facility and 450 MWac BESS.
34.5 kV Collector System	70	Co-located with access roads to minimize disturbance.
On-site Access Roads	44 for perimeter road 21 for internal accessways	Up to 18 miles of perimeter road and 10 miles of internal access ways within the solar arrays, up to 20 feet wide.
On-Site Substation and BESS	10	
O&M Facility	5	Includes the O&M building and permanent parking and storage
500 kV Gen-tie Access Road	76	Permanent gen-tie access road, 31.2 miles in length (assuming longest gen-tie route) up to 20 feet wide, will be constructed and maintained within the 200-foot-wide gen-tie ROW for construction and O&M purposes.
Gen-tie Structure Footings	13	Permanent foundations for gen-tie structures, assuming 50 feet by 50 feet or 0.06 acre of permanent disturbance.
TOTAL PERMANENT DISTURBANCE	**5,731**	
Temporary Disturbance		
Collector Line Construction Areas	0	Co-located with access roads to minimize disturbance.
Gen-tie Structure Work Areas	352	Assuming up to a 31.2-mile-long gen-tie (using longest gen-tie route), and an average of 750 feet between spans, this amounts to approximately 220 structure locations. Work area needs are typically 100 feet by 700 feet for an approximate acreage of 1.6 acre per structure site.

Gen-tie Pull/Tension Sites	20-30	Multiple pulling sites for gen-tie structures are anticipated to string conductor. These sites are typically between 200 feet wide and 400-600 feet in length or approximately 2.5 acres.
Staging Yard/Laydown Area	10	Outside the solar facility fence
TOTAL TEMPORARY DISTURBANCE	**392**	

1.3.6 Project Elements

The Project would include the following primary elements (see Appendix B for the Preliminary Site Plan):

- Solar array blocks consisting of solar photovoltaic modules mounted on single-axis, horizontal tracker mounting systems supported by driven steel posts or other embedded foundation design;
- Direct current (DC) collection system and Power Conversion Stations (PCSs) to collect power from the array blocks;
- Overhead 34.5 kV AC collection system to convey electricity from the PCSs to the substation;
- Battery energy storage system;
- An internal roadway system consisting of spoke, ring, and perimeter roadways;
- Gen-tie line extending from the onsite substation to the existing Mohave Substation, consisting of one up to 500 kV circuit (200-foot-wide ROW);
- Access road along the Project's gen-tie;
- An onsite substation hosting a ringbus switchyard(s);
- Administrative and maintenance buildings;
- Redundant telecommunication systems and cables installed in tandem with the gen-tie routes. Microwave and wireless systems also onsite;
- Meteorological towers (steel lattice), approximately 30 feet high, mounted on concrete foundations may be installed around the perimeter of the solar field;
- Project security using a combination of perimeter security fencing, controlled access gates, onsite security patrols, lighting, electronic security systems and/or remote monitoring;
- A 10-foot wide firebreak outside the perimeter fence;
- Drainage control structures, final design to be determined upon completion of a hydrologic study;
- Perimeter desert tortoise exclusion fencing (if required);
- A temporary construction mobilization and laydown area, which would contain construction trailers, construction workforce parking, above ground water tanks, materials receiving, and materials storage (graded/compacted earth).

1.3.7 Project Facilities

Solar Panel Arrays

The proposed Project would utilize high-efficiency commercially available solar PV modules that are Underwriters Laboratory (UL)-listed or approved by another nationally recognized testing laboratory. Materials commonly used for solar PV modules include monocrystalline silicon, polycrystalline silicon, amorphous silicon, cadmium telluride (CdTe), and copper indium selenide/sulfide.

The Project would use monocrystalline or polycrystalline silicon solar PV modules mounted on single-axis, horizontal tracker mounting systems. Mounted PV modules, inverters, and transformers would be combined to form array blocks, approximately 2 MW in size.

With a horizontal tracker mounting system, the panel arrays are arranged in north-south oriented rows and drive motors would rotate the horizontally mounted solar panels from east to west to follow the sun (on a single axis) throughout the day. A typical panel array layout using horizontal trackers is shown in Figure 2. The highest point for a horizontal tracker would be achieved during the morning and evening hours when the trackers are tilted at their maximum angle and would be a maximum of 12 feet above the ground surface depending on the grade where the posts are installed (Figure 3). When solar modules are roughly parallel to the ground, the overall height of the tracker unit would be a maximum of 6 feet above the ground surface depending on the grade where the posts are installed.

The vertical support legs for the tracker mounting system consists of foundations that may include concrete piers approximately 18 to 24 inches in diameter and 6 to 8 feet deep, or driven posts (wide flange I-beam) approximately 6 to 8 inches across and 6 to 12 feet deep. The preferred mounting configuration would use directly embedded driven posts; concrete piers would be used only if subsurface conditions do not support driven posts.

In this type of system, each tracker panel array is approximately 285 feet long and powered by a low-voltage solar-powered drive motor. The motors and actuator are mounted to one of the driven posts and do not require separate foundations for mounting. Hydraulic drive systems would not be used. The motors only would be operated for a few seconds every 5 to 10 minutes during daylight conditions to move the panels in approximately 1 degree increments. The sound from the tracker motors would be less than 70 decibels at a distance of 3 feet. This would equate to less than 30 decibels at 50 feet.

Meteorological stations located at the site would monitor wind speed and communicate with the tracker units. This would allow for the trackers to rotate to a flat position during high wind activity. The meteorological station towers would be located at multiple locations around the perimeter of the solar array. Meteorological station towers would be monopole or lattice design and would not exceed 30 feet in height. Each tower would require a small concrete foundation approximately 3 feet by 3 feet that would extend approximately 4 feet into the ground, depending on soil conditions.

Figure 2 Typical Array Configurations

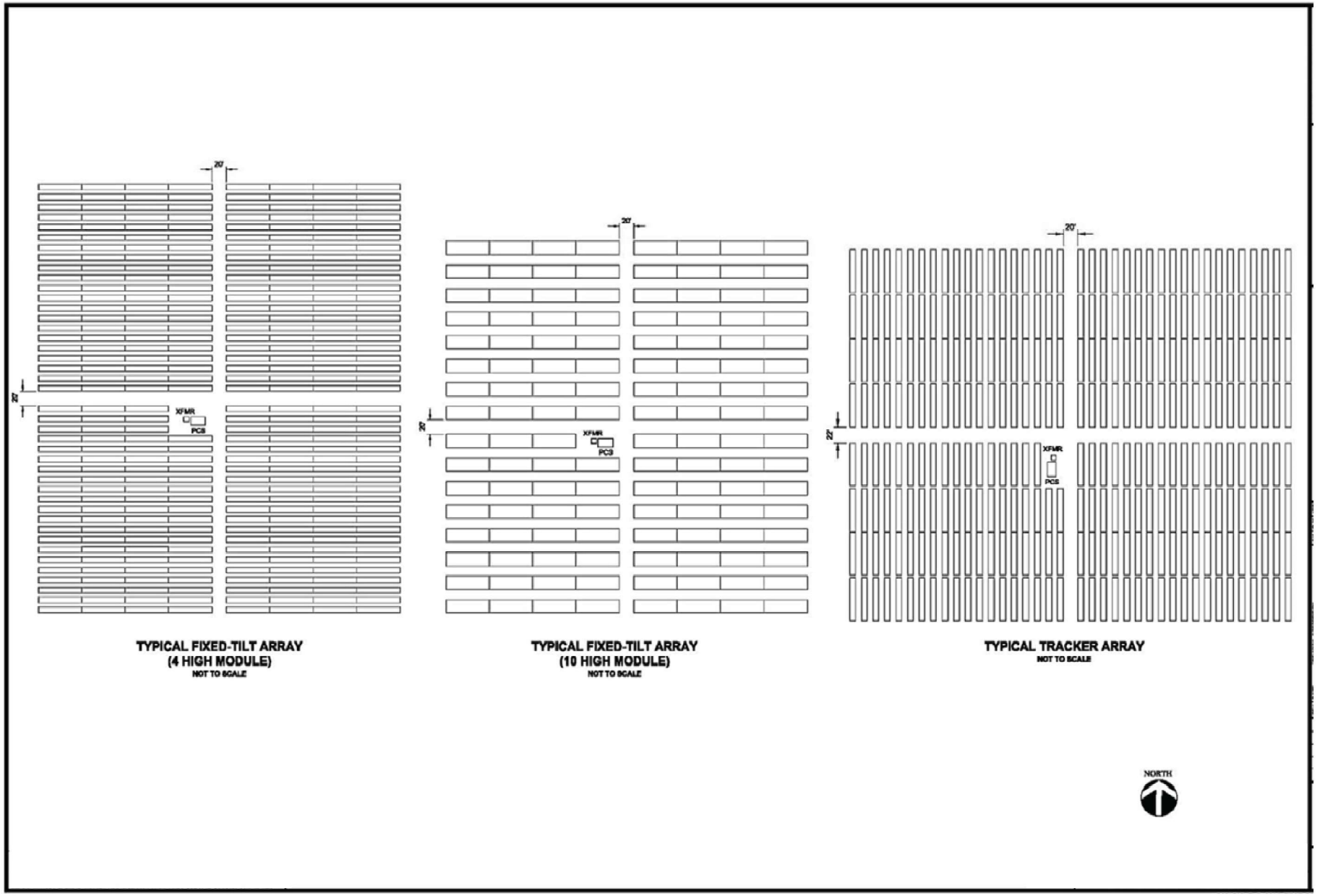
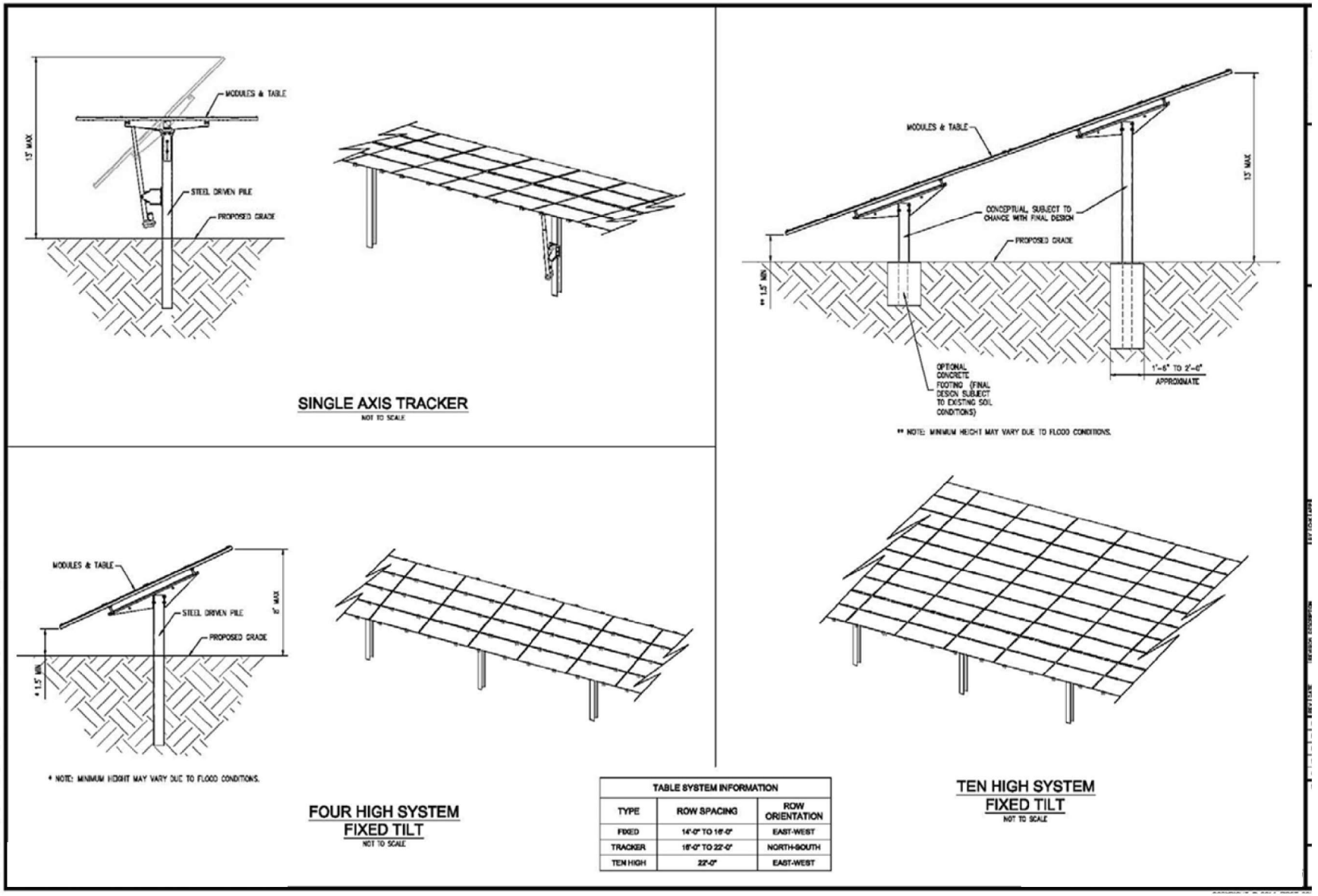


Figure 3 Typical Mounting System



If horizontal trackers are used, the PCSs would be equipped with emergency backup power required to rotate the tracker units to their stow position in the unlikely event of high winds and a loss of the primary electrical connection from the Project to the transmission system. The emergency back-up power system would consist of a 15 kilovolt-ampere (kVA) battery-based uninterruptible power supply (UPS) at each PCS.

Electrical Collection System

PV modules convert sunlight into DC electricity. One or more combiner boxes would be located in the array block to collect the DC electricity from PV modules. The electricity would be delivered through underground cables to an inverter that changes the DC electricity to AC electricity and a medium-voltage transformer that steps up the voltage to 34.5 kV. This converted electricity then would be delivered to an onsite substation, where the electricity again would be stepped up to 500 kV for delivery to the transmission grid.

Inverters, Transformers, and Medium Voltage Switchgear

Each array block would have a PCS containing inverters and medium voltage transformers, as well as other electrical equipment. Each PCS also would contain communication equipment to wirelessly communicate with the tracker units to control operation and detect anomalous conditions. Photovoltaic Combining Switchgear, or PVCS, will be located along the 34.5 kV collector line. All electrical equipment would be housed in protective enclosures on concrete pads.

34.5 kV Collection System

The 34.5 kV collection system would comprise both underground and overhead cabling. From the medium-voltage transformers to the PVCSs, the 34.5 kV system would be installed underground using 35 kV-rated medium voltage cables listed for direct buried applications except that overhead cabling would be installed where necessary to avoid existing underground facilities. Underground 34.5 kV cables would be installed to comply with the minimum burial depth in accordance with the National Electrical Code.

From the PVCSs to the onsite substation, the 34.5 kV system would be installed overhead. Overhead 34.5 kV collector lines would be installed as double circuit lines on wood poles with post insulators (typical of medium voltage installations in electric distribution systems). Pole height would be up to 75 feet above grade.

Substation

A 2.5-acre substation would be developed within the Project site. Individual 35 kV “Circuits” will feed approximately 10 blocks each. The onsite substation would be constructed based on applicable electrical safety codes. The substation would be separately fenced to provide increased security around the medium and high voltage electrical equipment. The substation area would include a transformer containment area, a microwave tower, a control house, and one or more transformers. Containment measures for all substation equipment shall be provided in accordance with Environmental Protection Agency 40 CFR Part 112 and all applicable codes required by the local, state, and federal governing authorities. The transformer

containment area would be lined with an impermeable membrane covered with gravel, and would include a drain with a normally closed drain valve. Transformers will be provided with secondary oil containment equal to 110% of the volume of oil present in the transformer in addition to the volume of rainwater for a 25-year, 24-hour rainfall event. An additional one to three additional on-site switchyards hosting on-site ringbus switchyard(s) may be required.

Energy Storage System

A BESS would be located within the solar facility site. Approximately 450 MW of battery energy storage will be installed at the Project, with each battery system installed at an inverter. The BESS will store energy during periods when there is low demand (e.g., daytime hours with no cloud cover) and will discharge the energy when there is a need (e.g., daytime hours with significant cloud cover, periods of high customer demand, nighttime). The batteries would be stored in containers on gravel pads. The containers would be air conditioned and include a smart disconnect system to autonomously react to hazard conditions to minimize risks of thermal runaway events. The BESS would be co-located adjacent to the substation and would occupy up to 7.5 acres.

Site Security and Fencing

Security at the Project site would be achieved by fencing, lighting, security patrols, and electronic security systems. The Project site would be monitored 24 hours per day, seven days per week during all phases. Lighting would be provided at the O&M building and Project entrance gate. The solar field and support facilities perimeter would be secured with chain link metal-fabric security fencing. Controlled access gates would be located at the site entrance. The perimeter fence would be an approximately 6- to 7-foot-high chain link fence with 1-foot-high barbed-wire security strands at the top; a 10-foot-wide fire break would be maintained around the exterior of the perimeter fence (the security fence in proximity to the gen-tie line would be properly grounded). If needed, approved desert tortoise exclusion fencing would be installed on the exterior perimeter security fence, in areas where desert tortoise would be excluded. Breakaway fencing would be used at drainages.

Internal Project-Related Roads

Project-related roads within the solar plant site would include the perimeter road and solar field access ways as described below. Similar to the disturbance that would occur from other Project components (based on the assumption that all acreage within the fenced perimeter would be disturbed), the acreage identified for roads also is considered to be permanent disturbance.

Perimeter Road

A new perimeter road would be located just inside the site's perimeter fence and within the solar field area around specific blocks of equipment. The perimeter road would be constructed to allow access by maintenance and security personnel. The perimeter road would be approximately 20 feet wide and would be composed of native graded and compacted dirt. Alternatively, the perimeter road may use an aggregate base in some or all areas to meet Project dust and flood control requirements.

Solar Field Access Ways

Within the solar field, new access ways would be built to provide vehicle access to the solar equipment (PV modules, inverters, transformers) for O&M activities. These access ways would be approximately 20 feet wide and approximately every 500 to 1,300 feet across the solar field. The existing surface area would be graded and compacted using onsite materials to facilitate use by two-wheel-drive vehicles.

1.3.8 Generation Tie-Line and Interconnection

500 kV Generation Tie-Line

The Project would require the construction of 500 kV circuit and telecommunications system (fiber optic system data) for interconnection to the El Dorado transmission system at the Mohave Substation. The exact routing of the gen-tie is still to be determined; however, a portion of the route will be within an existing Section 368 energy corridor on BLM land. Four options are being considered, ranging between 21.5 and 30.8 miles in length, as shown on Figure 1 and described below. The permanent gen-tie ROW width would be approximately 200-feet-wide for any of the potential options. The overhead line and telecommunications system (fiber optic system data) would be installed per local and national electrical code requirements.

A 20-foot-wide gen-tie access road would run the length of the gen-tie for O&M purposes. The overhead line and telecommunications system would be installed per local and national electrical code requirements. The gen-tie may utilize single or double circuit lattice, H-Frame, or tubular monopole type structures that are comprised of angular steel, tubular steel, concrete, wood, or a hybrid. The structure heights may range from 100 to 200 feet, and the average structure span may range from 400 to 1,000 feet. Structures would be galvanized steel with a dull gray appearance similar to existing steel poles installed adjacent to the site and would be used to support interconnection to the transmission system. The selection of specific tower type, height, and placement would be determined during the final design of the Project, taking into account any physical constraints, results of electrical studies, National Electric Safety Code Standards, and applicable environmental factors.

The gen-tie line may be supported by concrete foundations, pre-cast concrete footings, direct-embedded structure segments, and may require the use of guy cables that are anchored to the ground. The structures would support three phases of conductor per circuit, spaced 10 to 20 feet apart depending on structure type. Insulators and associated hardware would be used to position and support the conductor while maintaining electrical design clearances between the conductors and the structure. Typical gen-tie support structures are provided in Figures 4 through 6.

All overhead electrical lines would be designed and installed in accordance with the Avian Power Line Interaction Committee's (APLIC) Suggested Practices for Avian Protection on Power Lines (Avian Power Line Interaction Committee (APLIC), 2006). The Applicant also would prepare a Bird and Bat Conservation Strategy to address potential impacts to birds and bats during the construction, operations, and maintenance phases of the Project.

Gen-Tie Option 2[1]

Gen-tie Option 2 begins at the onsite substation and travels within the designated Section 368 corridor on the east side of the Project in a northwest direction for approximately 12.6 miles. At this point, the route enters private lands and continues northwest for approximately 4.6 miles. The route then turns due west through undeveloped private lands roughly paralleling the south side of Laughlin Ranch Road for 1.2 miles. The alignment crosses to the north side of Laughlin Ranch Road to avoid a developed area along Coyote Pass Drive and follows the north side of Laughlin Ranch Road for 0.75 mile traversing Bureau of Reclamation land to where it spans the Colorado River into Nevada. On the Nevada side of the river, the line continues heading west through private lands for 1.2 miles until it turns northward for 0.6 mile before interconnecting into the Mohave Substation. The total length of Option 2 is approximately 21.5 miles.

Gen-Tie Option 3

Gen-tie Option 3 begins at the same location as Option 2 and travels within the Section 368 corridor for approximately 10.6 miles. At this point, the alignment heads due west within the Atlas Wind Project application area for approximately 3.3 miles. The alignment then heads north along a Mohave Electric ROW on the west side of the Bullhead-Bajada ACEC for roughly 2 miles. The alignment then heads west for approximately 2.5 miles and crosses the Colorado River into Nevada. After crossing the Colorado River, the route turns northwest for 3.7 miles on Clark County land. The line then changes direction and heads northeast following Needles Highway for 2.5 miles. It crosses Needles Highway and extends east near West Casino Drive for about a mile, jogs north for 0.3 mile, and heads east-northeast again for 1.5 miles to the old Mohave Generating Station property. At this point, the line turns north for 0.65 mile until it interconnects into the Mohave Substation. The total length of Option 3 is 28.2 miles.

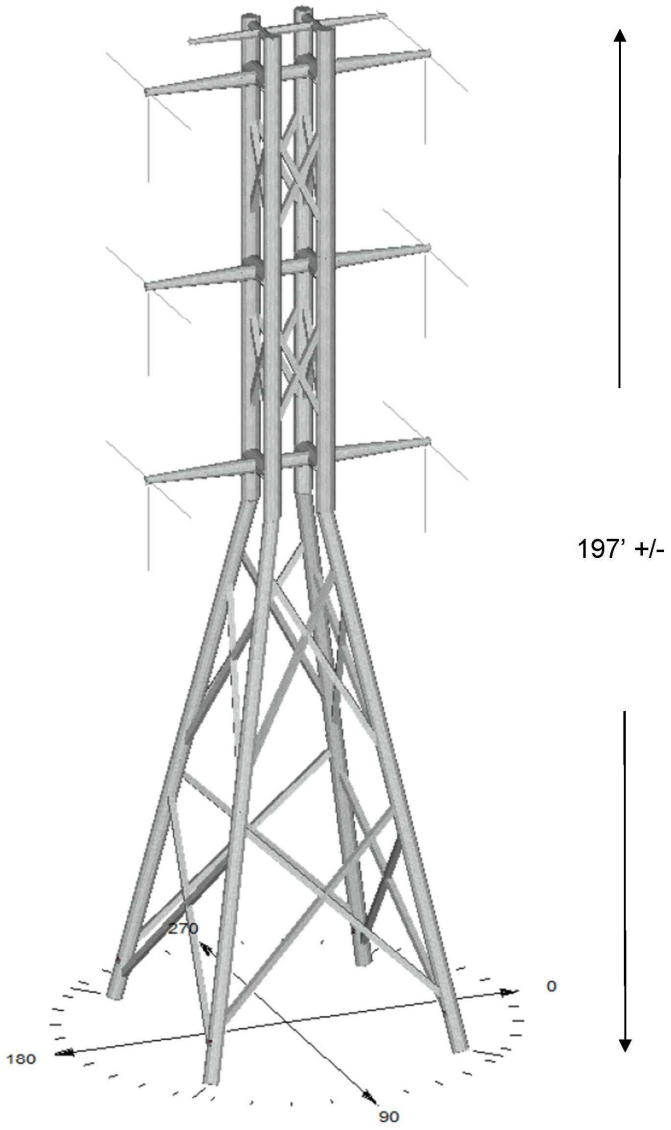
Gen-Tie Option 3a

Routing the gen-tie along the west side of the ACEC may present a land use conflict, and as a result, an alternative routing option, Option 3a, has been developed. Option 3a would begin at the onsite substation and follow the Section 368 corridor for approximately 12.4 miles to the north side of the Bullhead-Bajada ACEC. The route would then head west, through private and Arizona state lands for 1.2 miles and cross Bullhead Parkway. On the west side of Bullhead Parkway, the route would head southwest for 1.5 miles and south for another mile before heading west and crossing the Colorado River. From this point where the route heads due west, it would be the same as Option 3 described above. The total length of Option 3a is 30.8 miles.

[1] Gen-tie Option 1 was eliminated from consideration due to ROW constraints.

Figure 4 Double Circuit Tubular Steel Structure

Typical Structure Diagram



NOT TO SCALE

Figure 5 Typical Single Steel Pole

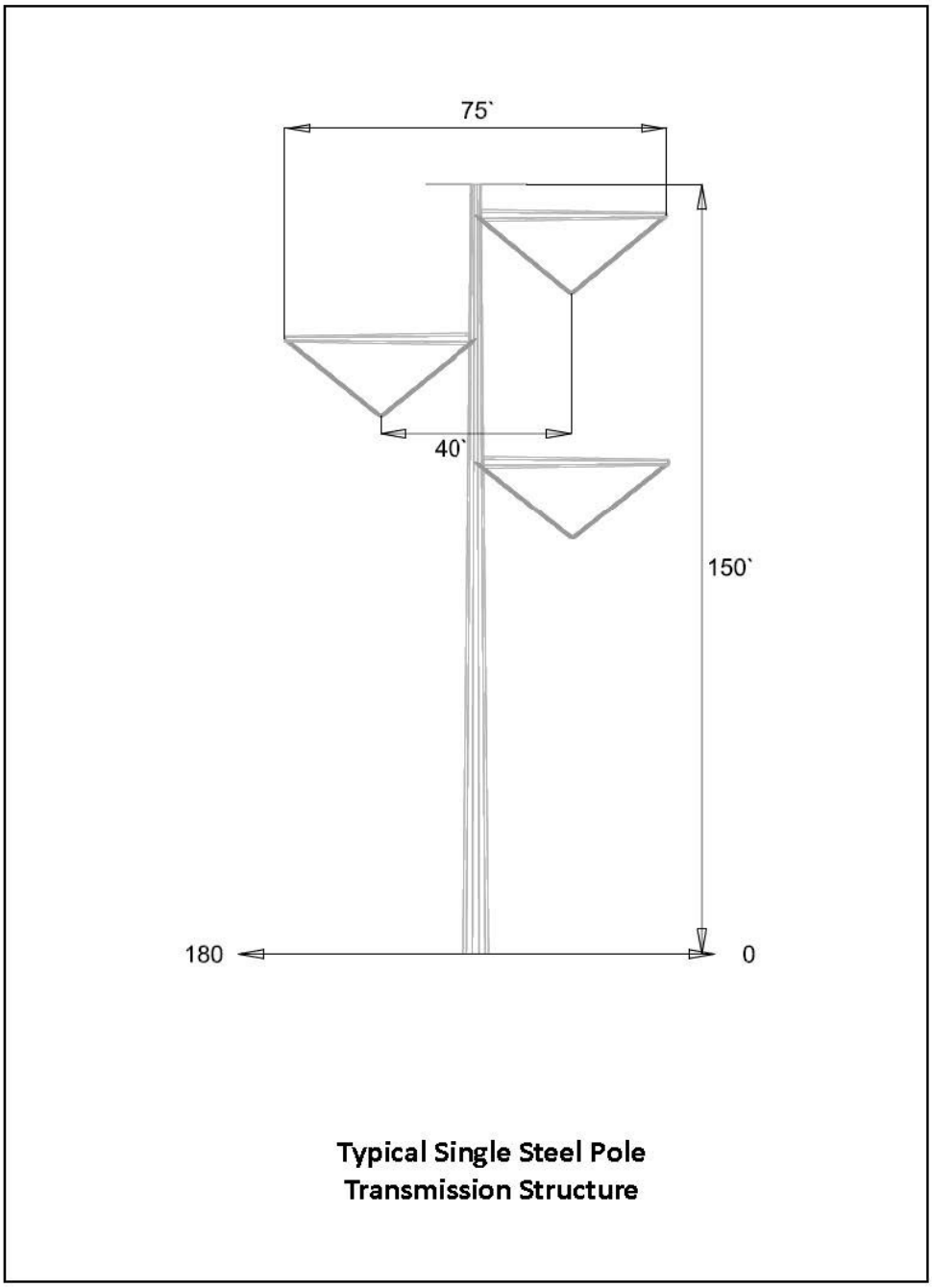
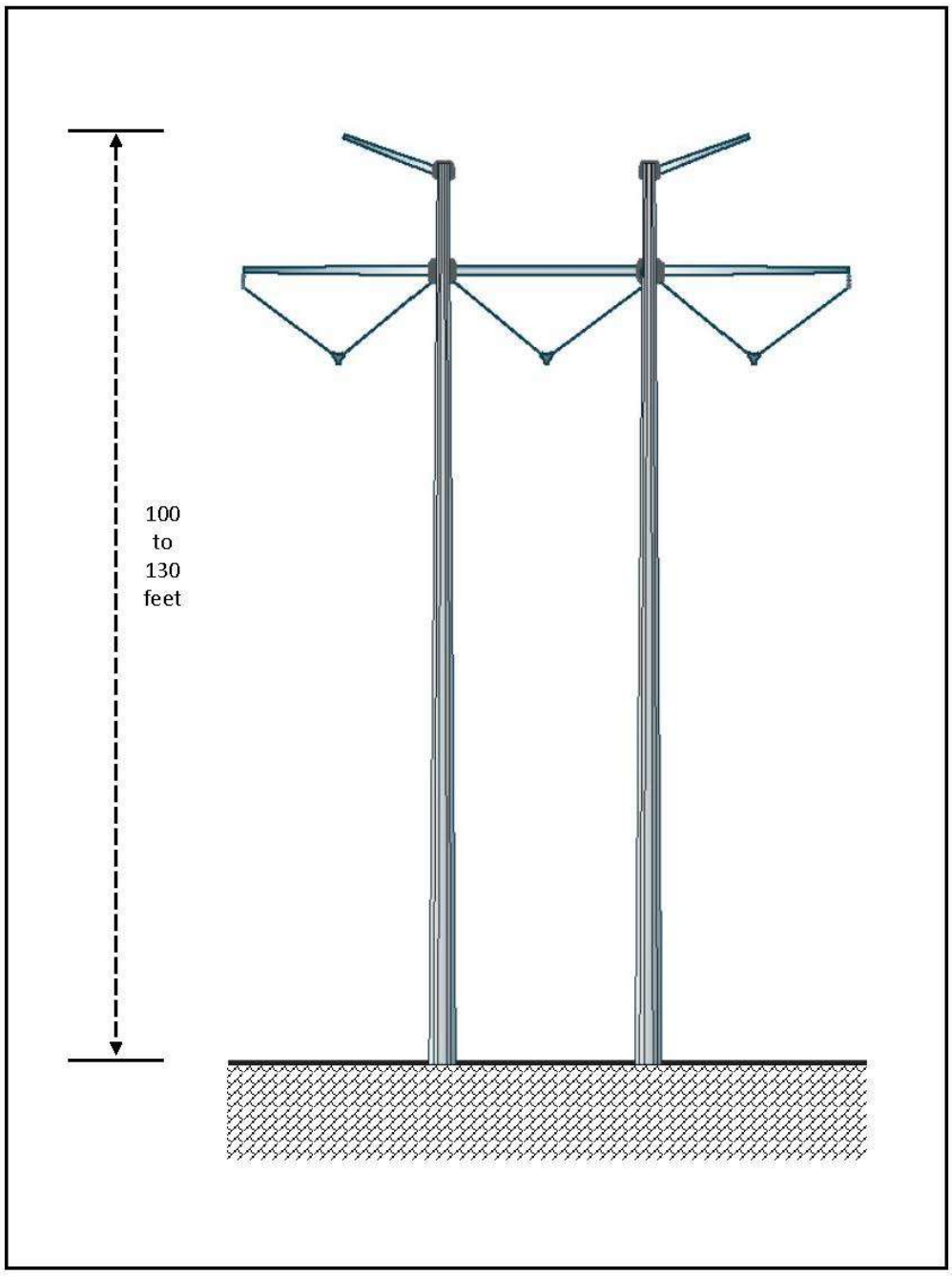


Figure 6 Typical H-Frame Structure



Gen-tie Option 4

Gen-tie Option 4 is the same as Option 3 described above until it meets the Atlas Wind substation location at the northwest corner of the Atlas Wind application area. Instead of heading due north along the west side of the ACEC, Option 4 continues due west along East Sterling Road within an Arizona State lands parcel for approximately 1 mile where it would continue west for another mile within private land, crossing US 95. At this point, the route heads northwest for about 4.4 miles, crosses the Colorado River, traversing a combination of BLM and Arizona state land on the Arizona side of the river and Clark County land on the Nevada side of the river. The route follows Needles Highway for about 3 miles before heading north for 1.8 miles within a combination of Bureau of Reclamation and Nevada state lands. At this point, the route heads east for 2.3 miles and into the Mohave Generating Station property to its interconnection at the Mohave Substation. The total length of Option 4 is approximately 27.6 miles.

Gen-tie Option 5

Gen-tie Option 5 begins in the same location as the other routes and continues northward within the Section 368 corridor for approximately 5.7 miles, at which point it heads west through the Atlas Wind application area just south of Boundary Cone Road. The route traverses Fort Mohave reservation lands generally paralleling Boundary Cone Road for approximately 4 miles until it heads north along the east side of the Colorado River. The route follows the Colorado River northward within Fort Mohave reservation lands for another 4 miles and crosses the Colorado River north of Aztec Road and the Avi Resort and Casino. Once the route crosses over into Nevada, it continues to parallel the Colorado River within Fort Mohave reservation lands for approximately 1.5 miles. At this point, the route heads northwest through reservation and County lands for 3 miles before heading north again for 2 miles paralleling and existing transmission line on the west side of Needles Highway. At this point, the route is the same as Gen-tie Option 4. The total length of Option 5 is approximately 31.2 miles.

Point of Interconnection

The 500 kV gen-tie would interconnect with the existing Mohave Substation operated by SCE. The Mohave 500 kV Substation is a component of the Eldorado transmission system, which also consists of the Eldorado Substation, the Eldorado – Mohave 500 kV line and the Eldorado – Mead No. 1 and No. 2 220 kV lines. The Eldorado transmission system is jointly owned by LADWP, NV Energy, and SCE. SCE is the Operating Agent for the Eldorado system, which is entirely within the metered boundary of the CAISO Balancing Authority Area.

Improvements to interconnection facilities are to be determined following detailed utility review of the Project. Engineering, procurement, and construction of the switchyard improvements would be performed by SCE as the Transmission Owner. The full scope of the additional equipment required for interconnection would be determined through electrical system impact and facilities studies.

1.3.9 Water and Wastewater

Water

Water would be needed for dust control, batching water for concrete production, and other washing needs (such as washing trucks, hydrating aggregate, etc.). An estimated 1,000 acre-feet (AF) of water would be required over the Project construction period for construction-related activities, including dust control. After construction is complete, the Project's water consumption during operation would require up to 10 acre-feet per year. Water would not be used for panel washing but would be used in conjunction with dust palliatives during operation. The Project would not require process water. Construction and operation water is anticipated to be purchased from a commercial source or a user with an existing appropriation. Potential sources include canal companies, adjacent landowners, municipalities, or other commercial sources. It would then be trucked to the Project site where it would be stored in an on-site water storage tank.

The BLM has allowed the use of several dust palliatives on other projects. If dust palliatives are used in place of water for the Project, the total amount of water needed during construction would be reduced. The Applicant may opt to use such palliatives, as authorized by the BLM for the Project. The soil binder/dust palliatives that are proposed for the Project, and which BLM previously has allowed are:

- Road Bond 1000
- For roads and heavy traffic areas: Soil Cement
- For non-traffic areas on finer soils: Formulated Soil Binder FSB 1000
- For non-traffic areas on sandier/rockier soils: Plas-Tex
- Alternatives as approved by BLM

Wastewater

Wastewater generated during construction would include sanitary waste from portable toilets. This waste would be collected by a contracted sanitary disposal service and transported to a licensed disposal facility. Since the facility will be manned by a small number of fulltime employees, no permanent wastewater facilities would be installed and the same portable toilets in use during construction would be utilized for ongoing operations.

1.3.10 Lighting

Permanent lighting would be provided within the substation and at the Project entry gate. Small domestic fixtures would also be placed at other electrical equipment as required by applicable codes. Lighting for facilities and associated infrastructure would be shielded and directed downward to keep light within the boundaries of the Project site and the minimum amount and intensity necessary for the intended use. Nighttime construction activities, if required, would be performed with temporary lighting. Night lighting used during construction, operation, and maintenance of the Project would be controlled or reduced using directed lighting, shielding, and/or reduced lumen intensity. The Applicant would prepare a Lighting Management Plan for construction and operation of the Project.

1.3.11 Solid Waste, Hazardous Materials, and Spill Management

The primary wastes generated at the Project during construction, operation, and maintenance would be nonhazardous solid and liquid wastes. The types of wastes and their estimated quantities are discussed below and summarized in Table 3. The Applicant would prepare a Hazardous Materials and Waste Management Plan, as well as a Spill Prevention and Emergency Response Plan, which would address waste and hazardous materials management, including Best Management Practices (BMPs) related to storage, spill response, transportation, and handling of materials and wastes.

Table 3 Wastes Potentially Generated by the Project

Waste	Origin	Composition	Estimated Quantity	Classification	Disposal
Scrap wood, steel, glass, plastic, paper	Construction activities	Normal refuse	200 tons	Non-hazardous	Recycle and/or dispose of in industrial or municipal landfill
Scrap metals	Construction activities	Parts, containers	<2 tons	Non-hazardous	Recycle and/or dispose of in industrial or municipal landfill
Empty hazardous materials containers	Operation and maintenance of plant	Drums, containers, totes*	<1 ton	Hazardous and non-hazardous solids	Containers <5 gal would be disposed as normal refuse. Containers >5 gal would be returned to vendors for recycling or reconditioning.
Waste oil filters	Construction equipment and vehicles	Solids	500 pounds	Used Oil	Recycle at a permitted Treatment, Storage, and Disposal Facility (TSDF)
Oily rags, oil sorbent excluding lube oil flushes	Cleanup of small spills	Hydrocarbons	100 cubic feet	Used Oil	Recycle or dispose at a permitted TSDF
Spent lead acid batteries	Equipment	Heavy metals	10	Hazardous	Store no more than 10 batteries (up to 1 year)—recycle off site.

Waste	Origin	Composition	Estimated Quantity	Classification	Disposal
Spent alkaline batteries	Equipment	Metals	50 pounds	Universal waste solids	Recycle or dispose offsite at a Universal Waste Destination Facility
Waste oil	Equipment and vehicles	Hydrocarbons	500 gallons	Used oil	Dispose at a permitted TSDF
Sanitary waste	Portable toilet holding tanks	Solids and liquids	200,000 gallons	Non-hazardous	Removed by contracted sanitary service

* Containers include <5-gallon containers and 55-gallon drums or totes

The Project would produce wastes typically associated with O&M activities. These would include defective or broken electrical materials, empty containers, the typical refuse generated by workers and small office operations, and other miscellaneous solid wastes.

Limited quantities of hazardous materials would be used and stored on site for O&M activities. Table 4 lists the hazardous materials anticipated that would be stored and used on site. Safety Data Sheets (SDSs) for each of these materials would be provided in the Spill Prevention and Emergency Response Plan.

Table 4 Potential Hazardous Materials Used and Stored Onsite

Hazardous Material	Storage Description; Capacity	Storage Practices and Special Handling Precautions
Mineral Insulating Oil	Carbon steel transformers; total onsite inventory of 40,000 gallons.	Used only in transformers, secondary containment for each transformer would be managed in accordance with the Spill Response and Emergency Response Plan.
Batteries, lead acid based and/or lithium ion	Battery-based emergency back-up power at each of the PCS.	Sufficient cooling capacity to maintain ambient temperatures appropriate for the selected battery would be provided.
Propane	Generator-based emergency back-up power at each of the five PCS shelters (or one centralized generator); tanks at PCS would be sized between 20 and 100 gallons (or 500 gallons if one centralized tank).	Would be managed in accordance with the Spill Response and Emergency Response Plan.

Hazardous Material	Storage Description; Capacity	Storage Practices and Special Handling Precautions
Herbicide Roundup (glyphosate) or equivalent; Pesticide	Brought on site by licensed contractor, used immediately.	No mixing would occur onsite and no herbicides would be stored onsite.

1.3.12 Fire Protection

The Project's fire protection water system would be supplied from a water storage tank. During construction, one electric and one diesel-fueled backup firewater pump would deliver water to the fire protection water-piping network. The electrical equipment enclosures that house the inverters and transformers would be either metal or concrete structures. Any fire that could occur would be contained within the structures, which would be designed to meet National Electric Manufacturers Association (NEMA) 1 or NEMA 3R IP44 standards for electrical enclosures (heavy duty sealed design to withstand harsh outdoor environmental conditions). The Applicant would prepare and implement a Fire Management Plan.

1.3.13 Health and Safety Program

The Applicant would require that all employees and contractors adhere to appropriate health and safety plans and emergency response plans. All construction and operations contractors would be required to operate under a Health and Safety Program (HASP) that meets industry standards. All site personnel would be required to go through a new hire orientation and follow a Worker Education and Awareness Plan (WEAP), which would address Project-specific safety, health, and environmental concerns.

1.3.14 Stormwater Management

Major existing FEMA-designated floodplains on the Project site would be avoided where feasible, with the exception of roadway crossings, and the Project would be designed and engineered to maintain the existing hydrology. Generally, offsite flows to the Project site come from the northwest. Runoff generated onsite would be conveyed as sheet flow across the site, maintaining as much of the natural grade of the terrain as possible. The soil is very permeable so following the natural terrain would allow for maximum infiltration thereby reducing runoff. Drainage channels or detention basins may be installed per the results of a hydrology study.

1.3.15 Vegetation Management

The site would be allowed to re-vegetate following construction. Vegetation would typically be maintained to a height of no more than approximately 12 inches as needed for site maintenance and fire-risk management using mechanical and chemical controls. Project roads and the O&M area would remain free of vegetation. The Applicant will address post construction vegetation management including invasive and noxious weed control as part of a BLM approved Integrated Weed Management Plan for the Project.

1.3.16 Noxious Weed and Pest Control

The Applicant would prepare an Integrated Weed Management Plan for the Project that would follow the Resource Management Plan, Noxious Weed Plan, and the interagency guidance Partners Against Weeds (BLM 2007c) for an active integrated weed management program. BLM-approved herbicides such as Roundup (glyphosate) would be used to control noxious weeds, if required. Pest control may also be required, including control of rodents and insects inside of the buildings and electrical equipment enclosures.

1.3.17 Site Security and Fencing

The Applicant would post safety and warning signs informing the public of construction activities. During construction, public access to active work zones would be monitored and controlled to prevent public access during such times when it would not be safe for public on-road or off-road use. Gates to fenced areas, including the substation, select lay down yards, and O&M area, would be locked at night or during non-construction hours. Fences may be installed around laydown areas, areas deemed hazardous, or areas where security or theft are of concern, and would be removed at the completion of the construction period. A permanent chain-link fence would be installed around the perimeter of the Project area.

If tortoise habitat or individuals are found onsite, approved tortoise fencing would be installed around the perimeter of the construction area to prevent tortoise from moving onto the site from adjacent areas. Authorized biologists would be retained to survey and relocate desert tortoise and perform other sensitive species removal and mitigation.

1.4 Alternatives Considered by Applicant

Other site options for the solar facility were considered for the Project. Site options to maximize solar energy potential and minimize environmental constraints were evaluated in the vicinity of the point of interconnection (El Dorado system's Mohave Substation). After evaluating the solar resource, variance areas, proximity to existing transmission, and environmental, topographic, geographic, and social considerations for the region, the proposed Leo Wind Project site was selected as the optimal location. Alternative technologies and project layouts will be defined by BLM staff in accordance with the NEPA process. Alternatives considered and carried forward for full environmental comparison in the BLM's NEPA process may also include:

- **No Action Alternative:** The ROW application would be denied.
- **Alternative Layout:** The ROW application would be approved with alternative boundaries, layout, and or overall acreage.
- **Alternative Technology:** The ROW application would be approved with the use of an alternative, concentrating solar technology.

Any other potentially viable wind sites or gen-tie routes would be identified by BLM staff and evaluated as part of the NEPA process for this Project.

1.5 Other Potential Permits and Authorizations

Table 5 Potential Federal, State, and Local Permits

Agency	Authorization/Permit
Federal	
Bureau of Land Management	Federal Lands Policy and Management Act • Plan of Development and Right-of-Way (ROW) Grant
	National Environmental Policy Act • EIS and Record of Decision to support issuance of ROW Grant
BLM, State Historic Preservation Offices in AZ and NV, and Advisory Council on Historic Preservation	National Historic Preservation Act (NHPA) • Compliance with Section 106 • Obtain concurrence from state historic preservation officers (SHPOs)
BLM, U.S. Fish and Wildlife Service	Endangered Species Act • Consult and obtain concurrence for any decisions that listed species would not be adversely affected
Bureau of Reclamation	• Land use authorization (SF 299 application) • *Only required if gen-tie traverses BOR land*
U.S. Army Corps of Engineers	Clean Water Act (CWA) • Section 404 Permit Preconstruction Notification for Nationwide Permit
	1899 Rivers and Harbors Act • Section 10 Permit for power line crossing of navigable waters (Colorado River)
Federal Aviation Administration	Safe, Efficient Use and Preservation of the Navigable Airspace, 14 CFR Part 77 • Obstruction Evaluation in coordination with U.S. Air Force. • Determination of No Hazard based on an application of Notice of Proposed Construction or Alteration for transmission structures
Arizona	
Arizona Corporation Commission	• Certificate of Compatibility needed for transmission lines greater than 2 poles and greater than 115kV or power generation facilities 100 MW or greater • Certificate of Public Convenience and Necessity should the power of eminent domain be necessary
Arizona Game and Fish Department	• Scientific Collection Permit (for biological contractor)
Arizona Department of Transportation	• Utility Crossing Permit • Permit for Use of Highway ROW (if gen-tie is routed along Arizona state highways) • Oversize/Overweight Load Permit • Encroachment Permit (for site access improvements from Oatman Highway

Agency	Authorization/Permit
Arizona Department of Agriculture	Native Plant Law • Notice of Intent to Remove or Destroy Protected Native Plants
Arizona SHPO	NHPA and State Historic Preservation Act (SHPA) • Compliance with SHPA and Compliance with Section 106 of the NHPA
Arizona State Land Department	• ROW/Right-of-Entry permit required for survey and construction of if gen-tie traverses state trust land
Arizona Department of Environmental Quality	• Clean Water Act Section 401 Water Quality Certification • Arizona Pollutant Discharge Elimination System (AZPDES) Stormwater Permit for construction and operation activities affecting 1 acre or more • AZPDES De Minimis General Permit for Offsite Discharge of Water • Class II Minor Source Permit • Dust and Emissions Control Plan (for Mohave County) • Aquifer Protection Permit • Hazardous Waste Generator Registration
	Clean Water Act • Section 401 Water Quality Certification for construction across water resources (state review required for all Federal Section 404 permits)
Arizona Department of Water Resources	• Well drilling permit *(if needed depending on water sources)*
Mohave County	• Special/Conditional Use Permit • Grading Permit • Building Permit
	County roads and highways, flood control/ drainage channels • Overhead Utility Road Crossing • Flood Control/Drainage Channel • Encroachment/Crossing Permit
Mohave Valley Irrigation and Drainage District	Crossing of district irrigation/drainage canals • Encroachment Permit
Nevada (for gen-tie alignment within Nevada)	
Nevada Public Utilities Commission	Utility Environmental Protection Act • Environmental Statement/Permit
Nevada SHPO	NHPA • Compliance Section 106 of the NHPA
Nevada Department of Wildlife	• Scientific Collection Permit (for biological contractor)
Nevada Department of State Lands	• ROW/Right-of-Entry permit required for survey and construction of gen-tie within ROWs on state land

Agency	Authorization/Permit
Nevada Department of Environmental Protection (NDEP)	• Prevention of Significant Deterioration Program, Major Source Permit • General Stormwater Permit for Construction Activities • Surface Area Disturbance /Dust Mitigation Control Plan • Section 401 Water Quality Certification • General Stormwater Discharge Permit • Groundwater Well Approval • Pesticide General Permit • Working in Waters Permit • Wastewater Discharge Permits
Nevada Division of Forestry	• Native Cacti and Yucca Commercial Salvaging and Transportation Permit
Nevada Department of Transportation	• ROW Occupancy Permit for facilities such as transmission lines crossing or paralleling state highways
Nevada Department of Motor Vehicles and Safety	• Nevada State Hazardous Materials Permit or Roving Permit
Clark County	• Special Use Permit / Development Agreement • Dust Control Permit • Encroachment Permit • Grading Permit • Building, Electrical, Fence, Structural, Fire, and Hazardous Materials Storage Permits
Clark County Regional Flood Control District	• Drainage Study Review

1.6 Financial and Technical Capability of Applicant

Arevia Power, LLC, the development manager for Leo Solar LLC, develops, designs and builds utility-scale solar PV power generation facilities that deliver low-cost solar energy to utility and industrial utility customers worldwide. Arevia Power, LLC is a privately-held company with operations in the United States. The company manages approximately 1.5 GW of solar development projects in the United States Southwest. Members of Arevia Power, LLC's management team have successfully developed numerous utility-scale PV solar energy plants through to commercial operations and have underwritten over 2GW of projects in various stages of development. Arevia Power, LLC also has extensive project finance, capital raising experience collectively raising over $100 million for solar PV projects.

2 CONSTRUCTION OF FACILITIES

2.1 Introduction

Construction of the Project is expected to take up to 18 months and would include the major phases of mobilization, site preparation and grading, installation of drainage and erosion controls, PV panel/tracker assembly, and solar field construction. If required, desert tortoise clearance would be conducted prior to site preparation, as applicable. The Applicant is planning to commence construction at the end of 2025 or early 2026.

2.2 Geotechnical Investigations

A design-level geotechnical investigation would be performed including additional subsurface evaluation and laboratory testing prior to construction. The geotechnical investigation would allow for the development of a geological profile and the characterization of soils conditions that could affect the engineering design. The geotechnical investigation provides information on rock, soil strata, bearing capacity of soils (which dictates depth of piles), compaction and swelling potential, corrosion potential, thermal and electrical resistivity, and infiltration.

Geotechnical investigations typically include a series of borings and test pits, as well as a second phase that include driving test piles. A more specific geotechnical investigation design would be prepared after Project approval but prior to construction that identifies the locations, methods of access, and timeline for the geotechnical investigations. If geotechnical investigations are performed before Project approval, additional NEPA review (e.g., Categorical Exclusion or Environmental Assessment) may be required.

2.3 Site Surveying and Staking

Prior to construction, the limits of construction disturbance areas would be determined by surveying and staking. Where necessary, the limits of the ROW also would 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 and staked and flagged in order to guide construction activities. Staking/flagging would be maintained until final cleanup and/or reclamation is complete, after which all survey staking would be removed. Staking and flagging is typically performed using wood lathe and colored flagging.

2.4 Preconstruction Clearance Surveys and Fencing

Prior to any mobilization and beginning work onsite, environmental contractors would need to conduct environmental preconstruction surveys and wildlife clearance work as part of the Project's NEPA compliance measures, ROD, ROW Grant, and other state and local permitting requirements. Preconstruction survey requirements would be based on the findings presented in the biological studies being conducted for the Project and the environmental review process.

Prior to major vegetation removal and grading, and if determined to be required, approved tortoise fencing would be installed around the perimeter of the construction area to prevent tortoise from moving onto the Project site from adjacent areas. If required, authorized biologists would be retained to survey and relocate desert tortoise and perform other sensitive species removal and mitigation in accordance with an approved Desert Tortoise Translocation Plan.

2.5 Mobilization and Establishment of Staging/Laydown Areas

Temporary construction workspace, laydown, and mobilization areas would be established after preconstruction surveys and site clearance is conducted. The Project construction contractor would develop a temporary construction mobilization and laydown area at the location of the O&M building, or other centralized location(s) that would include temporary construction trailers with administrative offices, construction worker parking, temporary water service and fire water supply holding tanks, temporary construction power services, tool sheds and containers, as well as a laydown area for construction equipment and material delivery and storage and parking. Up to 10 acres of temporary staging and laydown areas would be needed during the construction phase. Other temporary workspace and laydown areas may be established along the gen-tie as needed for structure assembly and installation within the gen-tie ROW.

2.6 Site Preparation, Vegetation Removal, and Treatment

2.6.1 Site Preparation and Vegetation Removal

Within the solar field areas that would be graded, existing vegetation would be worked into the underlying surface soils. Vegetation would be permanently cleared from roadways, access ways, and where concrete foundations are used for the inverter equipment, substations, and O&M facilities. A 10-foot-wide fire break would be established around the outside of the perimeter fence and maintained clear of vegetation.

2.6.2 Site Grading

All earthwork required to install drainage control detention basins, access roads, and foundations for Project-related buildings would be balanced on site. Trenching would be required for placement of collector lines. The solar field would require a positive natural terrain slope of less than 5 percent. The disk and roll technique would be used generally to prepare the

surface of the solar field for post and PV panel installation. The disk and roll technique uses conventional farming equipment to prepare the site for construction. Typical farming equipment includes: rubber tired tractors with disking equipment and drum rollers with limited use of scrapers to perform micrograding. In areas where the terrain is not suitable for disk and roll, conventional cut and fill grading would be used.

Solar Field and Internal Roads

Within the solar field, some grading would be required for roads and access ways between the solar arrays, and for electrical equipment pads. In general, the design standard for the roads and access ways within the solar field would be consistent with the amount and type of use they would receive.

Substation

The substation would require a graded site to create a relatively flat surface for proper operation, with approximately 1 percent maximum slope in either direction. The substation interior would be covered with aggregate surfacing for safe operation.

2.6.3 Erosion and Sediment Control Installation

Sediment and erosion control measures would be implemented as site preparation and grading activities progress throughout the Project in accordance with the BMPs found in the Project's SWPPP. Clearing would be performed only within the approved limits of disturbance or for fire prevention and fuel management. The Applicant would provide the locations of these clearings prior to the implementation of grading activities. The civil design site plan would contain details for the grading and drainage design of the overall site.

2.6.4 Gravel, Aggregate, and Concrete

Concrete would be poured in place for equipment and building foundations, fence footing and miscellaneous small pads. Aggregate material would be used for the trench backfill, parking lot and substation area (and if determined necessary, for the perimeter road and access roads). Riprap material may be required for erosion control. The Applicant would determine a source for these materials that would be presented for BLM review and approval, as necessary.

2.7 PV Solar Array Assembly and Construction

Prior to any construction in PV equipment areas, the clearance and site preparation steps for those areas would be completed. Within each area designated for PV equipment, the construction sequence would follow a generally consecutive order.

1. The construction of the solar field would proceed by arrays. Each array would contain solar panels, a PCS, and a step-up transformer. Within each array, materials for each row of PV modules would be staged next to that row. Prepare trenches for underground cable;
2. Install underground cable;

3. Backfill trenches;
4. Install steel posts and table frames;
5. Install PV modules;
6. Install concrete footings for inverters, transformers, and substation equipment;
7. Install inverter and transformer equipment;
8. Perform electrical terminations; and
9. Inspect, test, and commission equipment.

Cable trenches would be used to provide underground connection of Project equipment. Trenches would contain electrical conductors for power generation and fiber optic cables for equipment communication. Trenches would vary between 2 to 3 feet wide and 2 to 3 feet deep depending on the number of conductors and voltage of equipment to comply with applicable electrical codes.

The assembled solar equipment would be installed on steel posts to which steel table frames would be attached. Trucks would be used to transport the PV modules to the solar field. A small mobile crane may be used to assist construction workers in setting the solar modules on the driven steel posts. Final solar field assembly would require small cranes, tractors, and forklifts.

2.8 Electrical Collection and Transmission System Construction

Electrical construction would consist primarily of the following elements:

1. **Equipment**—Installation of all electrical equipment including DC combiner boxes, PCS Shelters (including inverters), transformers, circuit breakers, disconnect switches, switchgear and distribution panels, lighting, communication, control, and SCADA equipment.
2. **Cables**—Installation of all cables necessary to energize the Project equipment including instrument control wiring. High, medium, and low voltage cables would be routed via cable trays, above-grade conduits, below-grade conduit in duct bank, and overhead structures.
3. **Grounding**—All equipment and structures would be grounded as necessary. Within the solar field, an appropriate grounding system would be engineered and constructed in order to maintain personnel safety and equipment protection.
4. **Telecommunications**—Multiple communication systems would be required for the Project to properly operate, including T-1 internet cables, fiber optic, microwave, and telephone. All communications would be installed during electrical construction.

2.8.1 Standard Transmission Line Construction Techniques

The Project would include an overhead 34.5 kV collection system and an overhead 500 kV gen-tie. Standard transmission line construction techniques would be used to construct the collector and gen-tie lines. Primary stages in transmission line construction are foundation

installation, tower installation, and conductor stringing. Up to a 100-foot by 700-foot temporary laydown or staging area would be required at each 500 kV tower location for equipment, towers, and hardware. In general, little to no grading is expected to be required for these areas. Typical equipment expected to be used for transmission line construction includes: backhoe, truck-mounted tower hole auger, forklift, crane, line truck with air compressor, various pickup and flatbed trucks, conductor reel and tower trailers, bucket trucks, and truck-mounted tensioner and puller.

Foundation Installation

The steel towers used for the gen-tie would be supported by steel-reinforced poured pier concrete foundations suitable for the sandy soils conditions at the site. These foundations are constructed by auguring a cylindrical hole using a truck-mounted drilling rig. Reinforcing steel and anchor bolt cages would be installed in the hole and then the hole would be backfilled with concrete. Steel tower foundations would range in size from approximately 4 to 7 feet in diameter, and in depth from 12 to 30 feet. Wood poles used for the overhead 34.5 kV collector line would be embedded into the ground to a depth of at least 10 percent of the pole height plus 2 feet. Installation of wood poles is anticipated to require auguring holes approximately 2 feet in diameter and 8 feet deep. Aggregate or high-strength backfill would be used to stabilize the installed poles. Angle points on the 34.5 kV collection line would require steel poles supported by steel-reinforced poured pier concrete foundations.

Tower/Pole Installation

Poles would be placed onto their foundations (for wood, placed into their holes) using backhoes or heavy lifter vehicles for the smaller, lighter poles, or a crane for longer poles. The poles would be supported, as necessary, during backfilling or bolting to the foundation to ensure correct pole seating.

Conductor Stringing

Conductor stringing would likely be conducted one phase at a time, with all equipment in the same operational place until all phases of that operation are strung. Pull and tension sites would be set up at the beginning and end of each conducting stringing section and typically require a work area between 200 feet wide and 400-600 feet in length or approximately 2.5 acres. Up to 30 pull and tension sites would be needed to facilitate conductor stringing assuming the maximum length of potential gen-tie options.

Grounding

Ground rods would be hammered into the earth with a jackhammer device attached to a small excavator (such as a Bobcat). Typically, the rods are 8 to 12 feet long and can be longer if needed by joining multiple rods. For the 34.5 kV wood poles, a 3-foot square by 2-foot-deep area would be excavated to expose the ground rod for connection to the plant's grounding grid.

2.9 Road System Construction

Preconstruction activities for the Project-related roads would include meeting any necessary plant salvage requirements. The construction entrance and exit gates would be established. The Project's main access point would be graded and constructed in order to facilitate entry to the Project site. Within the solar field, some grading would be required for roads and access ways between the solar arrays. All Project-related roads are proposed to be native graded/compacted dirt; however, roads may alternatively use an aggregate base in some or all areas to meet Project dust and flood control requirements.

Any temporary or permanent crossings under existing or proposed transmission lines will be coordinated and approved with line owners. In addition, the use of all existing permitted roads will be coordinated with line owners.

Roadways with the designated FEMA floodplains would be constructed per the guidelines outlined in Chapter 9 of *Low Volume Roads Engineering, Best Management Practices Field Guide* (2003), as approved by the BLM.

2.10 Substation Construction

The onsite substation would be constructed in compliance with applicable electrical safety codes. Substation construction would consist of site grading, concrete equipment foundation forming and pouring, crane-placed electrical and structural equipment, underground and overhead cabling and cable termination, ground grid trenching and termination, control building erection, and installation of all associated systems including, but not limited to heating, ventilating, and air conditioning (HVAC) system components; distribution panels; lighting; communication and control equipment; and lightning protection.

The substation area would be excavated to a depth of 10 feet. A copper grounding grid designed to meet the requirements of IEEE 80, "IEEE Guide for Safety in AC Substation Grounding," would be installed and the foundations for transformers and metal structures would be prepared.

After installation of the grounding grid, the area would be backfilled, compacted, and leveled followed by the application of 6 inches of aggregate rock base. Equipment installation of the transformers, breakers, buswork, and metal dead-end structures would follow. A pre-fabricated control house would be installed to house the electronic components required of the substation equipment. Containment measures for all substation equipment shall be provided in accordance with Environmental Protection Agency 40 CFR Part 112 and all applicable codes required by the local, state, and federal governing authorities. The transformer containment area would be lined with an impermeable membrane covered with gravel and would include a drain with a normally closed drain valve. Transformers will be provided with secondary oil containment equal to 110 percent of the volume of oil present in the transformer in addition to the volume of rainwater for a 25-year, 24-hour rainfall event.

2.11 Site Stabilization, Protection, and Reclamation

Appropriate water and wind erosion and dust-control measures would be implemented to prevent an increased dust and sediment load to ephemeral washes around the construction site and to comply with Mohave County dust control requirements. Dust during construction would be controlled and minimized by applying water and/or BLM-approved palliatives discussed in Section 1.3.9, *Water and Wastewater*.

The Applicant would employ BMPs to protect the soil surface by covering or binding soil particles. The Project would incorporate erosion control 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 and included in the Project SWPPP.

The Applicant would prepare a Site Rehabilitation and Restoration Plan. This plan would be implemented immediately after construction for the areas that are temporarily disturbed, such as portions of the transmission line route that involve disturbance.

2.12 Construction Work Force, Equipment, and Materials

2.12.1 Construction Workforce and Hours

The onsite construction workforce would consist of laborers, craftsmen, supervisory personnel, support personnel, and construction management personnel. The onsite construction workforce is anticipated to be an average of 350 to 700 construction workers with a peak of up to 900 to 1000 workers at any given time. Construction staff and workers would commute daily to the jobsite from regional towns, including Bullhead City, Fort Mohave, Kingman, and Lake Havasu City, Arizona, and Needles, California, with some commuters likely to travel from Las Vegas, Nevada.

Construction generally would occur between 5:00 a.m. and 5:00 p.m. and may 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 (e.g., at 3:00 am) to avoid work during high ambient temperatures. Further, construction requirements would require some night-time activity for installation, service or electrical connection, inspection and testing activities.

Construction activities would follow a generally consecutive order, however, most construction activities associated with each construction component would overlap to some degree and would include the following:

1. Construction or improvements to the primary access road;
2. Installation of tortoise fencing and security fencing;
3. Clearing of tortoises;
4. Installation of BMPs and erosion control measures;

5. Site preparation activities and construction of the gen-tie and internal access roads, laydown areas, substation and equipment concrete pad, and distribution line (if feasible);
6. Construction of drainage control features;
7. Installation of posts and tracker structures;
8. PV module assembly;
9. Installation of electrical collection system, PCSs, PVCSs, and substations; and
10. Testing and commissioning.

2.12.2 Equipment

Tables 6, 7 and 8 provide a description of the onsite equipment expected to be used for solar panel array and collection system construction (Table 6), substation construction (Table 7), and gen-tie line construction (Table 8). Actual construction equipment details and durations may vary.

Table 6 Estimated Onsite Equipment for Solar Array and Collection System Construction

Equipment Description	Daily Quantity	Horsepower	Fuel Type	Equivalent Full-Load Operating Time (hr/day)	Vehicle Miles (VMT) per day on unpaved surfaces
Install BMP Measures (part of Site Preparation)					
Rough Terrain Forklift	2	75	Diesel	1.7	10
Delivery/Work Trucks	3	200	Diesel	2	5
Site Preparation – Solar Arrays					
Truck, Pick-up (Survey Crew)	2	180	Gas	1.7	5
Grader	6	200	Diesel	6.8	20
Backhoe/Front Loader	2	120	Diesel	3.4	20
Tractor/Disc	3	210	Diesel	6.8	40
Scraper	4	265	Diesel	3.4	30
Compactor	2	120	Diesel	1.7	10
Water Truck	2	175	Diesel	6.8	N/A
Site Preparation – Roads					
Grader	3	200	Diesel	6.8	20
Backhoe/Front Loader	1	120	Diesel	6.8	10
Compactor	2	120	Diesel	6.8	20
Water Truck	2	175	Diesel	6.8	N/A

Equipment Description	Daily Quantity	Horsepower	Fuel Type	Equivalent Full-Load Operating Time (hr/day)	Vehicle Miles (VMT) per day on unpaved surfaces
Dump Truck	5	235	Diesel	2.7	10
Install Fencing					
Rough Terrain Forklift	2	75	Diesel	1.7	10
Delivery/Work Trucks	3	200	Diesel	1	5
Post Installation					
Delivery/Work Trucks	2	200	Diesel	1	5
Post Machine	7	45	Diesel	8.1	1
Rough Terrain Forklift	2	75	Diesel	6.8	10
Install Support Structures					
Rough Terrain Forklift	6	75	Diesel	6.8	10
Delivery/Work Trucks	2	200	Diesel	1	5
Install Inverter and Switchgear Sub-structure					
Crane	2	125	Diesel	4.5	1
Backhoe/Front End Loader	2	120	Diesel	6.8	10
Delivery/Work Trucks	2	200	Diesel	1	5
DC and AC Wire Installation (Underground)					
Backhoe/Front End Loader	4	120	Diesel	6.8	10
Crawling Trencher	2	100	Diesel	4.1	1
Mini-Excavator	4	42	Diesel	6.8	10
Delivery/Work Trucks	2	200	Diesel	1	5
DC and AC Wire Installation (Above-ground)					
Rough Terrain Forklift	3	75	Diesel	1.7	10
Delivery/Work Trucks	2	200	Diesel	1	5
Module Installation					
Rough Terrain Forklift	15	75	Diesel	1.7	10
Delivery/Work Trucks	5	200	Diesel	1	5

Equipment Description	Daily Quantity	Horsepower	Fuel Type	Equivalent Full-Load Operating Time (hr/day)	Vehicle Miles (VMT) per day on unpaved surfaces
O&M Building					
Rough Terrain Forklift	1	75	Diesel	1	1
Manlift	2	110	Diesel	3	1
Miscellaneous (across Project site)					
Crane, Hydraulic, Rough Terrain	1	125	Diesel	1.5	N/A
Delivery: Truck, Semi, Tractor	1	310	Diesel	0.5	5
Delivery: Truck, Flatbed, 1-ton	1	180	Diesel	0.5	5
Forklift, less than 5 ton	3	75	Diesel	3.8	5
Forklift, greater than 5 ton	2	85	Diesel	3.8	5
Motor, Auxillary Generator Power for Trailers	4	24	Diesel	8	N/A
Trailer, Office, 40 feet	14	N/A	N/A	N/A	N/A
Trailer, Office, 20 feet	4	N/A	N/A	N/A	N/A
Skid Steers	5	75	Diesel	1.7	5
AWD Gator/Cart	20	15	Diesel	8.1	10
Water Truck	4	175	Diesel	6.8	N/A
Delivery/Work Trucks	10	200	Diesel	1	5
Electrical Generators/Pumps	4	50	Diesel	8.1	N/A

Table 7 Estimated Onsite Equipment for Substation Construction

Equipment Description	Daily Quantity	Horsepower	Fuel Type	Equivalent Full-Load Operating Time (hr/day)	Vehicle Miles (VMT) per day on unpaved surfaces
Steel Structures					
Boom Truck – 33 Ton	2	290	Diesel	1.5	1
Manlift	2	110	Diesel	1.2	1
Material Delivery – Hwy Tractor with 40-foot Flat	6	220	Diesel	0.2	4

Equipment Description	Daily Quantity	Horsepower	Fuel Type	Equivalent Full-Load Operating Time (hr/day)	Vehicle Miles (VMT) per day on unpaved surfaces
Insulators, Bus, and Electrical Equipment					
Boom Truck	2	220	Diesel	1.5	1
Manlift	4	110	Diesel	1.2	1
Welder Truck	4	210	Diesel	1.2	4
Material Delivery – Hwy Tractor with 40-foot Flat	8	310	Diesel	0.2	4
Material Delivery – Heavy Haul	2	300	Diesel	1.5	4
Crane	2	500	Diesel	1	N/A
Control Wiring					
Boom Truck	2	220	Diesel	0.6	1
Manlift	4	110	Diesel	0.8	1
1-ton Crew Vehicle	2	260	Diesel	0.2	4
Fiber Splicer Van	2	180	Gas	0.6	4
Test Equipment Van	2	180	Gas	1.7	4
Rough Terrain Forklift	2	75	Diesel	1.7	6

Table 8 Estimated Onsite Equipment for Gen-Tie Construction

Equipment Description	Daily Quantity	Horsepower	Fuel Type	Equivalent Full-Load Operating Time (hr/day)	Vehicle Miles (VMT) per day on unpaved surfaces
Steel (Hauling, Shake-out, Assembly and Erection)					
Crane, Hydraulic, 150/300 Ton	2	250	Diesel	1.8	5
Crane, Hydraulic, Rough Terrain, 25 Ton	2	125	Diesel	1.8	5
Truck, Flatbed with Boom, 12 Ton	2	235	Diesel	1	10
Truck, Crew Cab, Flatbed, 1 Ton	12	180	Gas	1.1	10
Truck, Semi-Tractor	2	310	Diesel	6	10
Truck, Flatbed, 40 feet	2	N/A	N/A		10

Equipment Description	Daily Quantity	Horsepower	Fuel Type	Equivalent Full-Load Operating Time (hr/day)	Vehicle Miles (VMT) per day on unpaved surfaces
Water Truck	2	175	Diesel	4.5	N/A
Motor, Auxiliary Power	2	5	Gas	1	0
Compressor, Air	2	75	Gas	2	15
Conductor/Shield Wire/OPGW (Stringing, Sagging, Dead-ending, and Clipping)					
Truck, Flatbed with Bucket	3	235	Diesel	3	15
Tension Machine, Conductor	2	135	Diesel	1.5	1
Tension Machine, Static	2	135	Diesel	0.2	1
Truck, Sock Line, Puller, 3 Drum	2	310	Diesel	2.3	1
Truck, Wire Puller, 1 Drum	2	310	Diesel	2.3	1
Truck, Semi Tractor	4	310	Diesel	6	10
Water Truck	2	175	Diesel	4.5	N/A
Truck, Crew Cab, Flatbed, 1 Ton	6	180	Gas	1.4	10
Backhoe with Bucket	2	85	Diesel	3	1
Truck, Mechanics	2	260	Diesel	3	15
Crane, Hydraulic, Rough Terrain	2	125	Diesel	1	10
Motor, Auxiliary Power	4	5	Gas	2.3	N/A
Cleanup					
Truck, Flatbed with Bucket, 5 Ton	2	235	Diesel	2	5
Excavator, Bucket Type	2	165	Diesel	4.5	5
Truck, Semi Tractor	2	310	Diesel	4.5	10
Truck, Dump, 10 Ton	2	235	Diesel	3	10
Motor Grader	2	110	Diesel	8	20
Truck, Flatbed	2	210	Diesel	2.1	10
Truck, Pick-up	2	210	Diesel	2.1	10
Motor, Auxiliary Power	2	5	Gas	0.5	N/A

2.13 Construction Access and Traffic

Typical construction traffic would consist of trucks transporting construction equipment and materials to and from the site and vehicles of management and construction employees during the construction period. Most construction staff and workers would commute daily to the jobsite from within Mohave County, Arizona, Clark County, Nevada, or San Bernardino County, California. I-95/Mohave Valley Highway and Oatman Highway would provide primary highway access to the Project site. Prior to the start of construction, the Applicant would prepare a Traffic Management Plan to address Project-related traffic.

2.14 Construction Power

Temporary overhead lines would be installed during construction to provide power to the laydown areas. Alternatively, generators may be used to provide temporary construction and operation power.

3 Related Facilities and Systems

3.1 Transmission System and Interconnection

3.1.1 Proposed Transmission System

A 500 kV gen-tie line would be constructed to transmit power generated by the Project from the Project substation to the existing Mohave Substation.

3.1.2 Interconnection Facilities

Interconnection facilities at the Mohave Substation are generally described in Section 1 and would be provided at a later time. Needed infrastructure could include circuit breakers, dead-end structures, isolation switches, and telecommunications systems, as well as metering systems. A point of change in ownership (POCO) will need to be established during design.

3.2 Ancillary Facilities

Ancillary facilities beyond those described in Section 1 are yet to be determined.

3.3 Status of Power Purchase Agreements

The Applicant intends to sell power from the Project in accordance with a PPA to be negotiated with one or more utilities.

3.4 Status of Interconnection Agreement

The power produced by the Project would be conveyed to the SCE/LADWP transmission system. The project sponsor plan to submit one or more interconnection applications at the Mohave Substation.

3.5 General Design and Construction Standards

The Project would be designed in accordance with federal and industrial standards including American Society of Mechanical Engineers standards, National Electrical Safety Code, International Energy Conservation Code, International Building Code, Uniform Plumbing Code, Uniform Mechanical Code, and National Fire Protection Association and Occupational Safety and Health Administration standards.

Construction would be in accordance with the federal codes listed above and all applicable state and local codes.

3.6 Gas Supply Systems

The Project would not require a natural gas supply system.

3.7 Other Related Systems

3.7.1 Communication System Requirements

Multiple communication systems would be used for construction and operation. These items would include telephone, fiber optics, and T1 internet. The Applicant expects to utilize existing wired or wireless telecommunications facilities. In the event that these facilities are not available in the Project vicinity, the Applicant would install hard-wired (landline) systems as part of the electrical construction activities or would supplement with small aperture (less than 1 meter) satellite communications gear.

4 Operations and Maintenance

4.1 Solar Facility Operation and Maintenance

The facility will operate 7 days a week. It is expected operations staff would be located off-site, with site visits occurring daily for security, maintenance, and repairs. To maintain generation performance, PV array washing may occur up to 24 hours per day (including nighttime panel washing), with approximately two panel washes anticipated per year. A solar PV project uses no process water, gas, or fuels for the power generation process.

A plant operation and maintenance program, typical of a project this size, will be implemented to control the quality of operations and maintenance. The frequency and type of maintenance is described in Table 9. During the first year of operation, the frequency of inspections would be increased to address settling and electrical termination torque (e.g., for year 1, inspections shown as semi-annually are performed quarterly, inspections shown as annual are performed semi-annually). At designated intervals, approximately every 10 to 15 years, major equipment maintenance would be performed. Operations and maintenance procedures will be consistent with industry standards practices maintaining useful life of plant components.

Operation and maintenance 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 weed abatement and soil stabilizer treatment in the bioremediation area. Pick-up trucks would be in periodic on the site. No heavy equipment would be used during normal plant operation.

The project is expected to have an annual equivalent plant availability of 92 to 98 percent. It will be possible for plant availability to exceed 98 percent for a given 12-month period.

The facility will be operated in one of the following modes:

1. The facility will be operated at its maximum continuous output for as many hours per year as sunlight is available.
2. Small portions of the facility may be temporarily shut down for repairs.
3. Only in the case of a transmission system disconnect would the facility encounter a full shutdown.

Dust during operations and maintenance would be controlled and minimized by applying water and/or BLM-approved palliatives (See Section 2.11, *Site Stabilization, Protection, and Reclamation*).

Table 9 Routine Maintenance Protocol

Equipment	Maintenance Interval	Task
PV Modules	Quarterly	• Visually inspect panels for breakage and secure mounting • Visually inspect modules for discoloration • Visually inspect wiring for connections and secure mounting • Visually inspect mounting structure for rust and erosion around foundations • Manually clean localized debris from bird droppings, etc.
	Semi-Annually	• Clean modules if determined necessary
Inverters	Semi-Annually	• Perform temperature checks on breakers and electrical terminations • Visual inspection of all major components and wiring harnesses for discoloration or damage • Measure all low voltage power supply levels • Inspect/remove any dust/debris inside cabinet • Inspect door seals • Check proper fan operation • Inspect and clean (replace if necessary) filters • Check electrical termination torque • Check the operation of all safety devices (e-stop, door switches, ground fault detection)
	Annually	• Check all nuts, bolts and connections for torque and heat discoloration • Calibrate control board and sensors • Inspect air conditioning units for proper operation
Medium-voltage Transformers	Semi-Annually	• Perform temperature check • Inspect door seals • Record all gauge readings • Clean any dirt/debris from low voltage compartment
Substation Transformers	Semi-Annually	• Inspect access doors/seals • Inspect electronics enclosure and sensor wiring • Record all gauge readings
	Annually	• Inspect fans for proper operation • Calibrate temperature and pressure sensors • Pull oil sample for oil screening and dissolved gas analysis.

Equipment	Maintenance Interval	Task
Breakers and Switchgear	Semi-Annually	• Inspect for discoloration of equipment and terminations • Inspect door seals
	Annually	• Check open/close operation
Overhead Transmission Lines	Annually (and after heavy rains)	• Inspect guy wires and tower angle • Visual inspection of supports/insulators • Visual inspection for discoloration at terminations
Roadways	Annually (and after heavy rain)	• Inspect access ways and roads that cross drainage paths for erosion
Water Wells	Annually	• Visual inspection • Pressure test
Vegetation	Semi-Annually	• Noxious weed inspections would be conducted in accordance with the BLM-approved Integrated Weed Management • Inspect for localized vegetation control to restrict height to less than 12 inches to address faster growth vegetation • Apply herbicides as necessary to control noxious weeds
	Every Three Years	• Mowing as required to reduce vegetation height to 9 inches
O&M Building	Semi-Annually	• Check smoke detectors • Apply pesticides as necessary to control rodents and insects
	Annually	• Check weather stripping and door/window operation • Check emergency lighting • Inspect electrical service panel
Backup Power	Annually	• Visually inspect backup power system • Perform functional test of backup power system
Fencing	Quarterly (and after heavy rain)	• Inspect fence or vandalism and erosion at base • Desert tortoise fence inspections would be conducted in accordance with the terms and conditions of the Project-specific BO, if required.

4.2 Operations Workforce, Equipment and Ground Transportation

The O&M building would be used to store equipment and supplies required for operations and maintenance of the Project and provide a facility where O&M personnel can prepare documentation of work done on the facility. The O&M building would be staffed during typical business hours, although there may be occasions when employees would work on weekends.

The O&M building would also house central supervisory control and data acquisition (SCADA) monitoring system. This system allows the facility to work remotely so personnel does not on-site 24 hours per day. It is anticipated that up to 20 workers would be employed during the operations phase of the project.

The O&M building would include external lighting, but the lighting would be minimal, would be shielded, and be directed downward. The Applicant may install a chain-link fence around the O&M building that would be up to 8 feet high and may be topped with barbed wire. A typical O&M building is shown in Figure 7.

Figure 7 Typical O&M Building

Limited quantities of lubricants, cleaners, and detergents would be stored near and within the O&M building. Waste fluids will be stored in accordance with applicable regulations at the O&M building for short periods of time during Project operations. BMPs incorporated into the design of the O&M facility, including containment areas and warning signs, would minimize the risk of accidental spill or release of hazardous materials at the facility. No risk to health and safety or the environment is anticipated.

The O&M building would be located near the location where the primary access road enters the Project site. This will provide easy access to the O&M staff and prevent any possible unnecessary disturbance in the Project site.

5 Environmental Considerations

5.1 PEIS Design Features

The BLM's decision in the Solar PEIS ROD includes amending land use plans in the six-state study area with: (1) programmatic design features that would be required for all utility-scale solar energy projects on BLM-administered lands; and (2) SEZ-specific design features that would be required for projects in individual SEZs. The Applicant will incorporate the following management plans to be prepared for BLM approval. These plans will be prepared subsequent to issuance of a ROD supporting the issuance of a ROW grant for the Project:

- Bird and Bat Conservation Strategy
- Decommissioning and Site Reclamation Plan
- Desert Tortoise Translocation Plan, if required
- Dust Abatement Plan
- Spill Prevention and Emergency Response Plan
- Health and Safety Program
- Groundwater Monitoring and Reporting Plan
- Fire Management Plan
- Lighting Management Plan
- Integrated Weed Management Plan
- Site Rehabilitation and Restoration Plan
- Stormwater Pollution Prevention Plan
- Site Drainage Plan
- Traffic Management Plan
- Surface Water Quality Management Plan
- Worker Environmental Awareness Program (WEAP)

5.2 Site Characteristics and Potential Environmental Issues

The Project site is located within a variance area as analyzed in the Solar PEIS. This indicates that, based on the program-level review in the Solar PEIS, the project site does not contain any major constraints to for utility-scale solar energy development; such development is permitted subject to site-specific conditions of approval.

A detailed analysis of site characteristics and environmental considerations will be provided in the EIS for the project. Topics to be covered in the project's environmental analysis include, but are not limited to:

- Air Resources
- Areas of Critical Environmental Concern
- Cultural Resources; Native American Religious Concerns
- Wildlife; Migratory Birds; Threatened, Endangered, and Candidate Animal Species
- Vegetation; Forestry; Invasive and Noxious Weeds
- Geology and Mineral Resources
- Soil Resources
- Hazards and Hazardous Materials
- Lands/Access
- Military and Civilian Aviation
- Recreation
- Socioeconomics and Environmental Justice
- Transportation
- Visual Resources
- Water Resources

5.2.1 Air Resources

Construction and operation of the Project would result in the generation of dust and exhaust emissions from vehicle and equipment traffic and ground disturbing activities such as vegetation mowing, limited grading, installation of access roads and fencing, electrical system installation, and related activities. Emissions would be quantified during the environmental review. The increase in dust emissions during construction activities would be mitigated by the application of best management practices outlined within a Dust Abatement Plan developed to satisfy BLM and county requirements. The plan and best management practices may include:

- Minimizing grading and vegetation removal.
- In areas where vegetation removal and/or grading is required, delaying the process of vegetation removal to the maximum time required before module installation.
- Limiting vehicle speed on roads to 15 mph.
- Applying water to disturbed soil areas using water trucks to control dust and maintain proper moisture levels for soil compaction.
- Minimizing over application of water to prevent runoff and ponding.
- Suspending excavation and grading during periods of high wind.
- Covering all trucks hauling soil or other loose material in and out of the project site.
- Using gravel or aggregate where access roads meet paved roads to limit offsite disturbance and prevent mud and dirt track-out.

Long term operation and maintenance of the facility are not expected to produce dust or noxious emissions. The addition of solar-derived energy to the regional market will lessen the demand for fossil fuel-derived electricity, which are a contributor to global climate change.

5.2.2 Biological Resources, Sensitive Species, and Habitats

The Project site is situated on the western slopes of the Black Mountains Range dominated by rolling, incised alluvial slopes at elevations ranging from 500 to 2,000 feet above sea level. The study area is an arid environment that receives 5.98 inches of rain on average per year (USclimatedata, 2023). The area is situated between the Sonoran and Colorado Desert. Creosote scrub (*Larrea tridentata)* dominates the bajadas (foothills) with deeply incised slopes deeply. Open, vacant BLM land exists to the north, east and south. Low-density development and farmlands are situated to the west of the study area, along the Colorado River basin. A habitat assessment of the Project site was performed in December 2022 to identify vegetation communities and the potential for special-status wildlife and plant species to occur on the Project site. Additional biological technical surveys and reports would be required to address impacts of the Project on biological resources. Anticipated biological studies include, but are not limited to:

- Wildlife study plan and habitat assessment
- Botanical surveys
- Desert tortoise surveys
- Eagle nesting surveys (2 years)
- Avian use surveys (2 years)
- Bat acoustic studies (1 year)
- Fall raptor migration surveys (2 years)
- Jurisdictional delineation

Prior to construction, biological resource management plans as outlined in Section 5.1 would be prepared in compliance with Solar PEIS project design features and mitigation measures from the EIS to ensure the protection of special status plants and animals during construction, operation, and decommissioning.

5.2.3 Cultural and Historic Resource Sites and Values

Cultural resources are defined as buildings, sites, structures, or objects, each of which has historical, architectural, archaeological, cultural, and/or scientific importance. Numerous laws, regulations, and statues, on both the federal and State levels, seek to protect and target the management of cultural resources.

A Class I (records search) cultural resources inventory of the Project area and a surrounding 1-mile buffer area was completed in February 2023, at the Arizona State Museum, the BLM Kingman Field Office and the Lake Havasu Field Office. The records search identified eight prior investigations within the study area, of which four intersect the Project area. Archaeological sites have been identified with the immediate proximity of the Project and there are several cultural landscape features known to be present in the area (specifically petroglyphs and trails). Within the Project area and a surrounding 1-mile buffer, 18 cultural resources were identified, with four of those resources being within the Project site. For the sites within the

Project site, three of the resources are prehistoric, while one is unknown and include prehistoric sherds and flaked stone scatter, petroglyphs, and a large prehistoric pavement quarry.

To minimize impacts to prehistoric, Tribal, and historic resources, a Class III cultural inventory and report would be conducted for the Project in support of NEPA compliance. The results of the Class I file and literature search will shape the methods and extent of pedestrian cultural surveys on the Project site and site recordation efforts. Consultations with the SHPO and Tribes would also occur in compliance with Section 106 of the National Historic Preservation Act. Survey data collected and associated reports will be incorporated as part of the final NEPA analysis and approval process.

5.2.4 Native American Tribal Considerations

The Fort Mojave Indian Reservation is less than a mile west of the Project site. The Applicant began its tribal outreach program for the Leo Solar project in late 2021 and early 2022 and has met and communicated with local Tribes, including the Fort Mojave Indian Tribe, Colorado River Indian Tribes, Hualapai Tribe, and Chemehuevi Indian Tribe over the last year.

As part of the Section 106 and NEPA processes, the BLM KFO would conduct government-government consultation with the identified Tribes to consider the effects of the Project on traditional Native American religious and cultural values and practices including TCPs, determine if any TCPs occur within or near the Project area and whether these TCPs would be potentially impacted by the Project, and evaluate means to avoid, minimize, or mitigate adverse effects.

The Applicant has initiated a Class I file search and literature review and will complete a Cultural Resources Inventory of the proposed Project area. Inventories will be used by the BLM, in conjunction with Tribal consultations, to determine whether resources of cultural or religious significance to the tribes are identified within the Project Area. If such resources are identified within the Project Area, construction activities will be designed to avoid those areas to the extent feasible, with the aim of resulting in no impacts. If such resources cannot be avoided, the BLM may require mitigation which would be discussed in partnership with tribal entities.

5.2.5 Paleontological Resources

The state geologic map was consulted to determine the potential for, and possible extent of paleontological resources within the proposed Project area, and to establish a general impression of the fossil sensitivity within the Project area and its surrounding environment. Based on geologic understanding of a particular area, the BLM provides a Potential Fossil Classification (PFYC) rating for geological units and their potential to produce fossils (BLM, 2022). These are summarized as:

- Class 1: Very Low
- Class 2: Low
- Class 3: Moderate/Undetermined

- Class 4: High
- Class 5: Very High

The PFYC used by BLM has identified most of the Project area as PFYC Class 4, which has a high potential to produce fossils. To further evaluate the potential for the project to impact significant fossils, the applicant would conduct a paleontological records search and pedestrian survey of the project footprint as part of the technical studies to support the NEPA process which would provide BLM a basis for developing mitigation measures commensurate with the paleontological sensitivity of the Project area.

5.2.6 Noise

Varying levels of baseline noise occur in the Project area based on land use. Rural and suburban communities and unpopulated open space lands have relatively low baseline noise levels around 50 dBA, but noise can be elevated sporadically due to aircraft flying overhead or due to on-road traffic noise. Noise at the Project area would be limited to initial construction, maintenance, and decommissioning activities. The day-to-day operation of the solar facility is expected to generate only low levels of noise. Noise reduction measures would be implemented during construction or during activities that generate noise levels above local thresholds. Additional mitigation would be implemented if any noise-sensitive receptors are identified.

5.2.7 Fire Protection

All federal, State, and county laws, ordinances, rules, and regulations that pertain to prevention, pre-suppression, and suppression of fire would be strictly adhered to. All personnel would be advised of their responsibilities under the applicable fire laws and regulations. It would be the responsibility of the construction crews to notify the agencies when a project-related fire occurs within or adjacent to the construction area.

The construction crews would be responsible for any fire started, in or out of the Project area, by their employees or operations during construction. The contractor would be responsible for fire suppression and rehabilitation. The crews would take aggressive action to prevent and suppress fires on and adjacent to the project area and would use their workers and equipment on the project for fighting fires within the project area.

5.2.8 Geology and Soil Resources

A detailed geotechnical investigation would be conducted to minimize geologic hazards and may include standard penetration test borings and other geotechnical testing methods at Project facilities to visually characterize the geologic and soil conditions and to obtain samples for laboratory testing. In-situ electrical resistivity tests and bulk samples for thermal resistivity testing may be performed at some locations.

Soils on the Project site are typical of alluvial fan terraces that are derived from the Black Mountains. The soils are excessively drained conglomerates comprised of various sizes of material. The terraces have been incised or eroded by rain events to create arroyos that flow

west-southwest toward the Colorado River basin. Evidence of caliche soils were observed during a site visit conducted for the biological habitat assessment in December 2022. Caliche soils exhibit harden-white mineral deposits that consist of calcium carbonate. Caliche soils can create a dense, impermeable layer that contributes to rainfall run-off and localized flooding events.

Slopes greater than 5 percent would be avoided as part of the solar development unless otherwise authorized by BLM. Any new access roads required on BLM-managed lands within the Project area would be designed and constructed per the BLM's Gold Book standards and BLM Manual 9113, Sections 1 and 2. Soil conditions within the Project area are expected to be largely conducive to the development of solar infrastructure. An erosion and sediment control plan and dust abatement plan would be developed as part of the POD and implemented as part of the SWPPP to minimize the potential for soil loss as a result of water or wind erosion within the Project area.

5.2.9 Land Use and Special Designations

The Project site is primarily undeveloped lands, surrounded by electric transmission infrastructure to the east and undeveloped and residential areas to the west. There is one Mohave Electric Cooperative 230 kV electric transmission ROW that traverses the northern portion of the site east to west which would be avoided by design. Notifications required by the BLM would be provided to individuals or other parties that may be affected by the proposed Project, including existing BLM ROW authorization holders to inform them that an application has been filed and request their comments pursuant to 43 CFR 2807.14. Approval of a solar development facility would preclude the development of the land for other uses. As such, no land use conflicts are expected to occur.

The Project site is not in a designated ACEC, Wilderness, or Wilderness Study Area. The nearest ACEC is the Black Mountains Ecosystem Management ACEC, approximately 3 miles to the east. The Black Mountains ACEC would not be affected by the Project. The Bullhead-Bajada ACEC is 8.5 miles northwest of the solar facility; however, several of the gen-tie routes either cross it (Option 3) or lie adjacent to its boundary (Option 1, 2, and 3a). A portion of Gen-tie Option 3 would traverse the western side of the Bullhead-Bajada ACEC alongside an existing Mohave Electric Cooperative ROW. The 500 kV gen-tie would require a wider ROW than the existing Mohave Electric ROW and may present a land use conflict with this ACEC. All other route options avoid this ACEC.

The Warm Springs Wilderness is approximately 1.6 miles east of the site, on the opposite side of Oatman Highway. The Wilderness Area would not be directly affected by the Project, though indirect impacts related to construction noise, traffic, and long-term changes in the scenic value of the region may occur. The applicant would complete a Traffic Impact Study, baseline noise surveys, and a visual resources technical study with visual simulations and impacts would be analyzed as part of the environmental review process. A Lighting Plan, Traffic Management

Plan, and Noise Control Plan would be developed as part of the POD to minimize impacts to nearby ACECs and Wilderness areas.

5.2.10 Aesthetics and Visual Resources

The BLM's VRM classification system is designed to minimize the visual impacts of surface-disturbing activities and maintain scenic values for the long term. The objectives of visual resource management in the VRM classification system rank from Class I (preserve the existing character of the landscape with little to no apparent visual change) to Class IV (provide for major modifications of existing landscape character with the application of mitigation measures). These class rankings provide for different levels of management activities within an area, from very limited (Class I), to activities that may dominate the view and be the major focus of viewer attention (Class IV). The Project site is within the lowest VRM classification, Class IV. Small portions of two gen-tie route options near the Colorado River are within VRM Class III areas.

Although the Project is in VRM Class IV, it is located in close proximity to the Historic Route 66, which is managed as a Type 1 National Back Country Byway and is also a state-designated scenic byway. These designations are given to routes that have high scenic, historic, archaeologic, or other public interest values. This byway was designated on February 8, 1993, by the BLM State Director and represents one of the last and best-preserved segments of the original U.S. 66, one of America's first transcontinental highways.

A baseline visual resources report with simulations from key observation points will be prepared as part of the NEPA process to determine mitigation that could be implemented to reduce the visual impacts in the Project area and from the scenic byway.

5.2.11 Water Resources

Surface and Groundwater

The Project is located within the Mohave watershed and Lake Mohave groundwater basin. Natural site drainage in the Project area is to the west to the nearby Colorado River. Streamflow in the Lake Mohave Drainage Basin is ephemeral and is generated in the Black Mountains to the east of the Project in response to summer and winter storms. There are no identified perennial drainages on the site; however, ephemeral drainages may be present on parts of the site. There are no wetlands or riparian areas in the proposed Project area. Further analysis will be conducted concurrent with the NEPA process to determine if any waters of the U.S. are present. If present and impacted by the Project, the appropriate permits would be obtained from the U.S. Army Corps of Engineers prior to development.

Watershed and drainage analysis and calculations, as well as watershed protection and erosion control design drawings, would be prepared for the Project area during the engineering and civil design phase of the Project. A SWPPP would be prepared to meet Arizona Department of Environmental Quality and EPA requirements for site drainage, erosion, sedimentation, and other stormwater runoff related issues.

The choice of PV technology for the proposed Project would minimize the amount of water required to support the Project. The Project would require a temporary water source for fire protection systems and dust control along access roads and solar facility development areas during construction. The project will require nominal to no groundwater use during operations. An analysis of groundwater withdrawals, if any, and the development of mitigation measures will occur as part of the NEPA process. Water sources and amounts required are unknown at this time; however, measures will be taken to ensure the minimum possible amount of water will be used during all facets of construction and operation of the Project. Any use of water would be coordinated with and permitted through the appropriate State and local authorities, including Mohave County and the Arizona Department of Water Resources, as needed.

The Project is not expected to cause an adverse effect on Endangered Species Act (ESA)-listed or other special status species or their habitats over the long term or to affect groundwater dependent ecosystems. The Project is within the Lake Mohave Groundwater Basin where depth to groundwater varies widely from a minimum of 4 feet below ground surface to a maximum of 428 feet below the ground surface (Arizona Department of Water Resources, 2023). In most locations the average depth to groundwater is approximately 90 feet below ground surface and considered too deep to affect surface ecosystems.

Floodplains

Floodplain mapping is provided in Flood Insurance Rate Map Panel 04015C5100J (effective December 30, 2020). Most of the Project site is in Zone X, outside the 100-year floodplain. Zone A, indicating a 1 percent chance of flood hazard is present within approximately 806 acres of the Project site. An assessment of flood hazards will be completed in conjunction with engineering design and in support of the environmental review process.

5.2.12 Reclamation and Revegetation

For areas that have required clearing and/or grading work, reclamation and restoration procedures would be based on site-specific requirements and techniques commonly employed at the time the area is to be reclaimed and would include regrading, respreading of topsoil, and revegetating all disturbed areas. All areas of disturbed soil would be reclaimed using weed-free native seed, shrubs, grasses, and/or forbs. Vegetation cover, composition, and diversity would be restored to values commensurate with the ecological setting.

Reclamation would be conducted on all disturbed areas to comply with BLM requirements. The short-term goal of reclamation would be to stabilize newly disturbed areas as rapidly as possible, thereby protecting sites and adjacent undisturbed areas from erosion and sedimentation. The long-term goal would be to return the land to approximate pre-disturbance conditions.

After construction is complete, disturbed work areas would be graded to the approximate original contour, and the area would be revegetated with BLM-approved seed mixtures. Most postconstruction work would entail scarifying soils to reduce compaction, replacement of salvaged topsoil, and reseeding. Since only certain areas within the Applicant's requested ROW

would be disturbed, a specific Site Restoration Plan and Decommissioning and Site Reclamation Plan would be prepared that describes the recommendations for each area.

5.2.13 Weed Management

Noxious weeds within the construction area are to be addressed by the initiation of mitigation measures in consultation with the BLM noxious weed management specialists. As part of the botanical surveys, an inventory or baseline of noxious weed populations would be undertaken as part of the Project's environmental review and prior to construction. The BLM would require ROW monitoring and noxious weed abatement prior to and following construction. Applicant would develop a Project-specific Integrated Weed Management Plan and Site Restoration Plan prior to the BLM issuing any permits or undertaking construction. Both plans would include preventive measures, treatment methods, and monitoring activities for invasive species.

5.2.14 Aviation and/or Military Considerations

The Project site is not located within airspace designated a Military Operations Area. However, it is possible that gen-tie structures may be close to 200 feet in height, and as a result, may require FAA evaluation of safety hazards. Consultation with FAA and DoD would occur during the EIS process. An Obstacle Evaluation analysis will be submitted to the FAA, which would include coordination with the DoD.

5.3 Applicant-Proposed Mitigation Measures

The following are preliminary Applicant-proposed mitigation measures. These measures are subject to change based on the findings of site-specific technical analyses, the analysis in the EIS, and BLM's decision in the Project's ROD.

5.3.1 Desert Tortoise Habitat

- A Worker Environmental Awareness Program (WEAP) will be implemented for construction crews prior to commencement of construction activities. Training materials and briefings will include but will not be limited to discussion of the Endangered Species Act (ESA), the consequences of noncompliance with the ESA, identification and values of wildlife and natural plant communities, hazardous substance spill prevention and containment measures, and review of all design features of the proposed action. Additionally, a qualified tortoise biologist will present a tortoise-education program to all personnel who will be working on-site. The program will include information on the life history of the desert tortoise, legal protection for desert tortoises, penalties for violations of federal and State laws, general tortoise activity patterns, reporting requirements, measures to protect tortoises, terms and conditions of the biological opinion, and personal measures employees can take to promote the conservation of desert tortoises. All workers will be instructed to check underneath all vehicles at work

sites before moving vehicles, as tortoises are attracted to shade and often take cover under vehicles. The definition of "take" will also be explained.

- All Project construction within desert tortoise habitat, including gen-tie, access routes, and fence lines, will be cleared by an authorized biologist before the start of construction or ground disturbance. The Project site will be surveyed for desert tortoises using survey techniques that provide 100 percent coverage. During the tortoise active season (typically April 1 to May 31 and September 1 to October 31), the preconstruction clearance survey will take place no more than 5 to 10 days before initiation of construction.

- Desert tortoise burrows will be avoided whenever possible. Tortoise burrows found in the construction areas that cannot be avoided will be searched for resident tortoises. Burrows that contain tortoises or nests will be excavated with hand tools, to allow removal of the tortoise or eggs following USFWS handling methods. If no tortoises are found, burrows will be collapsed to prevent re-entry.

- Tortoises found during the clearance surveys, within the Project site, will be relocated to temporary holding pens within the Project area. The tortoises will be affixed with radio transmitters and two health assessments will be conducted within 14-30 days apart prior to relocation. The tortoises will be monitored daily while retained in the pens.

- If trenches are needed, trenches will have tortoise escape ramps built to USFWS standards placed at least every 2,000 feet.

- A maximum speed limit of 25 miles per hour will be maintained while traveling on unpaved access roads. During active season (April–May and September–October), a maximum speed limit of 15 miles per hour will be maintained. This effort will reduce the potential for vehicle–wildlife related accidents. All Project-related individuals shall check underneath and around stationary vehicles before moving them.

5.3.2 Migratory Birds

- To prevent undue harm, habitat-altering projects or portions of projects should be scheduled outside bird breeding seasons. In upland desert habitats and ephemeral washes containing upland species, this season generally occurs from March 1 through August 31. During breeding season, a qualified biologist would survey the area for nests prior to commencement of construction activities. This shall include burrowing and ground-nesting species, in addition to those nesting in vegetation. If any active nests (containing eggs or young) are found, an appropriate buffer around the nest must be avoided until the young birds fledge.

- During construction in migratory bird season, the Authorized Biologist would clear ahead of the construction crews and flag and monitor any active nests found. If active nests are found within the construction zone, construction would only occur outside the buffer zone, until the nest is inactive.

5.3.3 Cultural and Resources

- Cultural resources are defined as buildings, sites, structures, or objects, each of which has historical, architectural, archaeological, cultural, and/or scientific importance. Numerous laws, regulations, and statues, on both the federal and State levels, seek to protect and target the management of cultural resources.

- In consultation with BLM and with SHPO concurrence, any areas which contain cultural resources of significance or whose eligibility for inclusion on the National Register of Historic Places (NRHP) is unevaluated, would be avoided, mitigated, or "treated" and recorded as appropriate. Applicant employees, contractors, and suppliers would be reminded that all cultural resources are protected and if uncovered, the resource shall be left in place, work would cease, and notification would be made to the Applicant representative and the appropriate BLM authorized office, with written confirmation to follow, immediately upon such discovery.

- If construction occurs in proximity to an NRHP-eligible cultural resource site, Applicant would have an authorized cultural monitor on-site during the activity.

5.3.4 Reclamation

- Also refer to Section 1.3.15, Vegetation Management and Section 1.3.15.1, Noxious Weed and Pest Control. For areas that have required clearing and/or grading work, restoration and reclamation procedures would be based on site-specific requirements and techniques commonly employed at the time the area is to be reclaimed and would include regrading, top soiling, and revegetating all disturbed areas. Topsoil from all decommissioning activities shall be salvaged and reapplied during final reclamation. All areas of disturbed soil shall be reclaimed using weed-free native shrubs, grasses, and/or forbs. Vegetation cover, composition, and diversity shall be restored to values commensurate with the ecological setting.

- Reclamation would be conducted on all disturbed areas to comply with BLM requirements. The short-term goal of reclamation would be to stabilize newly disturbed areas as rapidly as possible, thereby protecting sites and adjacent undisturbed areas from degradation. The long-term goal would be to return the land to approximate pre-disturbance conditions.

- After construction is complete, disturbed work areas would be graded to the approximate original contour, and the area would be revegetated with BLM-approved seed mixtures. Most postconstruction work would entail scarifying soils to reduce compaction and reseeding. Since only certain areas along the total gen-tie alignment will be disturbed, a specific Site Restoration/Revegetation and Decommissioning Plan would be prepared that describes the recommendations for each area.

5.3.5 Weed Management

Noxious weeds within the construction area are to be addressed by the initiation of mitigation measures in consultation with the BLM noxious weed management specialists. The BLM would require ROW monitoring and noxious weed abatement prior to and following construction. Applicant would develop a Project-specific Weed Management Plan prior to issuing any permits or undertaking construction. The Weed Management Plan would include preventive measures, treatment methods, and monitoring activities. At a minimum, the Weed Management Plan shall include the following preventive measures:

- All contractor vehicles and equipment would arrive at the work site clean and weed free.

- Prior to being allowing access to vehicles and equipment in the ROW or ancillary facilities, an inspector would ensure that vehicles and equipment are free of soil and debris capable of transporting noxious weed seeds, roots, or rhizomes.

- The distribution line ROW and ancillary facilities would be inspected for noxious weeds prior to vegetation clearing on the ROW and ancillary faculties. Any infestations would be recorded for reference in clearing the ROW and ancillary facilities for construction and for post-construction monitoring.

- In areas where infestations have been identified or noxious weeds were noted in the field, the contractor would stockpile cleared vegetation and salvaged topsoil adjacent to the area from which they are stripped to eliminate the transport of soil-borne noxious weed seeds, roots, or rhizomes. During reclamation, the contractor would return topsoil and vegetative material from infestation sites to the areas from which they were stripped.

- The contractor would implement the reclamation of disturbed lands following construction as outlined in the Decommissioning and Site Reclamation Plan.

- Continuing revegetation efforts would ensure adequate vegetative cover to prevent the invasion of noxious weeds.

- The contractor would ensure that straw bales used on the Project for sediment barrier installations or mulch distribution are certified weed-free.

- Equipment would not be sprayed with pre-emergent chemicals as a preventive measure, as these chemicals target a wide range of vegetation. As a result, the use of such chemicals could affect the success of revegetation efforts.
- Field wash stations would not be used as a preventive measure, as they have not proven to be an effective means of weed control.

5.3.6 Air Quality

- Water would be applied to the ground during the construction and use of the Project area, access roads, and other disturbed areas as necessary to control dust.

- If required by Mohave County, a fugitive dust permit from the respective counties would be obtained prior to construction, and requisite dust control measures and BMPs would be implemented during the proposed Project.

5.3.7 Fire Protection

- All federal, State, and county laws, ordinances, rules, and regulations that pertain to prevention, pre-suppression, and suppression of fire would be strictly adhered to. All personnel would be advised of their responsibilities under the applicable fire laws and regulations. It would be the responsibility of the construction crews to notify the agencies when a Project-related fire occurs within or adjacent to the construction area.

- The construction crews would be responsible for any fire started, in or out of the Project area, by their employees or operations during construction. The contractor would be responsible for fire suppression and rehabilitation. The crews would take aggressive action to prevent and suppress fires on and adjacent to the Project area and would use their workers and equipment on the Project for fighting fires within the Project area.

6 References

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Appendix A: Legal Description

Leo Solar Legal Description

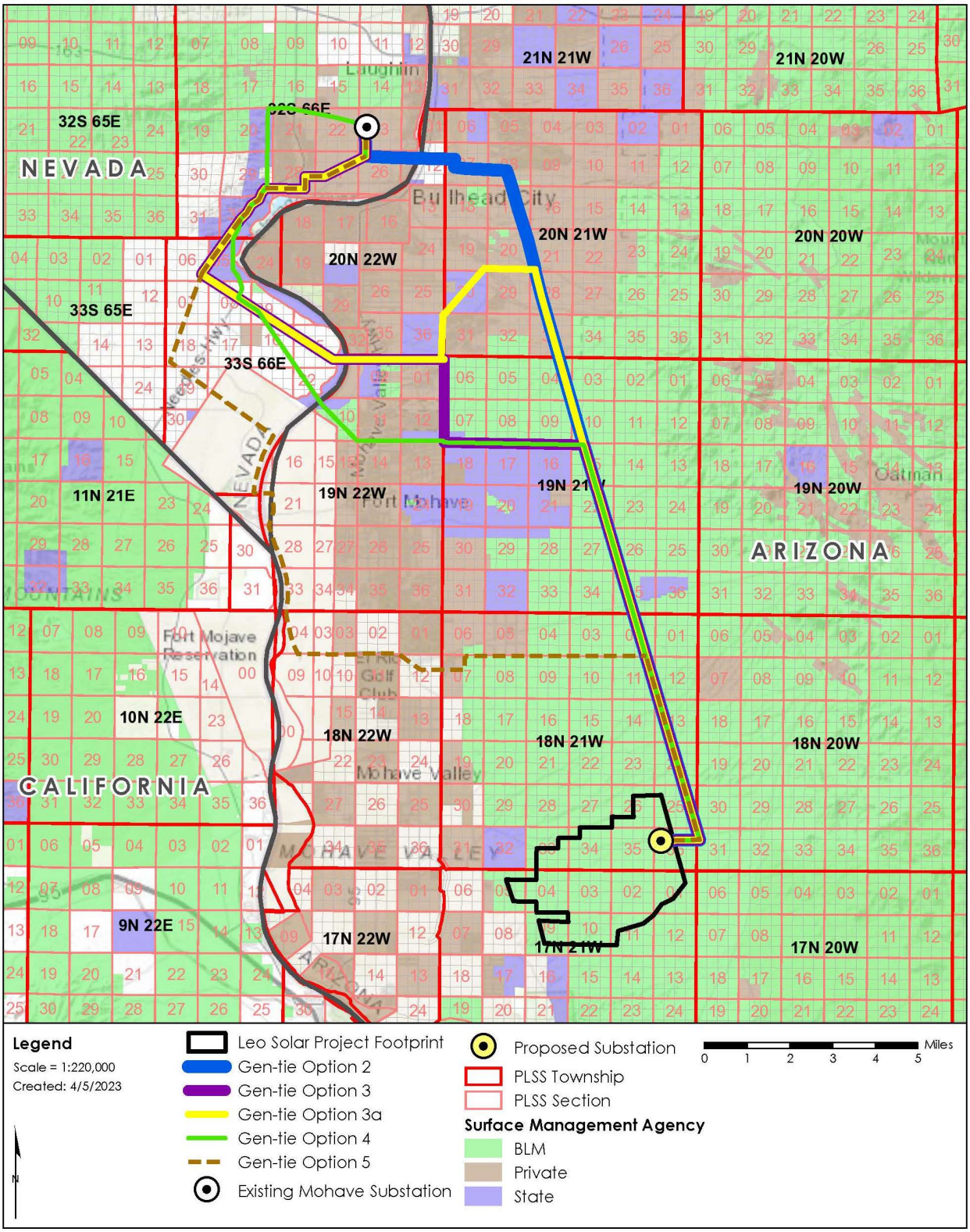
A legal description of the Leo Solar Project site is provided below.

TOWNSHIP/RANGE AND SECTION INFORMATION

Township	Range	Sections	Description
Arizona			
17N	21W	1	W1/2NE1/4, NW1/4, N1/2SW1/4, SW1/4SW1/4
		2	All
		3	All
		4	NE1/4, E1/2NW1/4, SW1/4NW1/4, N1/2SW1/4, SE1/4SW1/4
		5	S1/2NE1/4, N1/2SE1/4
		10	N1/2, N1/2SW1/4, N1/2 SE1/4
		11	N1/2NE1/4, SW1/4NE1/4, NW1/4, NW1/4SW1/4
18N	21W	25	SW1/4NW1/4, SW1/4
		26	S1/2NE1/4, S1/2SW1/4, SE1/4
		33	SE1/4NE1/4, E1/2SW1/4, SE1/4
		34	NE1/4, NE1/4NW1/4, S1/2NW1/4, S1/2
		35	All
		36	W1/2, W1/2SE1/4

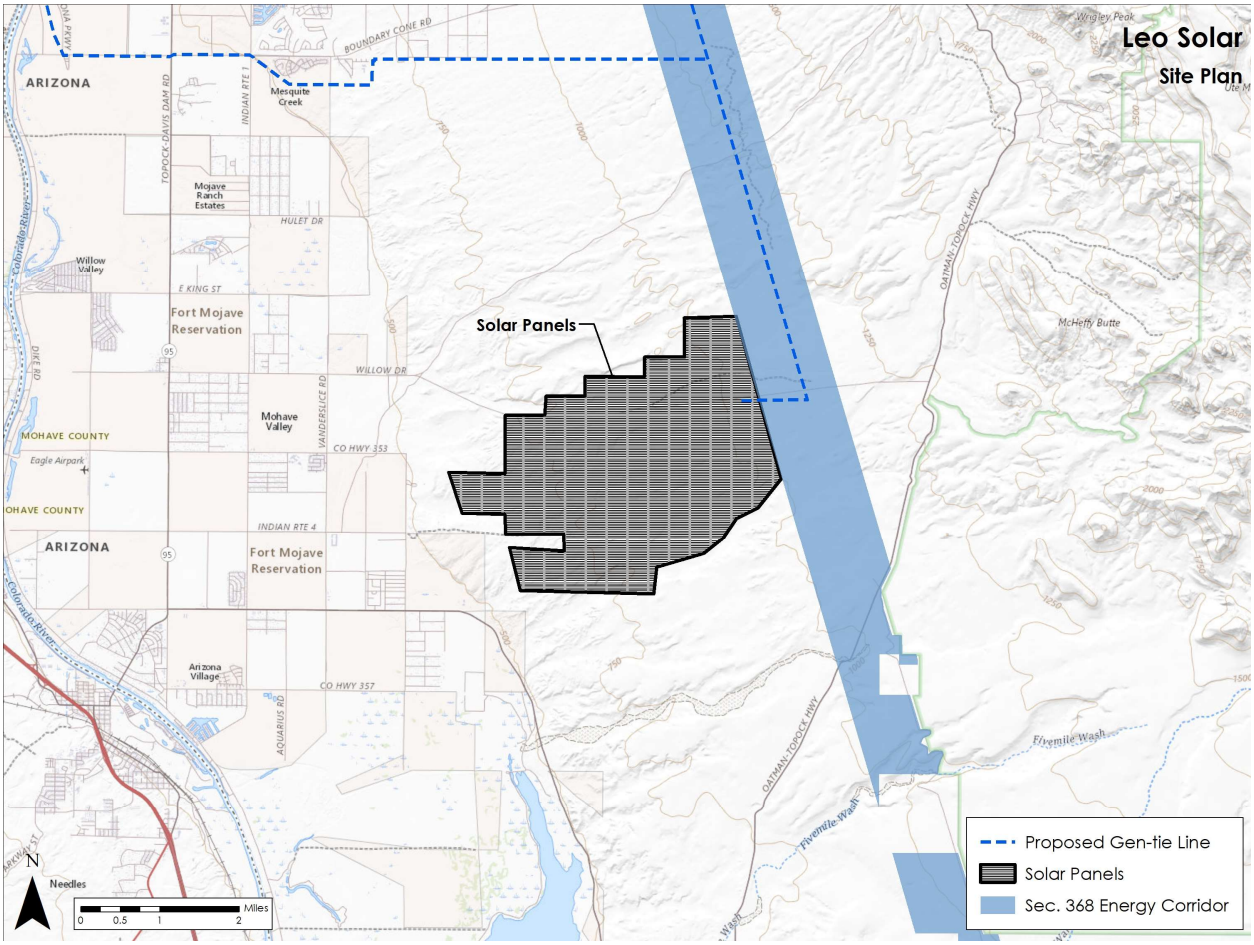
APPENDICES

Leo Solar PLSS Map



Appendix B: Preliminary Site Plan

APPENDICES


Leo Solar
Site Plan
Solar Panels
ARIZONA
Mesquite Creek
Mojave Ranch Estates
Willow Valley
Fort Mojave Reservation
Mohave Valley
MOHAVE COUNTY
Eagle Airpark
ARIZONA
Fort Mojave Reservation
Arizona Village
Needles
Colorado River
Fivemile Wash
McHeffy Butte
Proposed Gen-tie Line
Solar Panels
Sec. 368 Energy Corridor
N
Miles
0 0.5 1 2

Attachment C: Conformance with Solar PEIS Programmatic Design Measures Table

Attachment C: Solar PEIS Conformance Table, Leo Solar Project

From the Solar PEIS Record of Decision:

Design features are mitigation requirements that have been incorporated into BLM's Solar Energy Program to avoid, minimize, and/or mitigate adverse impacts. The BLM's decision included amending land use plans in the six-state study area with the following:
1. Programmatic design features that will be required for all utility-scale solar energy projects on BLM-administered lands.
2. Solar energy zone (SEZ)-specific design features that will be required for projects in individual SEZs.

The programmatic design features will apply to all utility-scale solar energy projects on BLM administered lands, whether those projects are within variance areas or SEZs.

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Lands and Realty	LR1-1	Project developers shall consult with the BLM in the early phases of project planning to identify potential land use conflicts and constraints				The proposed Project is in the Kingman Field Office planning area and is managed under the 1995 Kingman Resource Management Plan. BLM's Visual Resource Management (VRM) classification system is designed to minimize the visual impacts of surface-disturbing activities and maintain scenic values for the long term. The Project area and most of the gen-tie route options are mapped as Class IV. Small portions of two gen-tie routes options near the Colorado River crossing are in Class III; however, the alignment of the gen-tie has not been determined and would take advantage of existing corridors to the extent possible. The Project's gen-tie would be routed to utilize an existing corridor to the greatest extent possible to reach the interconnection point at Mohave Substation in Clark County, NV. The Project site is located adjacent to a Section 368 energy corridor, which would be utilized for a portion of the gen-tie alignment. In areas where the gen-tie would fall outside of this Section 368 corridor, it would be routed adjacent to existing infrastructure to the extent possible to minimize new disturbance. A detailed analysis of potential land use impacts would be evaluated in the Project's NEPA document and mitigation measures developed to avoid or minimize those impacts.
		(a) Identification of potential land use conflicts shall include, but is not limited to, the following:				
		• Identifying potential land use conflicts in proximity to the proposed project. In coordination with the BLM, developers shall consult existing BLM land use plans and local land use plans, as well as with appropriate Federal, state, and local agencies; affected tribes; and adjacent property owners.	X			
		• Identifying legal access to private, state, and Federal lands surrounding the solar facilities and the potential to create areas that are inaccessible to the public.	X			
		• Considering the effects on the manageability and uses of public lands around boundaries of solar energy facilities.	X			
		• Considering the potential effects on prime and unique farmland.		X		
		• Evaluating land use impacts and constraints as part of the environmental impact analysis for the project and considering options to avoid, minimize, and/or mitigate adverse impacts in coordination with the BLM.	X			
		• Providing notification to existing BLM ROW authorization holders within solar energy development areas, pursuant to Title 43, Part 2807.14 of the Code of Federal Regulations (43 CFR 2807.14), to inform them that an application that might affect their existing ROW has been filed and request their comments.	X			
		• Proposed solar energy developments within one-quarter mile of any project boundary will require issuance of a Chain of Survey Certificate in conformance with the Departmental standard. In some cases, Land Description Reviews, Certificates of Inspection and Possession, Boundary Assurance Certificates, resurveys, re-monumentation, and/or referencing of Public Land Survey System (PLSS) corners may be required before the start of any action.			X	

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Lands and Realty (cont.)	LR1-1 (cont.)	(b) Methods to minimize land use conflicts and constraints may include, but are not limited to, the following:				Notifications required by the BLM would be provided to individuals or other parties that may be affected by the proposed Project, including existing BLM ROW authorization holders to inform them that an application that might affect their existing ROW has been filed and requesting their comments (pursuant to 43 CFR 2807.14). See Figure 3 for mapping of existing and planned transmission lines.
		• Informing project personnel of all laws and regulations that they may be subject to, such as international borders, limitations on the removal of salable materials such as stone or wood from a project site for personal use, and use of vehicles off the project site in limited access areas. This information should be incorporated into a Worker Education and Awareness Plan (WEAP) that is provided to all project personnel prior to entering the project worksite. The WEAP shall be provided on a regular basis, covering multiple resources, to ensure the awareness of key mitigation efforts of the project worksite during all phases of the project's life. The base information the WEAP provides shall be reviewed and approved by the BLM prior to the issuance of a Notice to Proceed and incorporate adaptive management protocols for addressing changes over the life of the project, should they occur.	X			
	LR2-1	Solar facilities shall be sited, designed, and constructed to avoid, minimize, and/or mitigate impacts on BLM land use planning designations.				The location of the proposed Project was selected to optimize existing and planned improvements to transmission and substation infrastructure. The Project's gen-tie will be routed to align with a Section 368 corridor lies to the east of the Project site and runs generally in a north-south direction. In areas where the gen-tie would fall outside of this Section 368 corridor, it would be routed adjacent to existing infrastructure to the extent possible to minimize new disturbance.
		(a) Methods to minimize impacts on BLM land use planning designations may include, but are not limited to, the following:				
		• Locating existing designated transmission corridors within the area of a proposed solar energy development project in consultation with the BLM. Reviewing future transmission capacity in the corridor to determine whether the corridor should be excluded from solar energy development or whether the capacity of the designated transmission corridor can be reduced. Options to partially relocate the corridor to retain the current planned capacity or to relocate the solar energy project outside the designated corridor may be considered.	X			
		• Identifying and protecting evidence of the PLSS and related Federal property boundaries prior to commencement of any ground-disturbing activity. This will be accomplished by contacting the BLM Cadastral Survey to coordinate data research, evidence examination and evaluation, and locating, referencing, or protecting monuments of the PLSS and related land boundary markers from destruction. In the event of obliteration or disturbance of the Federal boundary evidence, the responsible party shall immediately report the incident, in writing, to the Authorizing Official. The BLM Cadastral Survey will determine how the marker is to be restored. In rehabilitating or replacing the evidence the responsible party will be instructed to use the services of a Certified Federal Surveyor (CFedS), whose procurement shall be per qualification-based selection, or to reimburse the BLM for costs. All surveying activities will conform to the Manual of Surveying Instructions and appropriate state laws and regulations. Local surveys will be reviewed by Cadastral Survey before being finalized or filed in the appropriate state or county office. The responsible party shall pay for all survey, investigation, penalty, and administrative costs.	X			
		• Considering opportunities to consolidate access to and other supporting infrastructure for single projects and for cases where there is more than one project in close proximity to another in order to maximize the efficient use of public land and minimize impacts.	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Specially Designated Areas and Lands with Wilderness Characteristics	LWC 1-1	Protection of existing values of specially designated areas and lands with wilderness characteristics shall be evaluated during the environmental analysis for solar energy projects, and the results shall be incorporated into the project planning and design.				"Specially designated areas" include mapped habitat areas for BLM sensitive species as well as ACECs. There are no mapped habitat areas or ACECs within or adjacent to the Project site. The nearest ACEC is the Black Mountains ACEC, located approximately 3 miles to the east. Gen-tie route Option 3 traverses the west side of the Bullhead-Bajada ACEC approximately 8.5 miles northwest of the Project site. The nearest designated Wilderness Area is the Warm Springs Wilderness, which is approximately 1.6 miles from the Project site on the opposite (east) side of Oatman Highway. No direct impacts to this Wilderness area would occur, however indirect impacts such as construction noise, traffic, and long-term changes in the scenic value of the region could occur and would be analyzed during NEPA review.
		(a) Assessing potential impacts on specially designated areas and lands with wilderness characteristics shall include, but is not limited to, the following:				
		• Identifying specially designated areas and lands with wilderness characteristics in proximity to the proposed projects. In coordination with the BLM, developers shall consult existing land use plans and updated inventories.	X			
		• Identifying lands that are within the geographic scope of a proposed solar energy project that have not been recently inventoried for wilderness characteristics or any lands that have been identified in a citizen's wilderness proposal in order to determine whether they possess wilderness characteristics. Developers shall consider including the wilderness characteristics evaluation as part of the processing of a solar energy ROW application for those lands without a recent wilderness characteristics inventory. All work must be completed in accordance with current BLM policies and procedures.	X			
		• Evaluating impacts on specially designated areas and lands with wilderness characteristics as part of the environmental impact analysis for the project and considering options to avoid, minimize, and/or mitigate adverse impacts in coordination with the BLM.	X			
		(b) Methods to mitigate unavoidable impacts on specially designated areas and lands with wilderness characteristics may include, but are not limited to, the following: BLM Solar Energy Program Design Features				
		• Acquiring wilderness inholdings from willing sellers.	X			
		• Acquiring private lands from willing sellers adjacent to designated wilderness.	X			
		• Acquiring private lands from willing sellers within proposed wilderness or Wilderness Study Areas.	X			
		• Acquiring other lands containing important wilderness or related values, such as opportunities for solitude or a primitive, unconfined (type of) recreation.	X			
		• Restoring wilderness, for example, modifying routes or other structures that detract from wilderness character.	X			
		• Contributing mitigation monies to a "wilderness mitigation bank," if one exists, to fund activities such as the ones described above.	X			
		• Enacting management to protect lands with wilderness characteristics in the same field office or region that are not currently being managed to protect wilderness character. Areas that are to be managed to protect wilderness characteristics under this approach must be of sufficient size to be manageable, which could also include areas adjacent to current WSAs or adjacent to areas currently being managed to protect wilderness characteristics.	X			
	LWC 2-1	Solar facilities shall be sited, designed, and constructed to avoid, minimize, and/or mitigate impacts on the values of specially designated areas and lands with wilderness characteristics.				

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Rangeland Resources - Grazing	RG1-1	Project developers shall consult with the BLM early in project planning to identify activities that could impact rangeland resources and grazing.				Notifications required by the BLM would be provided to individuals or other parties that may be affected by the proposed Project. However, there are no grazing allotments within the Project site and grazing impacts are not anticipated.
		(a) Identifying impacts on rangeland resources and grazing shall include, but is not limited to, the following:				
		• Identifying rangeland resources and grazing use in proximity to the proposed projects. In coordination with the BLM, developers shall consult existing land use plans and updated inventories.		X		
		• Coordinating with affected grazing permittees/lessees to discuss how a proposed project may affect grazing operations and to address possible alternatives to avoid and minimize impacts, as well as mitigation and compensation strategies.		X		
		• Evaluating impacts on rangeland resources and grazing use as part of the environmental impact analysis for the project, and considering options to avoid, minimize, and/or mitigate adverse impacts in coordination with the BLM. Issues to be considered include, but are not limited to, maintenance or relocation of range improvements and fencing, access to water and water rights, delineation of open range, and traffic management.		X		
	RG2-1	Roads shall be constructed, improved, and maintained to minimize their impact on grazing operations. Road design shall include fencing, cattle guards, and speed control and information signs where appropriate.		X		
Wild Horses and Burros	WHB1-1	Project developers shall coordinate with the BLM and other stakeholders early in the project planning process to assess and consider options to avoid, minimize, and/or mitigate impacts on wild horses and burros and their management areas.				The site is located within the Black Mountain Herd Area for burros. The amount of forage available for burros would be reduced potentially impacting the appropriate management level. Fences would create focal points where burros would be funneled potentially increasing the number of vehicle/burro collisions in the project area. The potential for such impacts would be analyzed further during the environmental review process and mitigation would be developed to minimize impacts on the local herd.
		(a) Assessing impacts on wild horses and burros and their management areas shall include, but is not limited to, the following:				
		• Identifying wild horses and burros and their management areas in proximity to the proposed projects. In coordination with the BLM, developers shall consult existing land use plans and updated inventories.				
		• Evaluating potential impacts on wild horses and burros and their management areas as part of the environmental impact analysis for the project and considering options to avoid, minimize, and/or mitigate adverse impacts in coordination with the BLM.				
		(b) Methods to minimize impacts on wild horses and burros and their management areas may include, but are not limited to, the following:				
		• Installing fencing and access control.				
		• Providing for movement corridors.				
		• Delineating open range.				
		• Requiring traffic management measures (e.g., vehicle speed limits).				
		• Ensuring access to or replacement of water sources.				
		• Incorporating key elements to mitigate impacts on wild horses and burros in a WEAP that is provided to all project personnel prior to entering the project worksite. The WEAP shall be provided on a regular basis, covering multiple resources, to ensure the awareness of key wild horse and burro mitigation efforts of the project worksite during all phases of the project's life. The base information the WEAP provides shall be reviewed and approved by the BLM prior to the issuance of a Notice to Proceed and incorporates adaptive management protocols for addressing changes over the life of the project, should they occur.				

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Wild Horses and Burros (cont.)	WHB2-1	Project access roads shall be sited, designed, constructed, fenced, and/or improved to minimize potential wild horse and burro collisions. Fences, or other appropriate structures, should be constructed to exclude wild horses and burros from solar energy project site facilities. Either water sources or access routes to water sources for horses and burros should be excluded from the solar energy development area, or alternate water sources or routes should be provided.	X			The site is located within the Black Mountain Herd Area for burros. The amount of forage available for burros would be reduced potentially impacting the appropriate management level. Fences would create focal points where burros would be funneled potentially increasing the number of vehicle/burro collisions in the project area. The potential for such impacts would be analyzed further during the environmental review process and mitigation would be developed to minimize impacts on the local herd.
Wildland Fire	WF1-1	Project developers shall coordinate with the BLM and other appropriate fire organizations early in the project planning process to determine fire risk and methods to minimize fire risk.				The Project proposes a 10-foot-wide firebreak constructed and maintained around or within the perimeter of the solar facility boundary to prevent a wildfire from entering or exiting the site. Construction of the firebreak would require the removal of all vegetation through disking or the use of a grader. The firebreak would not be constructed within the high banks or established channels of ephemeral washes. Additional impacts associated with wildland fire would be analyzed during the environmental review process and a Fire Management Plan would be developed as part of the POD to minimize the potential for wildland fire as a result of the Project.
		(a) Identifying fire risk shall include, but is not limited to, the following:				
		• Assessing the potential for fire risk associated with the proposed project in coordination with the BLM and other appropriate fire organizations. Developers shall consult existing land use plans and fire management plans.	X			
		• Evaluating fire risk as part of the environmental impact analysis for the project and considering options to avoid, minimize, and/or mitigate such risk in coordination with the BLM.	X			
		• Developing and implementing fire management measures that include providing worker training.	X			
		• Incorporating key elements to mitigate the potential for fire into a WEAP that is provided to all project personnel prior to entering the project worksite. The WEAP shall be provided on a regular basis, covering multiple resources, to ensure the awareness of key fire mitigation efforts of the project worksite during all phases of the project's life. The information provided in the WEAP shall be reviewed and approved by BLM prior to the issuance of a Notice to Proceed and incorporate adaptive management protocols for addressing changes over the life of the project, should they occur.	X			
		• Incorporating inspection and monitoring measures, including adaptive management protocols, into the POD and other applicable plans to monitor and respond to fire risk during construction, operations, and decommissioning of a solar energy development.	X			
	WF2-1	Solar facilities shall be sited and designed to minimize fire risk.				The Project would include a 10-foot-wide firebreak around the outside perimeter fence to minimize the potential for wildfire spread should a fire break out within the solar facility or impact the facility as a result of a wildland fire approach the Project boundary from outside the Project area. The Project would also require a temporary source of water for fire protection systems during construction. Fire management agencies would be consulted as part of the NEPA process and mitigation measures would be developed to further reduce the effects of wildfire both within and outside the Project site.
		(a) Methods to minimize fire risk may include, but are not limited to, the following:				
		• Siting and designing the solar facilities to ensure sufficient room for fire management within the ROW and its facilities to minimize the risk of fire moving outside the ROW and the risk of fire threatening the facility from outside.				
		• Consulting fire management personnel to determine actions, both active and passive (e.g., vegetation manipulation), that may minimize the need for protective responses by the BLM and state and local fire organizations.				
		• Developing and implementing measures to integrate vegetation management to minimize the potential to increase the frequency of wildland fires and prevent the establishment of non-native, invasive species on the solar energy facility and its transmission line and roads.				

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Public Access and Recreation	R1-1	Project developers shall consult with the BLM in the early phases of project planning to identify public access and recreation use areas in and adjacent to a project site.				Existing roads on BLM lands through the Project area that are publicly accessible may be closed to public use under the proposed Project and/or restricted by the planned perimeter fence around the facility. The current network of existing roadways around the proposed Project area allows for continued access to surrounding areas, although sometimes this access may be through alternative routes rather than direct routes. The final Project design would identify those roads that would be closed to public access. Oatman Highway is considered an Arizona state scenic highway and a portion of Oatman Highway near the intersection with Boundary Cone Road, northeast of the Project site, is designated as a Special Recreation Management Area for the Route 66 National Scenic Byway. Construction and operation traffic would utilize Oatman Highway to access the Project but would come to the site from the south, avoiding the SRMA to the north. Additionally, truck traffic would enter the site from the south as the road conditions along Oatman Highway coming from the north would not accommodate large trucks or deliveries. The Applicant would prepare a traffic impact study as part of the NEPA analysis and prepare a Traffic Management Plan prior to construction to minimize potential Project-related traffic impacts.
		(a) Identifying public access and recreation in and adjacent to a project shall include, but is not limited to, the following:				
		• Considering existing public access through or around proposed solar facilities that allows for access to and use of BLM administered public lands and non-BLM administered lands. Developers shall conduct this assessment in coordination with the BLM and consult existing land use plans, recreation management plans, etc.	X			
		• Identifying legal access to private, state, and Federal lands surrounding the solar facilities to avoid creating areas that are inaccessible to the public.	X			
		• Evaluating impacts on public access and recreation as part of the environmental impact analysis for the project and considering options to avoid, minimize, and/or mitigate adverse impacts in coordination with the BLM.	X			
		(b) Methods to minimize access and recreation conflicts may include, but are not limited to, the following:				
		• Considering replacement of acreage lost for identified recreation opportunities, such as off-highway vehicle use.	X			
		• Considering, to the extent practicable, providing access through or around a solar energy facility to provide for adequate public access and/or recreation.	X			
		• Incorporating environmental inspection and monitoring measures into the POD and other applicable plans to monitor and respond to impacts on recreation during construction, operations, and decommissioning of a solar energy development, including adaptive management protocols.	X			
	R2-1	Solar facilities shall not be sited in areas designated as unique or important recreation resources (such as Special Recreation Management Areas), where it has been determined that a solar facility or other such development of the land would be in direct conflict with the objectives of the relevant management plan.	X			
Military and Civilian Aviation	MCA1-1	Project developers shall coordinate with the BLM, military personnel, and civilian airspace managers early in the project planning process to identify and minimize impacts on military and civilian airport and airspace use.				The nearest airports are Eagle Airpark, 7 miles to the west, and Sun Valley-Bison-Fort Mohave Airport, 6.5 miles to the northwest. The Applicant has coordinated with military personnel and civilian airspace managers early in the Project planning process to identify potential conflicts with overhead airspace use. This consultation was done in conjunction with the adjacent Atlas Wind Project. The proposed solar facility does not present any potential conflicts and none of the gen-tie structures being planned for the Project are expected to exceed 200 feet in height or pose a safety hazard to military or civilian flights due to height. The main concern of the FAA was the height and placement of the wind turbine generators associated with the Atlas Wind project to the north of the Leo Solar Project.
		(a) Identifying impacts on military and civilian airport and airspace use shall include, but is not limited to, the following:				
		• Submitting plans for proposed construction of any facility that is 200 ft (~61 m) or taller and plans for other projects located in proximity to airports to the Federal Aviation Administration (FAA) to evaluate potential safety hazards.	X			
		• Consulting with the U.S. Department of Defense (DoD) to minimize and/or eliminate impacts on military operations, and encouraging compatible development. This consultation will be initiated by the BLM and will include both general discussions for early planning and detailed assessments of specific proposals at the local level. The BLM will accept formal DoD submissions once they have been vetted through both the Military Departments and the DoD Siting Clearinghouse.	X			
		• Evaluating impacts on military and civil aviation as part of the environmental impact analysis for the project and considering options to avoid, minimize, and/or mitigate adverse impacts in coordination with the BLM.	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Soil Resources and Geologic Hazards	SR1-1	Project developers shall coordinate with the BLM and other Federal, state, and local agencies early in the project planning process to assess soil erosion and geologic hazard concerns and to minimize potential impacts.				Slopes greater than 5 percent would be avoided as part of the solar development unless otherwise authorized by BLM. Any new access roads required on BLM-managed lands within the Project area would be designed and constructed per the BLM's Gold Book standards and BLM Manual 9113, Sections 1 and 2. Soil conditions within the Project area are expected to be largely conducive to the development of solar infrastructure. A detailed geotechnical investigation would be conducted to minimize geologic hazards and may include standard penetration test borings and other geotechnical testing methods at Project facilities to visually characterize the geologic and soil conditions and to obtain samples for laboratory testing. A Drainage, Erosion, and Sediment Control plan and Dust Abatement Plan would be implemented to minimize impacts.
		(a) Assessing soil erosion and geologic hazard concerns shall include, but is not limited to, the following:				
		Identifying soil erosion and geologic hazard concerns on-site and in proximity to the proposed projects. In coordination with the BLM, developers shall consult existing land use plans, updated inventories, soil surveys, etc.	X			
		Identifying local factors that can cause slope instability (e.g., groundwater conditions, precipitation, earthquake activity, slope angles, and the dip angles of geologic strata).	X			
		Consulting with local Federal, state, and county agencies regarding road design on the basis of local meteorological conditions, soil moisture, and erosion potential.	X			
		Determining the potential safety and resource impacts associated with soil erosion.	X			
		Evaluating soil erosion and geologic hazard concerns as part of the environmental impact analysis for the project and considering options to avoid, minimize, and/or mitigate adverse impacts in coordination with the BLM.	X			
	SR2-1	Solar facilities shall be sited, designed, and constructed to minimize soil erosion and geologic hazard concerns.				The Project is located within the Mohave watershed and Lake Mohave groundwater basin. Natural site drainage in the Project area is to the west to the nearby Colorado River. Streamflow in the Lake Mohave Drainage Basin is ephemeral and is generated in the Black Mountains to the east of the Project. There are no identified perennial drainages on the site; however, ephemeral drainages may be present on parts of the site. Further analysis will be conducted concurrent with the NEPA process to determine if any waters of the U.S. are present. If present and impacted by the Project, the appropriate permits would be obtained from the U.S. Army Corps of Engineers prior to development. A SWPPP would also be prepared to meet Arizona Department of Environmental Quality and EPA requirements for site drainage, erosion, sedimentation, and other stormwater runoff related issues.
		(a) Methods to minimize soil erosion may include, but are not limited to, the following: Designing structures to meet the requirements of all applicable Federal, state, and county permits and building codes.				
		• Minimizing ground-disturbing activities.	X			
		• Preventing channel erosion from project runoff.	X			
		• Controlling culvert outlets with appropriate structures (e.g., rock lining or apron) to reduce soil erosion and scouring.	X			
		• Recontouring and revegetating project roads that are no longer needed in order to increase infiltration and reduce soil compaction.	X			
		• Considering utilizing originally excavated materials for backfill.	X			
		• Controlling project vehicle and equipment speeds to reduce dust erosion.	X			
		• Controlling water runoff and directing it to settling or rapid infiltration basins.	X			
		• Retaining sediment-laden waters from disturbed, active areas within the project through the use of barriers and sedimentation devices (e.g., berms, straw bales, sandbags, jute netting, or silt fences). Removing sediment from barriers and sedimentation devices to restore sediment-control capacity.	X			
		• Placing barriers and sedimentation devices around drainages and wetlands.	X			
		• Siting project structures and facilities to avoid disturbance in areas with existing biological soil crusts.	X			
		• Replanting project areas with native vegetation at spaced intervals to break up areas of exposed soil and reduce soil loss through wind erosion.	X			
		• Minimizing land disturbance (including crossings) in natural drainage systems and groundwater recharge zones (i.e., ephemeral washes and dry lake beds).	X			
		• Locating and constructing drainage crossing structures so as not to decrease channel stability or increase water volume or velocity	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Soil Resources and Geologic Hazards (cont.)	SR2-1 (cont.)	(b) Methods to minimize soil erosion may include, but are not limited to, the following:				See above response.
		• Providing adequate space (i.e., setbacks) between solar facilities and natural washes to preserve hydrologic function.	X			
		• Considering the use of existing roads, disturbance areas, and borrow pits before creating new infrastructure. The use of any existing infrastructure shall be analyzed in the environmental analysis for the proposed project.	X			
		• Siting, designing, and constructing new roads and walking trails consistent with the appropriate design standards and criteria, such as those described in BLM Manual 9113 and 43 CFR 8342.1. Roads and trails should follow natural land contours, and hill cuts should be minimized in the project area.	X			
		• Avoiding areas with unstable slopes and soils.	X			
		• Avoiding excessive grades on roads, road embankments, ditches, and drainages during site preparation and construction.	X			
		• Considering use of special construction techniques in areas of steep slopes, erodible soil, and drainageways.	X			
		• Considering implementing construction in stages to limit the areas of exposed and unstabilized soils.	X			
		• Reducing construction activity timeframes so that ground disturbing activities take place over as short a timeframe as possible.	X			
		• Lessening fugitive dust emissions and site soils compaction by avoiding unpaved surfaces with construction traffic.	X			
		• Avoiding clearing and disturbing areas outside the construction zone.	X			
		• Clearly identifying construction zone boundaries on the ground (e.g., through the use of construction fencing) to minimize conflict with other resource concerns.	X			
		• Avoiding ground disturbance in areas with intact biological soil crusts and desert pavement.	X			
		• Burying electrical lines from solar collectors along existing features (e.g., roads or other paths of disturbance) to minimize the overall area of surface disturbance.	X			
		• Obtaining borrow materials from authorized and permitted sites.	X			
		• Conducting construction grading in compliance with industry practice (e.g., the American Society for Testing and Materials [ASTM] international standard methods) and other requirements (e.g., BLM and/or local grading and construction permits).	X			
		• Using temporary stabilization devices (i.e., erosion matting blankets, or soil stabilizing agents) for areas that are not actively under construction.	X			
		• Salvaging topsoil from all excavation and construction and reapplying it to disturbed areas upon completion of construction.	X			
		• Restoring native plant communities as quickly as possible in disturbed areas through natural revegetation or by seeding and transplanting (using weed-free native grasses, forbs, and shrubs), on the basis of BLM recommendations.	X			
		• Minimizing soil-disturbing activities on wet soils.	X			
		• Performing studies to determine the effects from construction activities on the eolian processes that maintain any nearby sand dunes, if applicable.	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Soil Resources and Geologic Hazards (cont.)	SR2-1 (cont.)	• Incorporating environmental inspection and monitoring measures into the POD and other applicable plans to monitor and respond to impacts on soil resources during construction, operations, and decommissioning of a solar energy development, including adaptive management protocols.	X			See above response.
		(c) Methods to minimize geologic hazard concerns may include, but are not limited to, the following:				
		• Building project structures in accordance with the design-basis recommendations in the project-specific geotechnical investigation report.	X			
		• Considering special siting, design, and engineering strategies in areas that involve high seismic activity or have potential for flooding or debris flow.	X			
	SR3-1	Compliance with the conditions for soil resources and geologic hazards shall be monitored by the project developer. Consultation with the BLM shall be maintained through the operations and maintenance of the project, employing an adaptive management strategy and modifications, as necessary and approved by the BLM.				The Project would be routinely monitored according to the inspection schedule outlined in the Project's Plan of Development. During routine inspections, the site would be monitored for soil erosion issues, washouts, and invasive weed infestations. A Site Restoration Plan and Integrated Weed Management Plan would guide restoration on site and monitoring to ensure the success of native plant community re-establishment following construction.
		(a) Methods to maintain the soil erosion and geologic hazard design elements during operations and maintenance of the project shall include, but are not limited to, the following:				
		• Applying design features developed for the construction phase to similar activities during the operations phase.	X			
		• Performing routine site inspections to assess the effectiveness of maintenance requirements for erosion and sediment control systems.	X			
		• Maintaining permanent barriers and sedimentation devices to ensure effective control.	X			
		• Regularly maintaining catch basins, roadway ditches, and culverts.	X			
		• Identifying soil erosion and geologic hazard requirements within the POD and other applicable plans.	X			
	SR 3-2	Permanent stabilization of disturbed areas shall occur during final grading and landscaping of the site and be maintained through the life of the facility.	X			
	SR 4-1	All design features for soil erosion and geologic hazards developed for the construction phase shall be applied to similar activities undertaken during the decommissioning and reclamation phase	X			
	SR 4-2	To the extent possible, the original grade and drainage pattern shall be re-established.	X			
	SR 4-3	Native plant communities in disturbed areas shall be restored by natural revegetation or by seeding and transplanting (using weed-free native grasses, forbs, and shrubs), on the basis of recommendations by the BLM, once decommissioning is completed.	X			
Mineral Resources	MR1-1	Project developers shall consult with the BLM in the early phases of project planning to identify potential impacts on mineral development activities and ways to minimize potential adverse impacts.				No active mining claims have been identified within the proposed Project area, and no other mineral resources are known to be present.
		(a) Assessing impacts on mineral resources shall include, but is not limited to, the following:				
		• Identifying active mining claims or mineral development activities and potential for mineral development in proximity to a proposed project. In coordination with the BLM, developers shall consult existing land use plans and updated inventories.		X		
		• Evaluating impacts on mineral development as part of the environmental impact analysis for the project and considering options to avoid, minimize, and/or mitigate adverse impacts in coordination with the BLM.		X		
	MR 1-2	All solar energy development ROWs shall contain the stipulation that the BLM retains the right to issue oil and gas or geothermal leases with a stipulation of no surface occupancy within the ROW area. Upon designation, SEZs will be classified as no surface occupancy areas for oil and gas and geothermal leasing.		X		

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
	MR 2-1	Solar energy development projects shall be located to minimize conflicts with valid existing mineral rights and/or ongoing mineral development.		X		
Water Resources	WR1-1	The project developer shall control project site drainage, erosion, and sedimentation related to stormwater runoff. The project developer shall identify site surface water runoff patterns and develop measures that prevent adverse impacts associated with project related soil deposition and erosion throughout and downslope of the project site and project related construction areas. This shall be implemented within a Stormwater Pollution Prevention Plan and incorporated into the POD, as appropriate.				There are no identified perennial drainages on the site. Ephemeral drainages may be present on parts of the site. There are no wetlands or riparian areas in the proposed Project area. Further analysis will be conducted concurrent with the NEPA process to determine if any waters of the U.S. are present. If present and impacted by the Project, the appropriate permits will be obtained from the Army Corps of Engineers prior to Project impacts. Watershed and drainage analysis and calculations, as well as watershed protection and erosion control design drawings, would be prepared for the Project area during the engineering and civil design phase of the Project. A SWPPP would also be prepared to meet Arizona Department of Environmental Quality and EPA requirements for site drainage, erosion, sedimentation, and other stormwater runoff related issues. Most of the project site is in Zone X, outside the 100-year floodplain. Zone A, indicating a 1 percent chance of flood hazard is present within approximately 806 acres of the Project site. An assessment of flood hazards will be completed in conjunction with engineering design in support of the NEPA process.
		(a) Assessing stormwater runoff concerns shall include, but is not limited to, the following:				
		• Conducting hydrologic analysis and modeling to define the 100-year, 24-hour rainfall for the project area and calculating projected runoff from this storm at the site.	X			
		• Demonstrating the project will not increase off-site flooding potential, and including provisions for stormwater and sediment retention on the project site.	X			
		• Demonstrating compliance with construction stormwater permitting through the EPA or state-run NPDES program (whichever applies within the state).	X			
		• Demonstrating compliance with the EPA requirement that any development larger than 20 acres (0.08 km2) and begun after August 2011 must monitor construction discharges for turbidity concentrations.	X			
		(b) Methods to minimize stormwater runoff concerns may include, but are not limited to, the following:				
		• Managing runoff from parking lots, roofs, or other impervious surfaces.				
		• Creating or improving landscaping used for stormwater treatment to capture runoff.				
		• Considering reduction of impervious surfaces through the use of permeable pavement or other pervious surfaces.				
		• Maintaining natural drainages and pre-project hydrographs for the project ROW to the extent practicable.				
		• Maintaining pre-development flood hydrograph for all storms up to and including the 100-year rainfall event.				
		• Incorporating environmental inspection and monitoring measures into the POD and other applicable plans to monitor and respond to impacts from stormwater runoff during construction, operations, and decommissioning of a solar energy development, including adaptive management protocols.				
	WR1-2	Project developers shall conduct hydrologic study (or studies) that demonstrate a clear understanding of the local surface water and groundwater hydrology.				The project is crossed by multiple ephemeral drainages identified in the National Wetlands Inventory. Natural site drainage in the Project area is to the west to the nearby Colorado River. Streamflow in the Lake Mohave Drainage Basin is ephemeral and is generated in the Black Mountains to the east of the Project in response to summer and winter storms. Most of the project site is in Zone X, outside the 100-year floodplain. Zone A, indicating a 1 percent chance of flood hazard is present within approximately 806 acres of the Project site. An assessment of flood hazards will be completed in conjunction with engineering design in support of the NEPA process.
		(a) Assessing surface water and groundwater hydrology may include, but is not limited to, the following:				
		Determining the relationship of the project site hydrologic basin to the basins in the region.	X			
		Identifying surface water bodies within the watershed of SEZs or individual projects (including rivers, streams, ephemeral washes/drainages, lakes, wetlands, playas, and floodplains) and identifying the 100-year floodplain of any surface water feature on the site.	X			
		Identifying applicable groundwater aquifers.	X			
		Quantifying physical characteristics of surface water features, such as streamflow rates, stream cross sections, channel routings, seasonal flow rates.	X			
		Quantifying physical characteristics of the groundwater aquifer, such as physical dimensions of the aquifer, sediment characteristics, confined/unconfined conditions, hydraulic conductivity, and transmissivity distribution of the aquifer.	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
		Quantifying the regional climate, including seasonal and long-term information on temperatures, precipitation, evaporation, and evapotranspiration.	X			
		Quantifying the sustainable yield of surface waters and groundwater available to the project.	X			
Water Resources (cont.)	WR1-2 (cont.)	Consulting with the U.S. Army Corps of Engineers (USACE) regarding the siting of solar energy generating facilities in relation to hydrological features that have the potential to be subject to USACE jurisdiction	X			See above response
	WR1-3	Project developers shall coordinate with the BLM and other Federal, state, and local agencies early in the planning process in order to identify water use for the solar energy project, and to secure a reliable and legally available water supply to meet project water needs.				The Project is within the Lake Mohave Groundwater Basin where depth to groundwater varies widely from a minimum of 4 feet below ground surface to a maximum of 428 feet below the ground surface. In most locations, according to well log data, the average depth to groundwater is approximately 90 feet below ground surface. The Project would require a temporary water source for fire protection systems and dust control along access roads and solar facility development areas during construction. The project will require nominal to no groundwater use during operations. An analysis of groundwater withdrawals, if any, and the development of mitigation measures will occur as part of the NEPA process. Water sources and amounts required are unknown at this time; however, measures will be taken to ensure the minimum possible amount of water will be used during all facets of construction and operation of the Project. Any use of water would be coordinated with and permitted through the appropriate State and local authorities, including Mohave County and the Arizona Department of Water Resources.
		(a) Assessing water use shall include, but is not limited to, the following:				
		• Quantifying water use requirements for project construction, operations, and decommissioning.	X			
		• Meeting potable water supply standards of Federal, state, and local water quality authorities (e.g., Sections 303 and 304 of the Clean Water Act [CWA]).	X			
		• Identifying wastewater treatment measures and new or expanded facilities, if any, to be included as part of the facility's National Pollutant Discharge Elimination System (NPDES) permit.	X			
		(b) Methods for minimizing water use may include, but are not limited to, the following:				
		• Utilizing appropriate water sources with respect to management practices for maintaining aquatic, riparian, and other water dependent resources.	X			
		• Considering water conservation measures related to solar energy technology water needs to reduce project water requirements (i.e., use dry cooling, use recycled or impaired water).	X			
		• Incorporating environmental inspection and monitoring measures into the POD and other applicable plans to monitor water use during construction, operations, and decommissioning of the solar energy development, including adaptive management protocols.	X			
	WR1-4	Project developers shall avoid and/or minimize impacts on existing surface water features, including streams, lakes, wetlands, floodplains, intermittent/ephemeral streams, and playas (any unavoidable impacts would be minimized or mitigated) and in nearby regions resulting from the development in accordance with the following:				There are no identified perennial drainages on the site. Ephemeral drainages may be present on parts of the site. There are no wetlands or riparian areas in the proposed Project area. Further analysis will be conducted concurrent with the NEPA process to determine if any waters of the U.S. are present. If present and impacted by the Project, the appropriate permits will be obtained from the Army Corps of Engineers prior to Project impacts. A jurisdictional delineation would be conducted to inform the NEPA analysis and a SWPPP would be prepared to meet Arizona Department of Environmental Quality and EPA requirements for site drainage, erosion, sedimentation, and other stormwater runoff related issues.
		• All sections of the CWA, including Sections 401, 402, and 404, addressing licensing and permitting issues;	X			
		• Executive Orders (E.O.s) 11988 and 11990 of May 24, 1977, regarding floodplain and wetland management: E.O. 11988, "Floodplain Management" (Federal Register, Volume 42, page 26951 [42 FR 26951]), and E.O. 11990, "Protection of Wetlands" (42 FR 26961);	X			
		• EPA stormwater management guidelines and applicable state and local guidelines;	X			
		• Include submittal of a jurisdictional delineation for consultation with the USACE, in accordance with the 1987 wetlands delineation manual and appropriate regional supplement; avoidance, minimization and compensation proposals;	X			
		• USACE permit, Nationwide verification, or other approved jurisdiction. This includes identification of a Least Environmentally Damaging Practicable Alternative (LEDPA) within the environmental analysis. The USACE permit, Nationwide verification, or approved jurisdiction letter shall be provided to the BLM prior to a decision;	X			
		• National Wild and Scenic Rivers System (Public Law 90-542; 16 United States Code [U.S.C.] 1271 et seq.); and		X		
		• Required CWA Section 303(d) identification of impaired surface water bodies.	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Water Resources (cont.)	WR2-1	Project developers shall avoid, minimize, and mitigate impacts on groundwater and surface water resources in accordance with the laws and policies above.				The Project is crossed by multiple ephemeral drainages identified in the National Wetlands Inventory. The Project is adjacent to Jakes Lake dry lakebed, with some larger washes flowing through the site into the dry lake. These waters would likely be considered state waters by the State of Nevada Division of Water Resources. The Project site is designated as a FEMA Zone D or "area of undetermined flood hazard." A drainage study and assessment of flood hazard would be completed in conjunction with the engineering design for the Project and in support of the NEPA environmental review. In addition, a Drainage, Erosion and Sediment Control Plan and Dust Abatement Plan would be prepared and best management practices would be implemented to reduce the effects of wind and water erosion and sedimentation.
		(a) Methods to minimize impacts on surface water and groundwater resources may include, but are not limited to, the following:				
		• Reclaiming disturbed soils as quickly as possible.	X			
		• Preventing the release of project waste materials into stormwater discharges.	X			
		• Avoiding impacts on sole source aquifers according to EPA guidelines.	X			
		• Developing measures to prevent potential groundwater and surface water contamination and incorporating them into the Spill Prevention and Emergency Response Plan and POD, as appropriate.	X			
		• Minimizing land disturbance in ephemeral washes and dry lakebeds. Stormwater facilities shall be designed to route flow through or around the facility using existing washes when feasible, instead of concrete-lined channels.	X			
		• Designing stormwater retention and/or infiltration and treatment systems for storm events up to and including the 100-year storm event.	X			
		• Utilizing geotextile matting to stabilize disturbed channels and stream banks.	X			
		• Diverting worksite runoff from entering disturbed streams using earth dikes, swales, and lined ditches.	X			
		• Placing sediment control devices so that sediment-laden water can pond, thus allowing sediment to settle out.	X			
		• Considering placement of check dams (i.e., small barriers constructed of rock, gravel bags, sandbags, fiber rolls, or reusable products) across a swale or drainage ditch to reduce the velocity of flowing water.	X			
		• Considering special construction techniques in areas of erodible soil, alluvial fans, and stream channel/wash crossings.	X			
		• Backfilling foundations and trenches with originally excavated material.	X			
		• Disposing of excess excavated material according to state and Federal laws.	X			
		• Maintaining drilling fluids or cuttings in a manner so as not to contact aquatic habitats. Temporary impoundments for storing drilling fluids and cuttings shall be lined to minimize the infiltration of runoff into groundwater or surface water.	X			
		• Avoiding washing equipment or vehicles in streams and wetlands.	X			
		• Constructing entry and exit pits in work areas to trap sediments from vehicles so they do not enter streams at stream crossings.	X			
		• Providing for periodic removal of wastewater generated in association with sanitary facilities by a licensed hauler.	X			
		• Avoiding the creation of hydrologic conduits between two aquifers.	X			
		• Using herbicides and pesticides within the framework of BLM and DOI policies and standard operating procedures, to include the use of only EPA-registered pesticides/herbicides that also comply with state and local regulations.	X			
		• Transporting, storing, managing, and disposing of hazardous materials and vehicle/equipment fuels in accordance with accepted best management practices (BMPs) and in compliance with all applicable regulations, and where applicable, the SWPPP.	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Water Resources (cont.)	WR3-1	Compliance with the terms and conditions for water resource mitigation shall be monitored by the project developer. The developer shall consult with the BLM through operations and maintenance of the project, employing an adaptive management strategy and modifications, as necessary and approved by the BLM.				Water would be required over the Project construction period for construction-related activities, including dust control and fire prevention. After construction is complete, the Project's water consumption during operation be minimal. Water would not be used for panel washing but would be used in conjunction with dust palliatives during operation. Construction and operation water is anticipated to be purchased from a commercial source or a user with an existing appropriation. It would then be trucked to the Project site where it would be stored in an on-site water storage tank. Wastewater generated during construction would include sanitary waste from portable toilets. This waste would be collected by a contracted sanitary disposal service and transported to a licensed disposal facility. Since the facility will be manned by a small number of fulltime employees, no permanent wastewater facilities would be installed and the same portable toilets in use during construction would be utilized for ongoing operations.
		(a) Maintaining the water resource design elements during operations and maintenance of the project shall include, but not be limited to, the following:				
		• Monitoring water quantity and quality in areas adjacent to or downstream from development areas through the life of the project to ensure that water flows and water quality are protected.	X			
		• Treating of sanitary and industrial wastewater either on-site or off-site to comply with Federal, state, and local regulations. Any discharges to surface waters would require NPDES permitting. Any storage or treatment of wastewater on-site must use proper lining of holding ponds and tanks to prevent leaks.	X			
		• Implementing monitoring using adaptive management strategies to ensure that long-term water use during operations does not substantially and disproportionately contribute to the long-term decline of groundwater levels or surface water flows and volumes, considering any mitigation measures that have been taken	X			
	WR4-1	Reclamation of the project site shall begin immediately after decommissioning to reduce the likelihood of water resource impacts from project activities. Developers shall coordinate with the BLM in advance of interim/final reclamation to have the BLM or other designated resource specialists on-site during reclamation to work on implementing water resource requirements and BMPs.				The Project site would be allowed to re-vegetate following construction. Vegetation would typically be maintained to a height of no more than approximately 12 inches as needed for site maintenance and fire-risk management using mechanical and chemical controls. Project roads and the O&M area would remain free of vegetation. The Applicant will address post construction vegetation management including invasive and noxious weed control as part of a BLM-approved Integrated Weed Management Plan for the Project.
		(a) Methods for minimizing water resource impacts associated with reclamation and decommissioning activities may include, but are not limited to, the following:				
		• Restoring the project area to predevelopment water conditions or to the extent acceptable to the BLM.	X			
		• Considering contouring of soil borrow areas, cut-and-fill slopes, berms, water bars, and other disturbed areas to approximate naturally occurring slopes.	X			
		• Feathering edges of vegetation to reduce form and line contrasts with the existing landscapes.	X			
		• Salvaging and reapplying topsoil from all decommissioning activities during final reclamation.	X			
		• Continuing groundwater and surface water monitoring activities for a limited period of time, if appropriate given the specific situation.	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Ecological Resources	ER1-1	Project developers shall consult with the BLM and other Federal, state, and local agencies in the early phases of project planning to help ensure compliance with Federal regulations that address the protection of fish, wildlife, and plant resources, with appropriate Federal, state, and local agencies.				The Project site is not located within an Areas of Critical Environmental Concern (ACEC) but the Black Mountains ACEC is approximately 3 miles to the east. There are no populations of or suitable habitat for sage grouse in the Project vicinity; however, the site does provide habitat for Sonoran desert tortoise. There are no critical habitats, wetlands, or riparian areas in the vicinity, as mapped by USFWS. A habitat assessment and any appropriate species-specific surveys will be completed in support of the NEPA process. BMPs will be applied to avoid work in migratory bird nesting season or if any ground-disturbing activities occurs during the nesting season. Additional environmental information and survey data collected (including wildlife surveys and sensitive plant surveys) will be incorporated as part of the final NEPA analysis and approval process. An Invasive Species and Noxious Weed Management Plan would be developed prior to site activities. Initial measures to be included in the plan include: • Cleaning all large civil equipment before mobilizing to the construction site to prevent any possible carrying or transferring of noxious weed seeds. • Use of only weed-free gravel, fill, and road base when constructing the access road. • Employment of weed-control methods approved in writing by the BLM. An approved pesticide use proposal must be obtained prior to the application of herbicides (if necessary). • Control of noxious weeds within the limits of the ROW. Construction activities would be coordinated with the BLM to establish appropriate monitoring and mitigation protocol within any sensitive species habitat, including wildlife habitat, which may allow for construction to proceed. Preconstruction resource surveys would be conducted depending upon the timing of construction and species potentially present.
		(a) Assessing compliance with pertinent regulations for ecological resources shall include, but is not limited to, the following:				
		• Developing in coordination with the BLM and USFWS strategies for complying with regulatory requirements of the Bald and Golden Eagle Act.	X			
		• Developing in coordination with appropriate Federal and state agencies (e.g., BLM, USFWS, and state resource management agencies) measures to protect birds (including migratory species protected under the Migratory Bird Treaty Act [MBTA]).	X			
		• Contacting appropriate agencies (e.g., BLM, USFWS, and state resource management agencies) early in the project planning process to identify potentially sensitive ecological resources such as aquatic habitats, wetland habitats, unique biological communities, crucial wildlife habitats, and special status species locations and habitats located within or in the vicinity of the areas occupied by the solar energy facility and associated access roads and ROWs.	X			
		• Reviewing maps and supporting information regarding desert tortoise connectivity habitat made available through the Solar PEIS project Web site (http://solareis.anl.gov) and consulting with the BLM and USFWS early in project planning to receive instructions on the appropriate desert tortoise survey protocols and the criteria the BLM and USFWS will use to evaluate the results of those surveys (see Appendix B, Section B.5.3, for additional information).	X			
		• Consulting with the USACE regarding the siting of solar energy generating facilities and energy transmission infrastructure in relation to hydrological features that have the potential to be subject to USACE jurisdiction.	X			
		• Considering restrictions on timing and duration of activities developed in coordination with the BLM, USFWS, and other appropriate agencies to minimize impacts from project activities on nesting birds (especially passerines and listed species).	X			
		• Considering recommendations contained in Interim Golden Eagle Technical Guidance: Inventory and Monitoring Protocol and Other Recommendations in Support of Golden Eagle Management and Permit Issuance.	X			
		• Adhering to instruction Memorandum 2010-156, the Bald and Golden Eagle Protection Act—Golden Eagle National Environmental Policy Act and Avian Protection Plan Guidance for Renewable Energy, until programmatic permits from the USFWS are available. The analysis of potential impacts on, and mitigation for, golden eagles shall be made in coordination with the USFWS.	X			
		• Avoiding take of golden eagles and other raptors. Mitigation regarding the golden eagle shall be developed in consultation with the USFWS and appropriate state natural resource agencies. A permit may be required under the Bald and Golden Eagle Protection Act.	X			
		• Discussing potential impacts on sensitive habitats resulting from operation of vehicles and construction of structures, including transmission lines, within the environmental analysis.	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Ecological Resources (cont.)	ER1-1 (cont.)	(b) Methods to minimize regulatory conflicts for ecological resources may include, but are not limited to, the following:				A habitat assessment, jurisdictional delineation, botanical surveys, and various wildlife surveys would be conducted to support the NEPA analysis which would analyze the effects of the Proposed Action to biological resources. Mitigation measures would be developed to avoid or minimize effects to sensitive wildlife and plant species and their habitats throughout construction, operation and maintenance and decommissioning of the Project.
		• Including submittal of a jurisdictional delineation for consultation with the USACE, in accordance with the 1987 wetlands delineation manual and appropriate regional supplement; avoidance, minimization and compensation proposals.	X			
		• Identifying an LEDPA and analyzing within the environmental analysis. A USACE permit, Nationwide verification, or approved jurisdiction letter shall be provided to the BLM prior to a decision.	X			
		• Developing measures to ensure protection of raptors in coordination with appropriate Federal and state agencies (e.g., BLM, USFWS, and state resource management agencies).	X			
		• Developing measures to ensure protection of bats in coordination with appropriate Federal and state agencies (e.g., BLM, USFWS, and state resource agencies).	X			
		• Developing measures to ensure mitigation and monitoring of impacts on special status species in coordination with appropriate Federal and state agencies (e.g., BLM, USFWS, and state resource management agencies).	X			
		• Consulting with the USFWS upon discovery of federally listed threatened and endangered species during any phase of the project. An appropriate course of action shall be determined to avoid, minimize, or mitigate impacts. All applicable terms and conditions and conservation measures listed in the programmatic Biological Opinion, issued by the USFWS, shall be followed.	X			
		• Informing project personnel that only qualified biologists are permitted to handle listed species according to specialized protocols approved by the USFWS.	X			
		• Considering plants, wildlife, and their habitats in the facility's Dust Abatement Plan.	X			
		• Limiting herbicide use to non-persistent, immobile substances. Only herbicides with low toxicity to wildlife and non-target native plant species shall be used, as determined in consultation with the USFWS. Section 5.10.2.1.5 of the Draft Solar PEIS discusses the potential impacts of herbicides on wildlife. All herbicides shall be applied in a manner consistent with their label requirements and in accordance with guidance provided in the Final Solar PEIS on vegetation treatments using herbicides. Prior to application of herbicide treatments, a qualified person, such as a biologist, shall conduct surveys of bird nests and of special status species to identify the special measures or BMPs necessary to avoid and minimize impacts on migratory birds and special status species.	X			
		• Developing a SWPPP for each project that avoids, to the extent practicable, changes in surface water or groundwater quality (e.g., chemical contamination, increased salinity, increased temperature, decreased dissolved oxygen, and increased sediment loads) or flow that result in the alteration of terrestrial plant communities or communities in wetlands, springs, seeps, intermittent streams, perennial streams, and riparian areas (including the alteration of cover and community structure, species composition, and diversity) off the project site.	X			
		• Utilizing block or check valves on both sides of the waterway or habitat to minimize product release from pipelines that transport hazardous liquids (e.g., oils) that pass through aquatic or other habitats. Such pipelines shall be constructed of double-walled pipe at river crossings.	X			
		• Considering compensatory mitigation and monitoring of significant direct, indirect, and cumulative impacts on, and loss of habitat for, special status plant and animal species.	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Ecological Resources (cont.)	ER1-1 (cont.)	• Incorporating key elements on the identification and protection of ecological resources (especially for special status species), including knowledge of required design features, in instructions to all personnel. Incorporate the knowledge into a WEAP that is provided to all project personnel prior to entering the project worksite. The WEAP shall be provided on a regular basis, so as to ensure the continued ecological awareness of the project worksite during all phases of the project's life. The base information the WEAP provides shall be reviewed and approved by the BLM prior to the issuance of a Notice to Proceed and incorporate adaptive management protocols for addressing ecological changes over the life of the project, should they occur.	X			See above response.
		• Planning for vegetation management that is consistent with applicable regulations and agency policies for the control of noxious weeds and invasive plant species (Sections 5.10.1.1.2 and 5.10.1.1.4 of the Draft Solar PEIS discuss the need for local and regional native plants in revegetation and restoration).	X			
		• Developing measures for fire management and protection that minimize the potential for a human- or facility-caused fire to affect ecological resources and that respond to natural fire situations (Sections 5.10.1.1.2 and 5.10.1.1.3 of the Draft Solar PEIS discuss the potential impacts of fire on native plant communities).	X			
		• Developing measures to investigate the possibility of revegetating parts of the solar array area.	X			
		• Designating a qualified biologist who will be responsible for overseeing compliance with all design features related to the protection of ecological resources throughout all project phases, particularly in areas requiring avoidance or containing sensitive biological resources. This person shall be reviewed and approved by the USFWS and the BLM for designation as a qualified biologist.	X			
		• Conducting pre-construction surveys, in coordination with BLM, USFWS, and state agency statutes, programs, and policies.	X			
		• Conducting seasonally appropriate inspections by a qualified biologist or team of biologists to ensure that important or sensitive species or habitats are not present in or near project areas. Attendees at the inspections may include appropriate Federal agency representatives, state natural resource agencies, and construction contractors, as appropriate. Habitats or locations to be avoided shall be clearly marked.	X			
	ER2-1	Solar facilities shall be sited and designed, and constructed to avoid, minimize, or mitigate impacts on ecological resources.				A habitat assessment, jurisdictional delineation, botanical surveys, and various wildlife surveys would be conducted to support the NEPA analysis which would analyze the effects of the Proposed Action to biological resources. Mitigation measures would be developed to avoid or minimize effects to sensitive wildlife and plant species and their habitats throughout construction, operation and maintenance and decommissioning of the Project.
		(a) Methods to avoid, minimize, or mitigate impacts on ecological resources may include, but are not limited to the following:				
		• Incorporating measures to exclude tortoises from entering solar energy development sites. Examples include, but are not limited to, tortoise-proof fencing (fence specifications should be consistent with those approved by the USFWS in the Desert Tortoise Field Manual [USFWS 2009]) and tortoise guards at all road access points where desert tortoise-proof fencing is interrupted.	X			
		• Reducing the attractiveness of solar energy development and infrastructure areas to opportunistic predators such as desert kit fox, coyotes, and common ravens. Examples include, but are not limited to, litter control programs; measures to discourage the presence of ravens on-site, including elimination of available water sources; designing structures to discourage their use as potential nest sites; use of hazing to discourage raven presence; and active monitoring of the site for presence of ravens.	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Ecological Resources (cont.)	ER2-1 (cont.)	• Considering opportunities to upgrade or maintain crossings along existing facilities (e.g., roads, railroads, and aqueducts) such that desert tortoise occupancy and connectivity are not compromised.	X			See above response.
		• Avoiding siting projects in designated critical habitat, ACECs, or other specially designated areas that are identified as necessary for special status species and habitat conservation.	X			
		• Considering siting projects on previously disturbed lands in close proximity to energy load centers to avoid and minimize impacts on remote, undisturbed lands.	X			
		• Designing project facilities to reduce the number of stream crossings within a particular stream or watershed (e.g., access roads and utilities could share common ROWs, where feasible), and locating facilities in pre-disturbed areas to reduce potential for habitat fragmentation.	X			
		• Preventing establishment and spread of invasive species and noxious weeds within the ROW and in associated areas where there is ground surface disturbance or vegetation cutting. Developers should consider siting project facilities and activities, including associated roads and utility corridors, out of occupied habitats of special status animal species.	X			
		• Determining, in coordination with appropriate Federal and state agencies, the translocation of special status species, including the steps to implement the translocation and the follow-up monitoring of populations in the receptor locations, as determined in coordination with the appropriate Federal and state agencies. Developers should plan for translocation of special status species when appropriate.	X			
		• Considering the salvage of Joshua trees (Yucca Brevifolia), other Yucca species, and most cactus species in coordination with the local BLM field office.	X			
		• Considering conducting interim and final restoration activities as soon as possible after development activities are completed in order to reduce the amount of habitat converted at any one time and to speed up the recovery to natural habitats.	X			
		• Implementing revegetation, soil stabilization, and erosion reduction measures to ensure temporary use areas are restored.	X			
		• Conducting a nesting bird survey or other necessary survey for nesting birds. If active nests are detected, the nest area shall be flagged, and no activity shall take place near the nest (at a distance determined by the BLM in coordination with the USFWS and/or appropriate state agencies), or until the appropriate agencies agree that construction can proceed with the incorporation of agreed-upon monitoring measures.	X			
		• Siting and designing project activities away from habitats occupied by special status animal species. Developers should consider establishing buffers around sensitive habitats to prevent destructive impacts associated with project activities (e.g., identified in the land use plan or substantiated by best available information or science in consultation with the BLM).	X			
		• To the extent practicable, avoiding entry into aquatic habitats, such as streams and springs, during site characterization activities until surveys by qualified biologists have evaluated the potential for unique flora and fauna to be present.	X			
		• Planning for and developing measures that identify management practices to minimize increases in nuisance animals and pests in the project area. The plans should identify nuisance and pest species that are likely to occur in the area, risks associated with these species, species-specific control measures, and monitoring requirements.	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Ecological Resources (cont.)	ER2-1 (cont.)	• Designing solar facilities to avoid, minimize, and mitigate impacts on wetlands, waters of the United States, and other special aquatic sites.	X			See above response.
		• Locating and designing individual project facilities to minimize disruption of animal movement patterns and connectivity of habitats. Section 5.10.2.1.2 of the Draft Solar PEIS discusses the potential impacts of habitat loss and fragmentation on wildlife.	X			
		• Avoiding surface water or groundwater withdrawals that adversely affect sensitive habitats (e.g., aquatic, wetland, playa, microphyll woodland, and riparian habitats) and habitats occupied by special status species.	X			
		• Designing water intake facilities to minimize the potential for aquatic organisms from surface waters to be entrained in cooling water systems.	X			
		• Demonstrating, through hydrologic modeling, that the withdrawals required for the project are not going to affect groundwater discharges that support special status species or their habitats.	X			
		• Considering the use of fencing and netting for evaporation ponds to prevent their use by wildlife.	X			
		• To the extent practicable, locating meteorological towers, solar sensors, soil borings, wells, and travel routes to avoid sensitive habitats or areas where wildlife (e.g., sage-grouse) is known to be sensitive to human activities.	X			
		• To the extent practicable, avoiding siting solar power facilities near open water or other areas that are known to attract large numbers of birds.	X			
		• To the extent practicable, placing tall structures, such as meteorological towers and solar power towers, to avoid known flight paths of birds and bats.	X			
		• Implementing current guidelines and methodologies in the design and analysis of proposed transmission facilities in order to minimize the potential for raptors and other birds to collide or be electrocuted by them.	X			
		• Placing mechanisms to visually warn birds (permanent markers or bird flight diverters) on transmission lines at regular intervals to prevent birds from colliding with the lines.	X			
		• Designing transmission line support structures and other facility structures to discourage use by raptors for perching or nesting (e.g., by using monopoles rather than lattice support structures or by use of anti-perching devices).	X			
		• Considering spanning important or sensitive habitats with transmission line conductors within the limits of standard structure design.	X			
		• Using low-water crossings (fords) during the driest time of the year. Developers should consider using rocked approaches to fords and returning the crossing to pre-existing stream channel conditions after the need for a low-water ford has passed.	X			
		• Employing noise reduction devices (e.g., mufflers) to minimize the impacts on wildlife and special status species populations. Explosives shall be used only within specified times and at specified distances from sensitive wildlife or surface waters as established by the BLM or other Federal and state agencies.	X			
		• Minimizing the number of areas where wildlife could hide or be trapped (e.g., open sheds, pits, uncovered basins, and laydown areas). Movement of a discovered special status species that is hidden or trapped is prohibited. If necessary, the animal should be moved only to remove the animal from the path of harmful activity, until the animal can escape.	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Ecological Resources (cont.)	ER2-1 (cont.)	• Implementing measures for proper trash removal and storage, such as using secured containers and periodic emptying, on the project site to reduce attractive opportunistic species, such as common ravens, coyotes, and feral cats and dogs.	X			See above response.
		• Constructing, improving, and maintaining access roads to minimize potential wildlife/vehicle collisions and facilitate wildlife movement through the project area.	X			
		• Limiting project vehicle speeds and using shuttle vans and carpooling in areas occupied by special status animal species. Traffic shall yield to wildlife, allowing safe road crossing.	X			
		• Utilizing existing access roads, utility corridors, and other infrastructure to the maximum extent feasible.	X			
		• Considering rolled and compacted on-site construction access routes to allow trucks and equipment to access construction locations.	X			
		• Minimizing vehicle use off access roads and foot traffic through undisturbed areas.	X			
		• Constructing fences (as practicable) to exclude livestock and wildlife from project facilities.	X			
		• Locating staging and parking areas within the site of the utility scale solar energy facility to minimize habitat disturbance.	X			
		• Prohibiting project personnel from bringing firearms and pets to project sites.	X			
		• Placing food refuse and other garbage in closed containers so it is not available to scavengers.	X			
		• Reducing the collection, harassment, or disturbance of plants, wildlife, and their habitats (particularly special status species) through employee and contractor education about applicable state and Federal laws.	X			
		• Advising personnel to minimize stopping and exiting their vehicles in the winter ranges of large game while there is snow on the ground.	X			
		• Coordinating with BLM and appropriate project personnel to handle unreasonable traffic delays caused by wildlife in roads. Utilizing appropriate personnel to move live, injured, or dead wildlife off roads, ROWs, or the project site.	X			
		• Reporting any vehicle-wildlife collisions. Observations of potential wildlife problems, including wildlife mortality, shall be immediately reported to the BLM or other appropriate agency authorized officer.	X			
		• Considering road closures or other travel modifications (e.g., lower speed limits, no foot travel) during crucial periods (e.g., extreme winter conditions, calving/fawning seasons, raptor nesting).	X			
		• Conducting pre-construction surveys by qualified personnel, such as a qualified biologist, in areas with potential to adversely affect special status species (Section 5.10.4.1.1 of the Draft Solar PEIS) and utilizing approved survey techniques or established species-specific survey protocols to determine the presence of special status species in the project area.	X			
		• Considering the number of qualified biological monitors (as determined by the Federal authorizing agency and USFWS) to be on-site during initial site preparation and during the construction period to monitor, capture, and relocate animals that could be harmed and are unable to leave the site on their own.	X			
		• Relocating wildlife found in harm's way from the area of the activity. Qualified personnel shall be required to relocate some animals such as rattlesnakes.	X			
		• Establishing a controlled inspection and cleaning area to visually inspect construction equipment arriving at the project area and to remove and collect seeds that may be adhering to tires and other equipment surfaces.	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Ecological Resources (cont.)	ER2-1 (cont.)	• To the extent practicable, avoiding placement of transmission towers within aquatic and wetland habitats, or other sensitive habitats such as riparian habitats. If towers must be placed within these habitats, they shall be designed and installed to not impede flows or fish passage.	X			See above response.
		• Designing necessary stream crossings to provide in-stream conditions that allow for and maintain uninterrupted movement and safe passage of fish during all project periods.	X			
		• Considering cutting trees in stream buffers that are able to grow into a transmission line conductor clearance zone within 3 to 4 years.	X			
		• Considering the use of helicopters where access roads do not exist or where access roads could not be constructed without significantly impacting habitats.	X			
	ER 3-1	The developer shall manage vegetation utilizing the principles of integrated pest management, including biological controls to prevent the spread of invasive species, per the Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States, and the National Invasive Species Management Plan, 2009. Consultation with the BLM shall be maintained through operations and maintenance of the project, employing an adaptive management strategy and modifications, as necessary and approved by the BLM.				The Project would incorporate measures from the Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States, and the National Invasive Species Management Plan, 2009 into the Project design and Integrated Weed Management Plan for the Project.
		(a) Methods to manage vegetation, including controlling for invasive species, during operations and maintenance of the project may include, but are not limited to, the following:				
		• Using certified weed-free seed and mulching.	X			
		• Cleaning vehicles to avoid introducing invasive weeds.	X			
		• Educating project personnel on weed identification, the manner in which weeds spread, and methods for treating infestations.	X			
		• Considering periodic monitoring, reporting, and immediate eradication of noxious weed or invasive species occurring within all managed areas.	X			
		• Limiting vegetation maintenance and performing maintenance mechanically rather than with herbicides.	X			
		• Considering retaining short (i.e., less than 7-in. [18-cm] tall) native species during maintenance and operation activities.	X			
		• Reducing risk of non-native and nuisance aquatic species introductions. Developers should decontaminate equipment used in surface water, especially equipment used to convey water (i.e., pumps).	X			
		• Monitoring for and eradicating invasive species.	X			
		• Reestablishing vegetation within temporarily disturbed areas immediately following the completion of construction activities.	X			
		• Focusing revegetation efforts on the establishment of native plant communities similar to those present in the vicinity of the project site. Considering dominant native species within the plant communities that exist in adjacent areas and have similar soil conditions for revegetation.	X			
		• Considering post-translocation surveys for target species (especially if the target species are special status species) and releasing individuals to protected off-site locations as approved by Federal and state agencies.	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Ecological Resources (cont.)	ER3-2	The developer shall, in consultation with the BLM and appropriate Federal, state, and local agencies, manage projects so as to minimize impacts on ecological resources during operations and maintenance of the project, employing an adaptive management strategy and modifications, as necessary and approved by the BLM.				Biological management plans would be developed for the Project to minimize impacts to biological resources during the Project's operational period. Anticipated biological resource plans include, but are not limited to: -Worker Environmental Awareness Program -Bird and Bat Conservation Strategy -Nesting Bird Management Plan -Nuisance Animal and Pest Control Plan -Integrated Weed Management Plan -Drainage, Erosion, and Sediment Control Plan -Decommissioning and Site Reclamation Plan -Wildlife Relocation Plan -Desert Tortoise Protection and Translocation Plan -Vegetation Management Plan -Site Restoration Plan. These plans would have an adaptive management component to evaluate the effectiveness of mitigation measures during that period.
		(a) Methods to minimize impacts on ecological resources during operations and maintenance of the project shall include, but are not limited to, the following:				
		• Monitoring for increase in predation of special status species (e.g., desert tortoise, Utah prairie dog, and greater sage-grouse) from ravens and other species that are attracted to developed areas and use tall structures opportunistically to spot vulnerable prey.	X			
		• Turning off all unnecessary lighting at night to limit attracting wildlife, particularly migratory birds.	X			
		(b) Other methods for maintaining compliance with ecological resource design elements during operations and maintenance of the project may include, but are not limited to, the following:				
		• Monitoring for and reporting bird mortality species (e.g., raptors) that are associated with power lines to the BLM and the USFWS.	X			
		• Monitoring for the effects of groundwater withdrawals on plant communities.	X			
		• Monitoring unavoidable impacts on wetlands and waters of the United States.	X			
		• For projects that affect desert tortoise linkages, developing and implementing a Desert Tortoise Habitat Linkage Management and Monitoring Plans and a Desert Tortoise Population Connectivity Effectiveness-Monitoring Plan as described in the USFWS Biological Opinion and Conservation Review for the Solar Energy Program (July 20, 2012).	X			
		• Removing raptor nests only if the birds are not actively using the nest.	X			
		• Considering relocating nests to nesting platforms. Reporting on relocated or destroyed nests to the appropriate Federal and/or state agencies.	X			
		• Coordinating with the USFWS and BLM project personnel in the event that a raptor nest is located on a transmission line support structure.	X			
		• Removing raven nests only when inactive (i.e., no eggs or young). The removal of raven nests may be addressed in the minimization measures that incorporate the most current USFWS guidance (e.g., FONSI, Implementation of a Desert Tortoise Recovery Plan Task: Reduce Common Raven Predation on the Desert Tortoise, 2008).	X			
		• Considering trench breakers and/or sealing the trench bottom to maintain the original wetland hydrology where a pipeline trench drains a wetland.	X			
		• Minimizing removal of deadfall or overhanging vegetation in streams for crossings.	X			
		• Installing fish screens on cooling water intakes to limit the potential for impingement impacts on organisms in surface water sources used for cooling water.	X			
		• Maintaining areas left in a natural condition during construction (e.g., wildlife crossings) in as natural a condition as possible within safety and operational constraints.	X			
		• Avoiding use of guy wires to minimize impacts on birds and bats. If guy wires are necessary, permanent markers (e.g., bird flight diverters) shall be used to increase their visibility.	X			
		• Maintaining native vegetation cover and soils and minimizing grading.	X			
		• Monitoring unavoidable impacts on wetlands and waters of the United States.	X			
		• Instructing personnel to avoid harassment and disturbance of local plants and wildlife.	X			
		• Informing personnel of the potential for wildlife interactions around facility structures.	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Ecological Resources (cont.)	ER 4-1	Reclamation of the construction and project site shall begin immediately after decommissioning to reduce the likelihood of ecological resource impacts in disturbed areas as quickly as possible.				A Decommissioning and Site Reclamation Plan and Site Restoration Plan would be developed and implemented for the Project.
		(a) Addressing ecological resource impacts during reclamation and decommissioning shall include, but is not limited to, the following:				
		• Applying design features developed for the construction phase to similar activities during the decommissioning and reclamation phase.	X			
		• Developing and implementing a Decommissioning and Site Reclamation Plan specific to the project, approved by the BLM in consultation with appropriate agencies, that incorporates adaptive management strategies.	X			
		• Using weed-free seed mixes of native shrubs, grasses, and forbs of local sources where available, as required in the Decommissioning and Site Reclamation Plan.	X			
		• Developing and implementing monitoring measures to ensure successful reclamation per the Decommissioning and Site Reclamation Plan.	X			
		• (b) Other methods to minimize ecological resource impacts during reclamation and decommissioning may include, but are not limited to, the following:	X			
		• Lightly raking and/or ripping and reseeding with seeds from low stature plant species collected from the immediate vicinity in disturbed areas.	X			
		• Reclaiming access roads when they are no longer needed, considering seasonal restrictions.	X			
		• Filling or grading holes and ruts created by the removal of structures and access roads.	X			
		• Considering maximizing area reclaimed during solar energy operations to minimize habitat loss and fragmentation.	X			
		• Maintaining a clean and orderly worksite during and after decommissioning to ensure land is clear of debris.	X			
		• Planning to return land surfaces to pre-development contours immediately following decommissioning.	X			
		• Expediting the reestablishment of vegetation for site stabilization.	X			
		• Continuing vegetation reestablishment efforts until all success criteria have been met, as identified within the Decommissioning and Site Reclamation Plan.	X			
		• Focusing revegetation on the establishment of native plant communities similar to those present in the vicinity of the project site. Considering dominant native species within the plant communities that exist in adjacent areas and have similar soil conditions for revegetation.	X			
		• Leaving the facility fencing in place for several years, or replacing it with new exclusion fencing, to assist reclamation (e.g., the fence could preclude large mammals and vehicles from disturbing revegetation efforts). Shorter times for maintaining fencing may be appropriate in cases where the likelihood of disturbance by cattle and wildlife is low.	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Air Quality and Climate	AQC 1-1	Project developers shall consult with the BLM in the early phases of project planning to help determine the potential conformance to air quality and other potential constraints.				The Project developer will consult with the BLM in the early phases of Project planning to help determine the potential conformance to air quality standards and whether specific air quality studies need to be completed. Construction and maintenance of the solar facility would be completed using equipment that meets emission standards for ADEQ and applicable EPA emissions requirements. The construction phase of the proposed Project would temporarily cause fugitive dust related to grading, vehicle traffic, drilling bore holes, and other construction activities. A dust abatement plan would be developed as part of the SWPPP and would comply with Mohave County, ADEQ, and EPA requirements. Binding agents and chemicals may be used on access roads if studies show no habitat for threatened and endangered species exist on or near the site. The following best management practices would be incorporated to minimize fugitive dust and wind erosion: • Minimize grading and vegetation removal. • In areas where vegetation removal and/or grading is required, delay the process of vegetation removal to the maximum time required before module installation. • Limit vehicle speed on roads to 15 mph. • Apply water to disturbed soil areas using water trucks to control dust and maintain proper moisture levels for soil compaction. Minimize over application of water to prevent runoff and ponding. • Suspend excavation and grading during periods of high wind. • Cover all trucks hauling soil or other loose material in and out of the proposed Project site. • Use gravel or aggregate where access roads meet paved roads to limit offsite disturbance and prevent mud and dirt track-out.
		(a) Assessing conformance to air quality and other related constraints shall include, but is not limited to, the following:				
		• Identifying air quality and other related constraints associated with the proposed project site. In coordination with BLM, the appropriate state and local air regulatory authorities shall be consulted to identify air quality and related constraints and requirements.	X		X	
		• Determining any applicable Federal, state, and local laws and regulations related to air quality.	X		X	
		• Considering effects on particulate matter PM10 and PM2.5 from the solar energy project and its facilities.	X		X	
		• Evaluating the cumulative impacts to air quality and air quality related values in Class I areas. Such an analysis should include the Reasonably Foreseeable Development Scenario from the Solar PEIS for all SEZs within the region of a proposed project.		X		
		• Evaluating potential contributions to air quality impacts as part of the environmental impact analysis for the project and considering options to avoid, minimize and/or mitigate adverse impacts in coordination with the BLM.	X			
	AQC 2-1	Solar facilities shall be sited and designed, and constructed to minimize impacts on air quality.				An air quality assessment would be conducted as part of the NEPA analysis and mitigation measures would be implemented to reduce effects. The following best management practices would be incorporated to minimize fugitive dust and wind erosion: • Minimize grading and vegetation removal. • In areas where vegetation removal and/or grading is required, delay the process of vegetation removal to the maximum time required before module installation. • Limit vehicle speed on roads to 15 mph. • Apply water to disturbed soil areas using water trucks to control dust and maintain proper moisture levels for soil compaction. Minimize over application of water to prevent runoff and ponding.
		(a) Methods to minimize air quality impacts shall include, but are not limited to, the following:				
		• Using equipment that meets emission standards specified in the state code of regulations and meets the applicable EPA Tier 3 and Tier 4 emissions requirements.	X			
		• Preparing a Dust Abatement Plan for the solar facilities that considers multiple methods for dust suppressant (i.e., water, paving, gravel, and/or regulation-compliant palliatives).	X			
		(b) Other methods to minimize air quality impacts and related constraints may include, but are not limited to, the following:				
		• Considering surfacing access roads with aggregate that is hard enough that vehicles cannot crush it.	X			
		• Managing unpaved roads, disturbed areas (e.g., areas of scraping, excavation, backfilling, grading, and compacting), and loose materials generated during project activities as frequently as necessary to effectively minimize fugitive dust generation.	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Air Quality and Climate (cont.)	AQC 2-1 (cont.)	• Using machinery that has air-emission-control devices as required by Federal, state, and local regulations or ordinances.	X			Other measures may include: • Suspend excavation and grading during periods of high wind. • Cover all trucks hauling soil or other loose material in and out of the proposed Project site. • Use gravel or aggregate where access roads meet paved roads to limit offsite disturbance and prevent mud and dirt track-out.
		• Limiting travel to stabilized roads.	X			
		• Considering paving the main access road to the main power block and the main maintenance building.	X			
		• Enforcing posted speed limits (e.g., 10 mph [16 km/hour]) within the construction site to minimize airborne fugitive dust.	X			
		• Covering vehicles that transport loose materials as they travel on public roads, using dust suppressants on truck loads, and keeping loads below the freeboard of the truck bed.	X			
		• Installing wind fences around disturbed areas that could affect the area beyond the site boundaries (e.g., nearby residences).	X			
		• Suspending soil disturbance activities and travel on unpaved roads during periods of high winds. Site-specific wind speed thresholds shall be determined on the basis of soil properties determined during site characterization.	X			
		• Utilizing compatible native vegetative plantings to limit dust generation from stockpiles that will be inactive for a relatively long period.	X			
		• To the extent practicable, avoiding chemical dust suppressants that emit volatile organic compounds within or near ozone nonattainment areas.	X			
		• Considering use of ultra-low sulfur diesel with a sulfur content of 15 parts per million (ppm) or less for project vehicles.	X			
		• Limiting the idling time of equipment to no more than 5 minutes, unless idling must be maintained for proper operation (e.g., drilling, hoisting, and trenching).	X			
		• Minimizing use of dust palliatives in areas of close proximity to sensitive soil and streams.	X			
		• Accessing transmission lines from public roads and designated routes to minimize fugitive dust emissions.	X			
		• Minimizing on-site vehicle use and requiring routine preventive maintenance, including tune-ups to meet the manufacturer's specifications, to ensure efficient combustion and minimal emissions.	X			
		• Encouraging use of newer and cleaner equipment that meets more stringent emission controls.	X			
		• Limiting access to the construction site and staging areas to authorized vehicles only through the designated treated roads.	X			
		• Staging construction to limit the areas exposed at any time.	X			
		• Considering inspection and cleaning of tires of all construction related vehicles to ensure they are free of dirt before they enter paved public roadways.	X			
		• Cleaning up visible trackout or runoff dirt on public roadways resulting from the construction site (e.g., street vacuum/ sweeping).	X			
		• Salvaging topsoil from all excavations and construction activities during reclamation or interim reclamation and reapplying to construction areas not needed for facility operation as soon as activities in that area have ceased.	X			
		• Considering atmospheric conditions when planning construction activities to minimize dust.	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Air Quality and Climate (cont.)	AQC 2-1 (cont.)	• To the extent practicable, avoiding ground disturbance from construction-related activities in areas with intact biological soil crusts and desert pavement. Developers should salvage soil crusts for restoration, on the basis of recommendations by the BLM once construction has been completed.	X			
		• Incorporating environmental inspection and monitoring measures into the POD and other relevant plans to monitor and respond to air quality during construction, operations, and decommissioning of a solar energy development, including adaptive management protocols.	X			
	AQC 3-1	Compliance with the terms and conditions for air quality shall be monitored by the project developer. Consultation with BLM shall be maintained through operations and maintenance of the project, employing an adaptive management strategy and modifications, as necessary and approved by the BLM.				Best management practices and measures to reduce the effects of emissions and fugitive dust would be implemented throughout all phases of the Project, including operations, maintenance and decommissioning. BLM-approved dust palliatives would be utilized on unpaved roads, speed limits would be reduced to 15 mph, and best available control technology would be utilized to control emission sources.
		(a) Methods for maintaining compliance with the terms and conditions for air quality during operations and maintenance shall include, but are not limited to, the following:				
		• Monitoring and treating areas that have been graded, scraped, bladed, compacted, or denuded of vegetation ahead of actual construction/assembly.	X			
		(b) Other methods to maintain compliance with the terms and conditions for air quality during operations and maintenance may include, but are not limited to, the following:				
		• Reapplying palliatives or water as necessary for effective fugitive dust management.	X			
		• Considering use of design features for portions of facilities maintained to be free of vegetation during operations, and use of the dust control design features that were listed above under AQC2-1 to limit fugitive dust emissions during the construction phase to minimize fugitive dust emissions from bare surfaces and unpaved access roads.	X			
		• Ensuring compliance of all combustion sources with state emission standards (e.g., best available control technology requirements).	X			
	AQC 4-1	Reclamation of the site shall incorporate the design features listed above for construction under AQC2-1 to reduce the likelihood of air quality impacts associated decommissioning.	X			
Visual Resources	VR 1-1	Project developers shall consult with the BLM in the early phases of project planning to help determine the proposed project's potential conformance to VRM class designations and other potential constraints, thus avoiding costly unforeseen planning implications and re-design.				The Project area and most of the gen-tie is mapped as VRM Class IV. A small portion of the gen-tie around Colorado River crossing is in Class III; however, the alignment of the gen-tie would take advantage of existing corridors to the extent possible. VRM Class IV is the lowest VRM class and allows for major modification to the existing landscape character. Although the Project is in VRM Class IV, it is located in proximity to the Historic Route 66, which is managed as a Type 1 National Back Country Byway and is also a state-designated scenic byway. These designations are given to routes that have high scenic, historic, archaeological, or other public interest values. This particular byway was designated on February 8, 1993, by the BLM State Director and represents one of the last and best-preserved segments of the original U.S. 66, one of America's first transcontinental highways.
		(a) Assessing conformance to VRM class designations and identifying visual resource conflicts shall include, but is not limited to, the following:				
		• Consulting with the appropriate BLM field office for VRM class designations and associated management objectives during the early phases of project planning, including those related to project site selection, planning, and design. The BLM visual resource inventory (VRI) class values—including those for scenic quality, sensitivity, and distance zones—shall also be factored into the project planning, design, and decision making.	X			
		• Analyzing how the visual values influence project design and how the impacts on these values will be minimized through consideration for the proposed project location and its relationship to the surrounding viewshed.	X			
		• Including a qualified professional, such as a landscape architect, with demonstrated experience of the BLM's VRM policies and procedures as part of the developer's and the BLM's respective planning teams, to evaluate visual resource issues as project siting options are considered.	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Visual Resources (cont.)	VR 1-1 (cont.)	• Consulting with the locally based public to provide input on identifying important visual resources in the project area and on the siting and design process. The public shall be involved and informed about the visual site design elements of the proposed solar energy facilities.	X			The impact of Project activities would be minimized through careful siting, minimal disturbance, and repeating the basic elements of form, line, color, and texture within the existing setting. A baseline visual resources assessment would be prepared as part of the NEPA process to determine if mitigation would be required to reduce the visual impacts in the Project area. Mitigation could include usage of paint colors for the O&M buildings that blend with the desert environment, development of a lighting plan, and use of non-specular conductor for the gen-tie.
		• Consulting on viewshed protection objectives and practices with the respective land management for landscapes having special designations, such as Wilderness Areas, National Scenic and Historic Trails, Wild and Scenic Rivers, National Parks, and National Wildlife Refuges located within the project's viewshed. Developers shall demonstrate a concerted effort to reconcile conflicts while recognizing that the BLM retains authority for final decisions determining project approval and conditions.	X			
		• For applications that include artifacts and remnants of a National Historic Trail, are located within the viewshed of a National Historic Trail's designated centerline, or include or are within the viewshed of a trail eligible for listing on the National Register of Historic Places (NRHP) by virtue of its important historical or cultural values and integrity of setting, evaluating the potential visual impacts on the trail associated with the proposed project; avoiding, minimizing, and/or mitigating adverse effects through the Section 106 consultation process; and identifying appropriate mitigation measures for inclusion as stipulations in the POD.	X			
		• Considering landscape settings observed from a unit of the National Park system, National Historic Sites, National Trails, and cultural resources of tribal concern that may be a part of the historic context contributing to the historic significance of the site or trail.	X			
		• Project developers are encouraged to obtain topographical data of engineering-design quality and use digital terrain mapping tools at a landscape-viewshed scale for project location selection, site planning and design, visual impact analysis, and visual impact mitigation planning and design. The digital terrain mapping tools shall be at a resolution and contour interval suitable for site design and accurate placement of proposed developments into the digital viewshed. Visual simulations shall be prepared and evaluated in accordance with BLM Handbook H-8431-1 and other agency directives, to create spatially accurate and realistic depictions of the appearance of proposed facilities. Simulations shall depict proposed project facilities from key observation points (KOPs) and other visual resource sensitive locations.	X			
		• Conducting outreach through public forums as necessary to disseminate visual resource information through methods such as offering organized tours of operating solar energy development projects, and using simulations in public presentations.	X			
		• Performing visual mitigation planning and design through field assessments, applied global positioning system (GPS) technology, photo documentation, use of computer-aided design and development software, three-dimensional GIS modeling software, and imaging software to depict visual simulations to reflect a full range of visual resource mitigation measures.	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Visual Resources (cont.)	VR 2-1	Solar facilities shall be sited and designed to minimize glint and glare.				The potential for visual and safety impacts as a result of glint or glare will be assessed in the NEPA analysis for the Project. A baseline visual resources assessment would be prepared as part of the NEPA process to determine if mitigation would be required to reduce the visual impacts in the Project area. Mitigation for glint or glare could include the use of non-reflective signage, non-specular conductor on the gen-tie, and minimizing the effects of lighting on buildings or other structures.
		(a) Identification of glint and glare effects shall include, but is not limited to, the following:				
		• Assessing and quantifying potential glint and glare effects and determining the potential safety and visual impacts associated with glint and glare using appropriate and commonly accepted software, procedures, and past project examples.	X			
		• Having qualified individuals conduct assessments for glint and glare.	X			
		(b) Methods to minimize glint and glare effects may include, but are not limited to, the following:				
		• Limiting use of signs and project construction signs. Beyond those required for basic facility and company identification for safety, navigation, and delivery purposes, commercial symbols or signs and associated lighting on buildings and other structures should be prohibited.	X			
		• Utilizing retro-reflective or luminescent markers in lieu of permanent lighting.	X			
		• Minimizing off-site visibility of all commercial symbols and signs and associated lighting. Necessary signs should be made of non-glare materials and utilize unobtrusive colors. The reverse sides of signs and mounts should be painted or coated using a suitable color selected from the BLM Standard Environmental Color Chart to reduce contrasts with the existing landscape. However, placement and design of any signs required by safety regulations must conform to regulatory requirements.	X			
		• Considering off-site mitigation of visual impacts. In some situations, off-site mitigation may serve as a means to offset and/or recover the loss of visual landscape integrity. For example, off-site mitigation could include reclaiming unnecessary roads, removing abandoned buildings, reclaiming abandoned mine sites, putting utility lines underground, rehabilitating and revegetating existing erosion or disturbed areas, or establishing scenic conservation easements. Appropriate off-site mitigation will be determined on a project specific basis in consultation with the BLM.	X			
	VR 2-2	Solar facilities shall be sited and designed to minimize night-sky effects. (a) Identification of night-sky effects shall include, but is not limited to, the following:				The Project will not result in a significant source of lighting. A baseline visual resources assessment would be prepared as part of the NEPA process to determine if mitigation would be required to reduce the visual impacts as a result of lighting in the Project area. Should nighttime construction be required for safety purposes, measures would be taken to reduce lighting effects such as pointing lights downward, using the lowest illumination possible to ensure safety, and using shielding to focus lighting on the activities at hand to avoid spillover onto surrounding lands.
		• Assessing and quantifying potential lighting impacts on the night sky and nocturnal wildlife, while providing lighting for hazard marking, safety, and other necessary site needs.				
		• Conducting assessments for night-sky effects by qualified individuals using appropriate and commonly accepted procedures and past project examples.				
		(b) Methods to minimize night-sky effects may include, but are not limited to, the following:				
		• Using minimum intensity lighting that meets safety criteria. When accurate color rendition is not required (e.g., roadway, basic security), lighting shall be amber in color, using low-pressure sodium lamps, yellow LED lighting, or equivalent. When white light is required for accurate color rendition, it shall be equal to or less than 3500° Kelvin color temperature. Bluish white lighting is discouragVed.				
		• Prohibiting the use of red or white strobe lighting unless the BLM approves its use because of conflicting mitigation requirements.				
		• Fully shielding all permanent lighting (e.g., full cut-off), except for collision markers required by the FAA or other emergency lighting triggered by alarms.				
		• Mount lighting so that no light is emitted above an imaginary horizontal plane through the fixture.				
		• Considering lighting control through timers, sensors, dimmers, or switches that are available to facility operators.				

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Visual Resources (cont.)	VR 2-2 (cont.)	• Considering vehicle-mounted lights over permanently mounted lighting for nighttime maintenance activities. When possible, such vehicle-mounted lighting shall be aimed toward the ground to avoid causing glare and skyglow.				See above response.
	VR 2-3	The siting and design of solar facilities, structures, roads, and other project elements shall explore and document design considerations for reducing visual dominance in the viewshed and shall comply with the VRM class objectives in conformance with VR1-1.				The impact of Project activities would be minimized through careful siting, minimal disturbance, and repeating the basic elements of form, line, color, and texture within the existing setting. A baseline visual resources assessment would be prepared as part of the NEPA process to determine if mitigation would be required to reduce the visual impacts in the Project area. Mitigation could include usage of paint colors for the O&M buildings that blend with the desert environment, development of a lighting plan, and use of non-specular conductor for the gen-tie.
		(a) Assessing visual dominance shall include, but is not limited to, the following:				
		• Conforming with VRM class objectives through the use of the BLM contrast rating procedures defined in BLM Handbook H-8431-1. Visual contrast rating mitigation of visual impacts shall abide by the requirements outlined in the handbook and other BLM directives. Revised project plans and simulations are to be reevaluated by using the contrast rating procedures.	X			
		• Selecting KOPs by first determining the extent of the viewshed using the viewshed modeling tools previously cited under VR1-1. The viewshed modeling shall illustrate the areas from which the proposed facilities may be seen out to 25 mi (40 km). From within the areas, KOPs are to be selected at places where people would be expected: scenic overlooks, roads, trails, campgrounds, recreationally active river corridors, residential areas, etc. For the purpose of conducting a visual contrast rating evaluation, the number of KOPs would be reduced to those that serve as the best representations for demonstrating conformance to the respective VRM class objectives. The BLM is consulted on the KOP selections, and reserves the right to require additional KOPs to further determine the extent of visual impacts and conformance to VRM class objectives.	X			
		• Integrating visual design elements into the construction plans, details, drawings, and specifications for the project.	X			
		• Incorporating facility siting measures to minimize the profile of all facility-related structures to reduce visibility and visual dominance within the viewshed, particularly for facilities proposed within the foreground/middle ground distance zone (0–5 mi [0–8 km]) of sensitive viewing locations.	X			
		(b) Measures to minimize visual dominance may include, but are not limited to, the following:				
		• Using existing topography and vegetation as screening or partially screening devices.	X			
		• Incorporating visual design elements when planning for grubbing and clearing, vegetation thinning and clearing, grading, revegetation, drainage, and structural measures.	X			
		• Minimizing visual dominance of projects by siting projects outside the viewsheds of KOPs or by diminishing dominance through maximizing visible separation with distance.	X			
		• Avoiding, when feasible, locating facilities near visually prominent landscape features (e.g., knobs and waterfalls) that naturally draw an observer's attention.	X			
		• Avoiding visual "skylining" by placing structures, transmission lines, and other facilities away from ridgelines, summits, or other locations where they would silhouette against the sky from important viewing locations; however, consideration should be given to the potential for increased ground disturbance and other resource impacts.	X			
		• Designing linear features (e.g., ROWs and roads) to follow natural land contours rather than straight lines; however, consideration should be given to the potential for increased ground disturbance and other resource impacts.	X			
		• Locating linear developments (e.g., transmission lines, pipelines, roads) at the edges of natural clearings or natural lines of transition between vegetation type and topography.	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Visual Resources (cont.)	VR 2-3	• Considering alternative means of access in visually sensitive areas, to preserve the natural landscape conditions between tower locations.	X			See above response.
		• Minimizing vegetation and ground disturbance, and taking advantage of existing clearings where feasible.	X			
		• Reducing cut and fill for structures and roads by design and location. Retaining walls, binwalls, half bridges, etc., can be used to reduce cut and fill.	X			
		• Considering rounded and varied road-cut slopes and the cut-and fill pitches to reduce contrasts in form and line; encouraging slope cuts to preserve specimen trees and nonhazardous rock outcroppings.	X			
		• Considering sculpting and shaping natural or previously excavated bedrock landforms when excavation of these landforms is required. For example, percent backslope, benches, and vertical variations may be integrated into a final landform that repeats the natural shapes, forms, textures, and lines of the surrounding landscape. The earthen landform may be integrated and transitioned into the excavated bedrock landform. Sculpted rock face angles, bench formations, and backslope could adhere to the natural bedding planes of the natural bedrock geology. The color contrast from the excavated rock faces may be removed by color treating with a rock stain. Native vegetation or a mix of native and non-native species (if necessary to ensure successful revegetation) could be reestablished with the benches and cavities created within the created bedrock formation.	X			
		• Designing and installing natural-looking earthwork landforms, or vegetative or architectural screening to minimize visual impacts. Considering shape and height of earthwork landforms for adaptation to the surrounding landscape.	X			
		• Repeating the size, shape, and characteristics of naturally occurring openings in vegetation for facilities, structures, roads, etc.	X			
		• Burying electrical collector lines, pipelines, and communication and local utility lines to minimize additional surface disturbance where feasible (e.g., along roads or other paths of surface disturbance).	X			
		• Minimizing visual impacts associated with solar energy and electricity transmission projects by choosing appropriate building and structural materials and surface treatments (i.e., paints or coatings designed to reduce contrast and reflectivity). A careful study of the site should be performed to identify appropriate colors and textures for materials; both summer and winter appearance shall be considered, as well as seasons of peak visitor use. Materials and surface treatments shall repeat and/or blend with the existing form, line, color, and texture of the landscape.	X			
		• Considering the typical viewing distances and landscape when choosing colors. Appropriate colors for smooth surfaces often need to be two to three shades darker than the background color to compensate for shadows that darken most textured natural surfaces. The BLM Standard Environmental Color Chart CC-001 and guidance shall be referenced when selecting colors.	X			
		• Selecting appropriately colored materials for structures, or stains/coatings to blend with the project's backdrop. Materials, coatings, or paints having little or no reflectivity shall be used whenever possible.	X			
		• Color treating solar panel/mirror/heliostat backs/supports to reduce visual contrast with the landscape setting.	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Visual Resources (cont.)	VR 2-3	• Color treating solar towers to reduce visual contrast.	X			See above response.
		• Considering multiple-color camouflage technology application projects within sensitive viewsheds and with a visibility distance that is between 0.25 and 2 mi (0.40 and 3.20 km).	X			
		• Matching aboveground pipelines' paint or coating to their surroundings.	X			
		• Considering the appropriate choice of monopoles versus lattice towers for a given landscape setting to further reduce visual impacts.	X			
		• Utilizing nonspecular conductors and nonreflective coatings on insulators for electricity transmission/distribution projects.	X			
		• Minimizing the use of signs. Where signs are necessary, they shall be made of non-glare materials and utilize unobtrusive colors. The reverse sides of signs and mounts shall be painted or coated by using the most suitable color selected from the BLM Standard Environmental Color Chart; however, placement and design of any signs required by safety regulations must conform to regulatory requirements.	X			
		• Clearly delineating construction boundaries and minimizing areas of surface disturbance; preserving vegetation to the greatest extent possible; utilizing undulating surface disturbance edges; stripping, salvaging, and replacing topsoil; using contoured grading; controlling erosion; using dust suppression techniques; and stabilizing exposed soils.	X			
		• Preserving existing rocks, vegetation, and drainage patterns to the maximum extent possible.	X			
		• Employing brush-beating, mowing, or the use of protective surface matting rather than removing vegetation.	X			
		• Considering mulching and spreading slash from vegetation removal over fresh soil disturbances.	X			
		• Avoiding leaving slash piles in sensitive viewing areas.	X			
		• Considering restoration of disturbed soils by use of weed-free native grasses, forbs, and shrubs representative of the surrounding and intact native vegetation composition and/or using non-native species, if necessary, to ensure successful revegetation.	X			
		• Reducing the visual color contrast of graveled surfaces with approved color treatment practices.	X			
		• Considering segregating and spreading topsoil from cut-and-fill activities on freshly disturbed areas to reduce color contrast.	X			
		• Avoiding leaving topsoil piles in sensitive viewing areas.	X			
		• Spreading excess cut and fill material within project disturbance area and vegetate per approved restoration plan requirements while maintaining natural drainage pathways. Where soil cannot reasonably be spread within project disturbance areas, excess cut-and-fill materials should be hauled out to minimize ground disturbance and impacts from piles.	X			
		• Removing stakes and flagging from the construction area after completion of construction.	X			
	VR 2-4	Project developer shall perform a pre-construction meeting with BLM or their designated visual/scenic resource specialists, such as a landscape architect, to coordinate the project construction VRM mitigation strategy. Final design and construction documents will be reviewed with regard to the visual mitigation elements, assuring that requirements and commitments are adequately addressed. The review of construction documents will include, but not be limited to, grading, drainage, revegetation, vegetation clearing, and feathering.	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Visual Resources (cont.)	VR 3-1	Compliance with the terms and conditions for VRM mitigation shall be monitored by the project developer. Consultation with the BLM shall be maintained through operations and maintenance of the project, employing an adaptive management strategy and modifications, as necessary and approved by the BLM.				See above response.
		(a) Maintaining the visual resource design elements during operations/maintenance shall include, but is not limited to, the following:				
		• Maintaining revegetated surfaces until a self-sustaining stand of vegetation is reestablished and visually adapted to the undisturbed surrounding vegetation. No new disturbance shall be created during operations without completion of a VRM analysis and approval by the BLM authorized officer.	X			
		• Keeping painted and color-treated facilities in good repair and repainting when the color fades or flakes.	X			
		• Using interim restoration during the operating life of the project as soon as possible after land disturbances.	X			
		• Including dust abatement and noxious weed control in maintenance activities.	X			
		• Deploying and operating mirrors/heliostats to avoid high intensity light (glare) reflected off-site. Where off-site glare is unavoidable and project site/off-site spatial relationships favor effective results, fencing with privacy slats or similar screening materials should be considered.	X			
	VR 4-1	Reclamation of the construction site shall begin immediately after construction to reduce the likelihood of visual contrasts associated with erosion and invasive weed infestation and to reduce the visibility of temporarily disturbed areas as quickly as possible. Developers shall coordinate with BLM in advance of interim/final reclamation to have BLM or other designated visual/scenic resource specialists, such as a landscape architect, on-site during reclamation to work on implementing visual resource requirements and BMPs.				See above response.
		(a) Methods for minimizing visual contrast associated with reclamation and decommissioning of the project may include, but are not limited to, the following:				
		• Including treatments, such as thinning and feathering vegetation along project edges, enhanced contour grading, salvaging landscape materials from within construction areas, special revegetation requirements (e.g., use of mix of native and nonnative species).	X			
		• Designing and implementing restoration of the project area to predevelopment visual conditions and the inventoried visual quality rating, or to that of the surrounding landscape setting conditions to the best extent possible or to conditions agreed upon by the BLM.	X			
		• Removing aboveground and near-ground-level structures. Some structures may need to be removed to a level below the ground surface to allow reclamation/restoration.	X			
		• Considering contouring soil borrow areas, cut-and-fill slopes, berms, water bars, and other disturbed areas to approximate naturally occurring slopes. Contouring to a rough texture would trap seeds and discourage off-road travel, thereby reducing associated visual impacts. Cut slopes can be randomly scarified and roughened to reduce texture contrasts with existing landscapes and aid in revegetation.	X			
		• Utilizing native vegetation to establish a composition consistent with the form, line, color, and texture of the surrounding undisturbed landscape.	X			
		• Reapplying stockpiled topsoil to disturbed areas, where applicable, or using a mix of native and non-native species if necessary to ensure successful revegetation.	X			
		• Removing or burying gravel and other surface treatments.	X			
		• Restoring rocks, brush, and forest to approximate pre-existing visual conditions.	X			
		• Integrating feathering edges of vegetation to reduce form and line contrasts with the existing landscapes.	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Noise	N 1-1	Project developers shall consult with the BLM in the early phases of project planning to assess and minimize the proposed project's noise impacts on sensitive noise receptors.				Noise at the Project area would be limited to initial construction, maintenance, and decommissioning activities. The day-to-day operation of the solar facility is expected to generate only low levels of noise. During construction, the Project would employ noise mitigation if any noise-sensitive receptors are identified.
		(a) Assessing noise impacts shall include, but is not limited to, the following:				
		• Taking measurements to assess the existing background ambient sound levels both within and outside the project site and comparing these with the anticipated noise levels proposed at the facility. The ambient measurement protocols of all affected land management agencies shall be considered and utilized. Nearby residences and likely sensitive human and wildlife receptor locations shall be identified.	X			
		• Conducting assessments for noise impacts by qualified individuals using appropriate and commonly accepted software, procedures, and past project examples.	X			
		• Evaluating impacts from noise as part of the environmental impact analysis for the project and considering options to avoid, minimize, and/or mitigate adverse impacts in coordination with the BLM	X			
	N 2-1	The siting and design of solar facilities, structures, roads, and other project elements shall seek to minimize impacts on sensitive noise receptors.				
		(a) Methods to minimize project impacts on sensitive noise receptors may include, but are not limited to, the following:				
		• Enclosing noisy equipment when located near sensitive receptors.	X			
		• Posting warning signs at high-noise areas and implementing a hearing protection program for work areas with noise in excess of 85 dBA.	X			
		• Implementing a noise complaint process and hotline, including documentation, investigation, evaluation, and resolution of legitimate project-related noise complaints.	X			
		• Maintaining project equipment in accordance with manufacturers' specifications. For example, suitable mufflers and/or air-inlet silencers shall be installed on all internal combustion engines (ICEs) and certain compressor components.	X			
		• Limiting low-altitude (under 1,500 ft [457 m]) helicopter flights for installation of transmission lines near noise-sensitive receptors to locations where only helicopter activities can perform the installation.	X			
		• Scheduling construction activities to minimize disruption to nearby residents and existing operations surrounding the project areas.	X			
		• Planning noisy construction activities near sensitive receptors to take place during the least noise-sensitive times of day (i.e., daytime between 7 a.m. and 7 p.m.), and on weekdays.	X			
		• Coordinating individual noisy activities to occur at the same time to reduce the frequency of site boundary noise.	X			
		• Implementing noise control measures (e.g., erection of temporary wooden noise barriers) where activities are expected near sensitive receptors.	X			
		• Notifying nearby residents in advance of noisy activities, such as blasting or pile driving, before and during the construction period.	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Noise (cont.)	N 3-1	Compliance with the terms and conditions for noise shall be monitored by the project developer. Consultation with the BLM shall be maintained through operations and maintenance of the project, employing an adaptive management strategy and modifications as necessary and approved by the BLM.				See above response.
		(a) Methods for maintaining compliance with the noise design elements during operations and maintenance may include, but are not limited to, the following:				
		• Managing noise levels from cooling systems and dish engine technology so that levels at the nearest residences and sensitive receptor areas near the facility boundary are kept within applicable guidelines.	X			
		• Operating vehicles traveling within and around the project area in accordance with posted speed limits to reduce vehicle noise levels.	X			
		• Scheduling activities to minimize disruption to nearby residents and existing operations surrounding the project areas.	X			
		• Notifying nearby residents in advance of noisy activities, such as blasting or pile driving, before and during the reclamation and decommissioning activities.	X			
		• Monitoring and maintaining transformer noise levels. Considering installation of new transformers with reduced flux density, which generate noise levels as much as 10 to 20 dB lower than National Electrical Manufacturers Association (NEMA) standard values, or use of barrier walls, partial enclosures, or full enclosures to shield or contain the noise.	X			
	N 4-1	Reclamation of the construction site shall minimize the project's noise impacts on sensitive noise receptors.	X			
Paleontological Resources	P 1-1	Project developers shall coordinate with the BLM early in the project planning process to identify and minimize impacts on paleontological resources.				The PFYC used by BLM has identified that the Project site is in an area classified as PFYC Class 4, which has a high potential to produce fossils. To further evaluate the potential for the project to impact significant fossils, the applicant would conduct a paleontological records search and pedestrian survey of the project footprint as part of the technical studies to support the NEPA process, which would provide BLM a basis for developing mitigation measures commensurate with the paleontological sensitivity of the Project area.
		(a) Identifying paleontological resources shall include, but is not limited to, the following:				
		• Determining in coordination with the BLM whether paleontological resources exist in a project area.	X			
		• Determining the potential presence of paleontological resources on the basis of the following: the sedimentary context of the area and its potential to contain paleontological resources (potential fossil yield classification [PFYC] class, if it is available); a records search of published and unpublished literature for past paleontological finds in the area; coordination with paleontological researchers working locally in potentially affected geographic areas and geologic strata; and/or depending on the extent of existing information, the completion of a paleontological survey.	X			
		(b) Methods to minimize impacts on paleontological resources may include, but are not limited to, the following:				
		• Instituting BMPs, such as training/education programs (see WEAP bullet below), to reduce the amount of inadvertent destruction to paleontological sites (see also P2-2 below). Project-specific management practices shall be established in coordination with the BLM, incorporating BLM IM 2009-011.	X			
		• Planning for management and mitigation of paleontological resources of the project area for areas of known presence or high potential of presence.	X			
		• Identifying measures to prevent potential looting/vandalism or erosion impacts and addressing the education of workers and the public to make them aware of the consequences of unauthorized collection of fossils on public land.	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Paleontological Resources (cont.)	P 1-1 (cont.)	• Incorporating key elements to mitigate the impacts on paleontological resources into a WEAP that is provided to all project personnel prior to entering the project worksite. The WEAP shall be provided on a regular basis, covering multiple resources, to ensure the awareness of key mitigation efforts for paleontological resources of the project worksite during all phases of the project's life. The base information the WEAP provides shall be reviewed and approved by the BLM prior to the issuance of a Notice to Proceed and shall incorporate adaptive management protocols for addressing changes over the life of the project, should they occur.	X			See above response.
		• Incorporating environmental inspection and monitoring measures into PODs and other relevant plans to monitor and respond to paleontological resource impacts during construction, operations, and decommissioning of a solar energy development, including adaptive management protocols.	X			
	P 2-1	Project developers shall use a qualified paleontological monitor during excavation and earthmoving activities in areas with high potential for paleontological resources.	X			
	P 2-2	Project developers shall notify the BLM immediately upon discovery of fossils. Work shall be halted at the fossil site and continued elsewhere until qualified personnel, such as a paleontologist, can visit the site, determine the significance of the find, and, if significant, make site-specific recommendations for collection or other resource protection. The area of the discovery shall be protected to ensure that the fossils are not removed, handled, altered, or damaged until the site is properly evaluated and further action determined.	X			
Cultural Resources	CR 1-1	Project developers shall coordinate with the BLM early in the planning process to identify and minimize cultural resource impacts; the BLM will consult with other Federal, tribal, state, and local agencies as appropriate.				A Class I (records search) cultural resources inventory of the Project area and a surrounding 1-mile buffer area was completed on February 16, 2023, at the Arizona State Museum, the BLM Kingman Field Office and the Lake Havasu Field Office. The records search identified 14 prior investigations within the study area, of which four intersect the project area. Within the Project area and a surrounding 1-mile buffer, 47 cultural resources were identified, with 21 of those resources being within the Project area. A full Class I cultural resources inventory study is currently in progress and will be provided to the BLM under separate cover. To minimize impacts to prehistoric, Tribal, and historic resources, a Class III cultural inventory and report would be conducted for the Project in support of NEPA compliance. The results of the Class I file and literature search will shape the methods and extent of pedestrian cultural surveys on the Project site and site recordation efforts. As part of the proposed Project, consultation with the State Historic Preservation Office and Tribes would be required in compliance with Section 106 of the National Historic Preservation Act. Survey data collected and associated reports will be incorporated as part of the final NEPA analysis and approval process. The NEPA analysis would assess the potential for impacts to cultural resources and mitigation measures would be developed to reduce those impacts.
		(a) Determining cultural resource impacts shall include, but is not limited to, the following:				
		• Initiating Section 106 consultations between the BLM, SHPOs, Indian tribes, and other consulting parties early in the project planning process. Thresholds for the involvement of and review by the Advisory Council on Historic Preservation (ACHP) include non-routine interstate and/or interagency projects or programs; undertakings adversely affecting National Historic Landmarks; undertakings that the BLM determines to be highly controversial; and undertakings that will have an adverse effect and with respect to which disputes cannot be resolved through formal agreement between the BLM and SHPO, such as a Memorandum of Agreement (MOA).	X			
		• Conducting site-specific Section 106 review for individual projects. The BLM will require the completion of inventory, evaluation, determinations of effect, and treatment in accordance with the Solar PA. This Solar PA is titled "Programmatic Agreement among the United States Department of the Interior, Bureau of Land Management, the Arizona State Historic Preservation Officer, the California State Historic Preservation Officer, the Colorado State Historic Preservation Officer, the New Mexico State Historic Preservation Officer, the Nevada State Historic Preservation Officer, the Utah State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding Solar Energy Development on Lands Administered by the Bureau of Land Management."	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Cultural Resources (cont.)	CR 1-1 (cont.)	(b) General methods to minimize cultural resource impacts may include, but are not limited to, the following:				Mitigation measures could include worker environmental awareness training, preparation and implementation of a Cultural Resources Management Plan, and cultural and tribal monitoring in areas of high sensitivity.
		• If historic properties that could be adversely affected are present in the project location, developing an MOA tiered to the Solar PA to address the mitigation steps that will be followed to avoid, minimize, or mitigate adverse effects on historic properties.	X			
		• Where the BLM determines that a specific proposed solar energy project has the potential to adversely affect historic properties but those effects cannot be determined prior to its approval, the BLM may elect to review a proposed solar energy project using an undertaking-specific PA executed pursuant to 36 CFR 800.6, instead of following the procedures outlined in the overarching Solar PA.	X			
		• Using training/educational programs for solar company workers to reduce occurrences of disturbances, vandalism, and harm to nearby historic properties. The specifics of these sensitivity training programs shall be established in project-specific consultations between the applicant, BLM, SHPO, and affected Indian tribes, and will be articulated in a WEAP. Such education and awareness plans will incorporate adaptive management protocols for addressing changes over the life of the project, should they occur.	X			
		• Securing a performance and reclamation bond for all solar energy generation facilities to ensure compliance with the terms and conditions of the ROW authorization. When establishing bond amounts and conditions, the BLM authorized officer shall require coverage of all expenses tied to cultural resources identification, protection, and mitigation. These may include, but are not limited to, costs for ethnographic studies, inventory, testing, geomorphological studies, data recovery, curation, monitoring, treatment of damaged sites, and generation and submission of reports (see ROW authorization policies, Section 2.2.1.1 of the Final Solar PEIS).	X			
	CR 2-1	Solar facilities shall be characterized, sited and designed, and constructed in coordination with the BLM to minimize cultural resource impacts.				A full Class I cultural resources inventory study is currently in progress and will be provided to the BLM under separate cover. To minimize impacts to prehistoric, Tribal, and historic resources, a Class III cultural inventory and report would be conducted for the Project in support of NEPA compliance. The results of the Class I file and literature search will shape the methods and extent of pedestrian cultural surveys on the Project site and site recordation efforts. As part of the proposed Project, consultation with the State Historic Preservation Office and Tribes would be required in compliance with Section 106 of the National Historic Preservation Act. Survey data collected and associated reports will be incorporated as part of the final NEPA analysis and approval process. The NEPA analysis would assess the potential for impacts to cultural resources and mitigation measures would be developed to reduce those impacts.
		(a) Methods to minimize impacts on cultural resources shall include, but are not limited to, the following:				
		• The BLM determining the APE for each proposed solar energy project, to include a review of existing information, and efforts to seek information from and views of tribes and other parties likely to have knowledge of or concerns with historic properties in the APE. This information will be supplemented by discussions at pre-application meetings with the solar energy project applicant, SHPO, and affected tribes regarding project designs, sacred sites, traditional cultural properties (TCPs), and proposed cultural resource inventory strategies.				
		• The BLM consulting the SHPO, affected tribes (regarding the treatment of adverse effects for those property types on which the tribes indicate at pre-application or other meetings they wish to provide input), and any other consulting parties, if National Register of Historic Places (NRHP)-eligible properties are present at the site and would be adversely affected. The BLM will seek agreement to avoid, minimize, or mitigate adverse effects on historic properties. The BLM will execute an MOA with the SHPO to conclude the Section 106 process and will file a copy with the ACHP. Where the BLM and the SHPO are unable to execute an MOA, the BLM will invite the ACHP to participate in an undertaking-specific MOA. The MOA will specify the treatment for which the BLM will be responsible, and which will be implemented by the solar applicant.				
		• Undertaking a Class III inventory of the APE. If the BLM decides to require less than a Class III inventory for the entire APE, the BLM will seek additional views of the SHPO, affected tribes, and other parties and determine the final inventory strategy that best represents a reasonable and good-faith effort to carry out appropriate identification efforts.				

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Cultural Resources (cont.)	CR 2-1 (cont.)	• Conducting inventories according to the standards set forth in the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44716); BLM Handbook H-8110 (Handbook for Identifying Cultural Resources); revised BLM Manual 8110; and applicable BLM or SHPO survey, site record, or reporting standards. All inventory data must be provided to the BLM in digitized or paper format that meets BLM accuracy standards, including shape files for surveyed areas.	X			See above response.
		• Bringing any unexpected discovery of cultural resources during any phase of development (construction, operations and maintenance, or decommissioning) to the attention of the responsible BLM authorized officer immediately, as specified in the PA. Work shall be halted in the vicinity of the find. The area of the find shall be protected to ensure that the resources are not removed, handled, altered, or damaged while they are being evaluated and to ensure that appropriate mitigative or protective measures can be developed and implemented.	X			
		(b) Methods to minimize cultural resource impacts may include, but are not limited to, the following:				
		• Including in the MOAs measures for management of historic properties, in situations where historic properties require management or monitoring for avoidance and protection within or near a project's boundaries. Such measures will specify the preparation and implementation of steps to lessen the adverse effects of the undertaking upon those aspects of NRHP eligibility criteria that make the historic properties eligible for nomination to the NRHP.	X			
		• Requiring that surface disturbance be restricted or prohibited within the viewshed of such property types when their eligibility is tied to their visual setting to protect NRHP-eligible traditional cultural properties, sacred sites, or historic trails from visual intrusion and to maintain the integrity of their historic setting unless acceptable mitigation is proposed.	X			
		• Employing cultural field monitors (appropriate for the resource anticipated) to monitor ground-disturbing activities (for example in geomorphic settings, such as in shifting sands, where buried deposits may be present) in cases where there is a probability of encountering cultural resources during construction that could not be detected during prior Class III inventories. Monitoring plans shall be specified within MOAs.	X			
		• Encouraging the use of previously disturbed lands and lands determined by archeological inventories to be devoid of historic properties.	X			
	CR 3-1	Prior to reclamation activities, the BLM may require further planning for treatment of historic properties or planning for mitigation addressing reclamation activities.	X			
	CR 3-2	The BLM shall be notified prior to the demolition or substantial alteration of any building or structure. If judged necessary by the BLM, the developer will be required to evaluate the structures for their significance employing professionally qualified architects or historic architects. If structures slated for demolition are found to be eligible for listing on the NRHP, they will be recorded to Historic American Building Survey and/or Historic American Engineering Record standards before alteration or removal.	X			
	CR 3-3	Project developers shall confine soil-disturbing reclamation and decommissioning activities to previously disturbed areas. Known historic properties will be avoided during these activities.	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Native American Concerns	NA 1-1	The BLM shall consult with federally recognized Indian tribes early in the planning process to identify issues and areas of concern regarding any proposed solar energy project as required by the National Historic Preservation Act (NHPA) and other authorities to determine whether construction and operation of a project is likely to disturb traditional cultural properties or sacred sites, impede access to culturally important locations, disrupt traditional cultural practices, affect movements of animals important to tribes, or visually affect culturally important landscapes.				The American Indian Religious Freedom Act of 1978 requires all federal agencies to consider the effect of their actions on traditional Native American religious and cultural values and practices. Traditional Cultural Properties (TCPs) are a separate class of cultural resources. They are places that have cultural values that transcend, for instance, the values of scientific importance that are normally ascribed to cultural resources such as archaeological sites and may or may not coincide with archaeological sites. The Fort Mojave Indian Reservation is less than two miles west of the Project site. The Applicant began its tribal outreach program for the Leo Solar project in late 2021 and early 2022 and has met and communicated with local Tribes, including the Fort Mojave Indian Tribe, Colorado River Indian Tribes, Hualapai Tribe, and Chemehuevi Indian Tribe over the last year. As part of the Section 106 and NEPA processes, the BLM Kingman Field Office would conduct government-government consultation with the identified Tribes to consider the effects of the Project on traditional Native American religious and cultural values and practices including TCPs, determine if any TCPs occur within or near the Project area and whether these TCPs would be potentially impacted by the Project, and evaluate means to avoid, minimize, or mitigate adverse effects.
		(a) Identifying issues and areas of concern to federally recognized Indian tribes shall include, but is not limited to, the following:				
		• Covering planning, construction, operation, and reclamation activities during consultation. Agreements or understandings reached with affected tribes shall be carried out in accordance with the terms of MOAs or State Specific Procedures as defined within the Solar PA.	X			
		• The BLM consulting with affected Indian tribes during the Section 106 process at the points specified in the Solar PA.	X			
		• The BLM consulting with Indian tribes under the terms of the Native American Graves Protection and Repatriation Act (NAGRA). Any planning for treatment of historic properties or mitigation will take such consultations into account.	X			
		• The BLM seeking, during consultation, to develop agreements with affected tribes on how to appropriately respond to input and concerns in advance to save time and avoid confusion.	X			
		(b) Methods to minimize issues and areas of concern to federally recognized Indian tribes may include, but are not limited to, the following:				
		• Employing standard noise design features for solar facilities located near sacred sites to minimize the impacts of noise on culturally significant areas.	X			
		• Employing health and safety design features for the general public for solar facilities located near Native American traditional use areas in order to minimize potential health and safety impacts on Native Americans.	X			
		• Avoiding known human burial sites. Where there is a reasonable probability of encountering undetected human remains and associated funerary objects by a solar energy project, the BLM will carry out discussions with Indian tribes before the project is authorized, in order to provide general guidance on the treatment of any cultural items (as defined by NAGPRA) that might be exposed.	X			
		• Avoiding visual intrusion on sacred sites through the selection of the solar facility location and solar technology. When complete avoidance is not practicable or economically feasible, the BLM shall engage in timely and meaningful consultation with the affected tribe(s) and shall attempt to formulate a mutually acceptable plan to mitigate or reduce the adverse effects.	X			
		• Avoiding rock art (panels of petroglyphs and/or pictographs). These panels may be just one component of a larger sacred landscape, in which avoidance of all impacts may not be possible. Mitigation plans for eliminating or reducing potential impacts on rock art shall be formulated in consultation with the appropriate tribal cultural authorities.	X			
		• Avoiding springs and other water sources that are or may be sacred or culturally important. If it is necessary for construction, maintenance, or operational activities to take place in proximity to springs or other water sources, appropriate measures, such as the use of geotextiles or silt fencing, shall be taken to prevent silt from degrading water sources. The effectiveness of these mitigating barriers shall be monitored. Measures for preventing water depletion impacts on springs shall also be employed. Particular mitigations shall be determined in consultation with the appropriate Indian tribe(s).	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Native American Concerns (cont.)	NA 1-1 (cont.)	• Avoiding culturally important plant species. When it is not possible to avoid affecting these plant resources, consultations shall be undertaken with the affected Indian tribe(s). If the species is available elsewhere on agency-managed lands, guaranteed access may suffice. For rare or less-common species, establishing (transplanting) or propagating an equal amount of the plant resource elsewhere on agency-managed land accessible to the affected tribe may be acceptable (e.g., for mesquite groves and rice grass fields, identified as tribally important plant species in the ethnographic studies).	X			See above response.
		• Avoiding culturally important wildlife species and their habitats. When it is not possible to avoid these habitats, solar facilities shall be designed to minimize impacts on game trails, migration routes, and nesting and breeding areas of tribally important species. Mitigation and monitoring procedures shall be developed in consultation with the affected tribe(s).	X			
		• Securing a performance and reclamation bond for all solar energy generation facilities to ensure compliance with the terms and conditions of the ROW authorization. When establishing bond amounts and conditions, the BLM authorized officer shall require coverage of all expenses tied to identification, protection, and mitigation of cultural resources of concern to Indian tribes. These may include, but are not limited to, costs for ethnographic studies, inventory, testing, geomorphological studies, data recovery, curation, monitoring, treatment of damaged sites, and generation and submission of reports (see ROW authorization policies, Section 2.2.1.1 of the Final Solar PEIS).	X			
	NA 2-1	Prior to construction, the project developer shall provide training to contractor personnel whose activities or responsibilities could affect issues and areas of concern to federally recognized Indian tribes.	X			
	NA 3-1	Consultation with affected federally recognized Indian tribes shall be ongoing during the life of the project.	X			
	NA 3-2	The project developer shall train facility personnel regarding their responsibilities to protect any known resources of importance to federally recognized Indian tribes.	X			
	NA 4-1	The project developer shall confine reclamation and decommissioning activities to previously disturbed areas and existing access roads to the extent practicable.	X			
	NA 4-2	The project developer shall return the site to its pre-construction condition, to the extent practicable and approved by the BLM.	X			
Socioeconomic Impacts	S 1-1	Project developers shall coordinate with the BLM and other Federal, state, and local agencies to identify and minimize potential socioeconomic impacts.				The Project would invest $350 million in the local area during the construction period. This investment would support jobs, local economic activity, and tax revenues. In addition to the jobs and spending directly required, both indirect and induced economic activity would occur because of building the facility. Examples of indirect activity include supplying industries such as welding and construction vehicle repair. Induced activity results from increases in local wages and salaries include spending on restaurants, retail goods, and childcare. Construction would support up to 1,000 jobs for two years. Total labor income, including benefits and payroll taxes, is estimated to be over $100 million per year for the 2 years. The Project would pay a range of taxes during construction, including sales, property, payroll, and vehicle.
		(a) Identifying socioeconomic impacts shall include, but is not limited to, the following:				
		• Assessing the potential for socioeconomic impacts associated with the proposed project in coordination with the BLM and other qualified experts. Project developers shall collect and evaluate available information describing the socioeconomic conditions in the vicinity of the proposed project, as needed, to predict potential impacts of the project.				
		• Evaluating socioeconomic impacts as part of the environmental impact analysis for the project and considering options to minimize and/or mitigate impacts in coordination with the BLM.				
		(b) Methods to minimize socioeconomic impacts may include, but are not limited to, the following:				
		• Developing a community monitoring program that would be sufficient to identify and evaluate socioeconomic impacts resulting from solar energy development. Measures developed for monitoring may include the collection of data reflecting the economic, fiscal, and social impacts of development at the state, local, and tribal level.				

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Socioeconomic Impacts (cont.)	S 1-1 (cont.)	• Developing community outreach programs that would help communities adjust to changes triggered by solar energy development.				The facility is planned to operate for 30 years. Operations and maintenance of the facility will generate permanent jobs for 20 to 30 employees. In addition, an economics report and socioeconomics impact study would be prepared as part of the environmental review process.
		• Establishing vocational training programs for the local workforce to promote development of skills required by the solar energy industry.				
		• Developing instructional materials for use in area schools to educate the local communities on the solar energy industry.				
		• Supporting community health screenings.				
		• Providing financial support to local libraries for the development of information repositories on solar energy, including materials on the hazards and benefits of commercial development. Electronic repositories established by the project developer could also be of great value.				
Environmental Justice	EJ 1-1	Project developers shall coordinate with the BLM and other Federal, state, and local agencies to identify and minimize the potential for environmental justice impacts.				Analysis of environmental justice impacts, and development of potential mitigation measures, would occur as part of the NEPA process. The Project site is not located in the immediate vicinity of any communities that would be impacted by construction or operation of the facility. The nearest population center is approximately three miles west, within Census Tract 04015955000 in the Mohave Valley. According to the U.S. Environmental Protection Agency's Environmental Justice Screening and Mapping Tool, this Census Tract has a Demographic Index of 49 compared to the Arizona statewide average. The Demographic Index is based on the average of two demographic indicators, low income and people of color. An index of 49 indicates the area's demographics are close to the average for Arizona, without a disproportionate concentration of low income or people of color.
		(a) Identifying environmental justice impacts shall include, but is not limited to, the following:				
		• Assessing the potential for environmental justice impacts associated with the proposed project in coordination with the BLM and other qualified experts. Project developers shall collect and evaluate available information describing the socioeconomic conditions in the vicinity of the proposed project, as needed, to predict potential environmental justice impacts of the project (i.e., environmental, economic, cultural, and health impacts on low-income and minority populations). This will include the identification of all environmental justice communities in proximity to a proposed project.				
		• Evaluating environmental justice impacts as part of the environmental impact analysis for the project and consider options to avoid, minimize, and/or mitigate such risk in coordination with the BLM.				
		(b) Methods to minimize environmental justice impacts may include, but are not limited to, the following:				
		• Developing and implementing focused public information campaigns to provide technical and environmental health information directly to low-income and minority groups or to local agencies and representative groups. Including key information such as any likely impact on air quality, drinking water supplies, subsistence resources, public services, and the relevant preventative/minimization measures that may be taken.				
		• Providing community health screenings for low-income and minority groups.				
		• Providing financial support to local libraries in low-income and minority communities for the development of information repositories on solar energy, including materials on the hazards and benefits of commercial development.				
		• Establishing vocational training programs for the local low-income and minority workforce to promote development of skills for the solar energy industry.				
		• Developing instructional materials for use in area schools to educate the local communities on the solar energy industry.				
		• Providing key information to local governments and directly to low-income and minority populations on the scale and timeline of expected solar energy projects and on the experience of other low-income and minority communities that have followed the same energy development path.				

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Transportation Impacts	T 1-1	Project developers shall coordinate with the BLM and other Federal, state, and local agencies to identify and minimize impacts on transportation.				The potential for transportation impacts associated with the proposed Project would be assessed in coordination with the BLM, Arizona Department of Transportation, Mohave County, and any affected private landowners during the NEPA process. A transportation and traffic study will be prepared to support the NEPA process. The project site is accessible from Oatman Highway, a paved road. Oatman Highway will be the project's primary access route during construction and operations and construction would utilize this roadway coming from the south. Truck traffic from the north would not be possible given the road conditions and to reduce impacts to the SRMA northeast of the Project site. New access road disturbances will be minimized to the degree feasible. No paved roadways would be impacted by the Project. Impacts to dirt roads or trails crossing the site will be evaluated in the NEPA document.
		(a) Identifying impacts on transportation shall include, but is not limited to, the following:				
		• Assessing the potential for transportation impacts associated with the proposed project in coordination with the BLM and other appropriate state and local agencies. Consulting land use plans, transportation plans, and local plans as necessary. The developer may be required to perform traffic studies, analyses, or other studies of the capacity of existing and proposed new roads to physically handle the added wear and tear from increased construction commuter and truck traffic.	X			
		• Evaluating transportation impacts as part of the environmental impact analysis for the project and considering options to avoid, minimize, and/or mitigate such risk in coordination with the BLM.	X			
		(b) Methods to minimize impacts on transportation may include, but are not limited to, the following:				
		• Incorporating site access into the local and regional road network. Incorporation must be done under the supervision of the pertinent local, county, state, and Federal agencies.	X			
		• Considering public roadway corridors through a site to maintain proper traffic flows and retain more direct routing for the local population.	X			
		• Considering implementing local road improvements, providing multiple site access locations and routes, staggering work schedules, and implementing a ride-sharing or shuttle program to minimize daily commutes of construction workers.	X			
		• Implementing traffic control measures to reduce hazards for incoming and outgoing traffic and streamline traffic flow, such as intersection realignment and speed limit reductions; installing traffic lights and/or other signage; and adding acceleration, deceleration, and turn lanes on routes with site entrances.	X			
		• Incorporating environmental inspection and monitoring measures into the POD and other relevant plans to monitor and respond to transportation impacts during construction, operations, and decommissioning of a solar energy development, including adaptive management protocols.	X			
Hazardous Materials and Waste	HMW 1-1	Project developers shall coordinate with the BLM and other Federal, state, and local agencies early in the planning process to assess hazardous material and waste concerns and to minimize potential impacts.				While no significant use of hazardous materials or generation of hazardous waste is anticipated, the Project would prepare and implement a Health and Safety Plan and Hazardous Materials Management Plan. Stipulations and requirements would be in place to notify the BLM in the event of a release of hazardous substances or petroleum products. These plans would be prepared in conjunction with the POD, and in compliance with all applicable state and federal regulations for the storage and disposal of any hazardous material, including oil and fuel.
		(a) Assessing hazardous material and waste concerns shall include, but is not limited to, the following:				
		• Identifying expected waste generation streams at the solar energy site and hazardous waste storage locations for consideration in the environmental analysis evaluating the proposed project.	X			
		• Conducting site characterization, construction, operation, and decommissioning activities in compliance with applicable Federal and state laws and regulations, including the Toxic Substances Control Act of 1976, as amended (15 USC 2601, et seq.). An example of complying with applicable law is reporting any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR Part 117 as required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, Section 102b.	X			
		• Evaluating impacts related to potential hazardous material and waste as part of the environmental impact analysis for the project and considering options to minimize and/or mitigate impacts in coordination with the BLM.	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Hazardous Materials and Waste (cont.)	HMW 1-1 (cont.)	(b) Methods to minimize hazardous material and waste related impacts shall include, but are not limited to, the following:				See above response.
		• Developing a Hazardous Materials and Waste Management Plan that addresses the selection, transport, storage, and use of all hazardous materials needed for construction, operations, and decommissioning of the facility for local emergency response and public safety authorities and for the designated BLM land manager. Furthermore, the plan shall address the characterization, on-site storage, recycling, and disposal of all resulting wastes.1 At minimum, the plan will discuss facility identification; comprehensive hazardous materials inventory; Material Safety Data Sheets (MSDSs) for each type of hazardous material; emergency contacts and mutual aid agreements, if any; site map showing all hazardous materials and waste storage and use locations; copies of spill and emergency response plans, and hazardous materials–related elements of a Decommissioning and Site Reclamation Plan.	X			
		• Planning for waste management will address all solid and liquid wastes that may be generated at the site in compliance with the CWA requirements to obtain the project's NPDES or similar permit.	X			
		• Considering fire management in developing hazardous materials and waste management measures.	X			
		• Identifying and implementing prevention measures, including material substitution of less hazardous alternatives, recycling, and waste minimization.	X			
		• Establishing procedures for fuel storage and dispensing that consider health and safety of personnel and methods for safe use (i.e., fire safety, authorized equipment use).	X			
		• Ensuring vehicles and equipment are in proper working condition to reduce potential for leaks of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials.	X			
		• Considering establishing schedules regular removal of wastes (including sanitary wastewater generated in temporary, portable sanitary facilities) for delivery and removal by licensed haulers to appropriate off-site treatment or disposal facilities.	X			
	HMW 2-1	Solar facilities shall be characterized, sited and designed, and constructed to minimize hazardous materials and waste management design elements.				While no significant use of hazardous materials or generation of hazardous waste is anticipated, the Project would prepare and implement a Health and Safety Plan and Hazardous Materials Management Plan. Stipulations and requirements would be in place to notify the BLM in the event of a release of hazardous substances or petroleum products. These plans would be prepared in conjunction with the POD, and in compliance with all applicable state and federal regulations for the storage and disposal of any hazardous material, including oil and fuel.
		(a) Methods to minimize hazardous material and waste management impacts may include, but are not limited to, the following:				
		• Indemnifying the United States against any liability arising from the release of any hazardous substance or hazardous waste on the facility or associated with facility activities.	X			
		• Providing a copy of any report required or requested by any Federal agency or state government as a result of a reportable release or spill of any toxic substances shall be furnished to the BLM authorized officer concurrent with the filing of the reports to the involved Federal agency or state government.	X			
		• Designing and operating systems containing hazardous materials in a manner that limits the potential for their release.	X			
		• Establishing measures for construction with compatible materials in safe conditions.	X			
		• Establishing dedicated areas with secondary containment for offloading hazardous materials transport vehicles.	X			
		• Implementing "just-in-time" ordering procedures designed to limit the amounts of hazardous materials present on the site to quantities minimally necessary to support continued operations. Excess hazardous materials shall receive prompt disposition.	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Hazardous Materials and Waste (cont.)	HMW 2-1 (cont.)	• Surveying project sites for unexploded ordnance, especially if projects are within 20 mi (32 km) of a current DoD installation or formerly utilized defense site.		X		See above response.
		• Siting refueling areas away from surface water locations and drainages and on paved surfaces; features shall be added to direct any spilled materials to sumps or safe storage areas where they can be subsequently recovered.	X			
		• Designating hazardous materials and waste storage areas and facilities. Limiting access to designated areas to authorized personnel only.	X			
	HMW 3-1	Compliance with the terms and conditions for hazardous materials and waste management shall be monitored by the project developer. Consultation with the BLM shall be maintained through the operations and maintenance of the project, employing an adaptive management strategy and modifications, as necessary and approved by the BLM.				While no significant use of hazardous materials or generation of hazardous waste is anticipated, the Project would prepare and implement a Health and Safety Plan and Hazardous Materials Management Plan. Stipulations and requirements would be in place to notify the BLM in the event of a release of hazardous substances or petroleum products. These plans would be prepared in conjunction with the POD, and in compliance with all applicable state and federal regulations for the storage and disposal of any hazardous material, including oil and fuel.
		(a) Methods for maintaining compliance with the terms and conditions for hazardous materials and waste management during operations and maintenance of the project may include, but are not limited to, the following:				
		• Installing sensors or other devices to monitor system integrity.	X			
		• Implementing robust site inspection and repair procedures.	X			
	HMW 4-1	Project developers shall maintain emergency response capabilities throughout the reclamation and decommissioning period as long as hazardous materials and wastes remain on-site.	X			
	HMW 4-2	All design features developed for the construction phase shall be applied to similar activities during the reclamation and decommissioning phases.	X			
Health and Safety	HS 1-1	Project developers shall coordinate with the BLM and other Federal, state, and local agencies early in the planning process to identify project health and safety risks and methods to minimize those risks.				The Project would require all construction and operation subcontractors to operate under a health and safety program that is approved by OSHA and BLM industry standards. A Health and Safety Plan would be developed in conjunction with the POD.
		(a) Assessing project health and safety risks shall include, but is not limited to, the following:				
		• Identifying and establishing Federal and state occupational health and safety standards, such as the Occupational Health and Safety Administration's (OSHA's) Occupational Health and Safety Standards, 29 CFR Parts 1910 and 1926, respectively, for all phases of the project.	X			
		• Identifying safety zones or setbacks for solar facilities and associated transmission lines from residences and occupied buildings, roads, ROWs, and other public access areas that are sufficient to prevent accidents resulting from various hazards during all phases of development.	X			
		(b) Methods to minimize project health and safety risks may include, but are not limited to, the following:				
		• Identifying and accounting for general project injury prevention within the POD and the Health and Safety Plan, such as established PPE requirements, respiratory protection, hearing conservation measures, electrical safety considerations, hazardous materials safety and communication, housekeeping and waste handling, confined space identification, and rescue response and emergency medical support, including on-site first aid capability.	X			
		• Implementing training and awareness measures for workers and the general public to minimize and address standard practices (such as OSHA's) for the safe use of explosives and blasting agents; occupational electric and magnetic field (EMF) exposures; fire safety and evacuation procedures; and safety performance standards (e.g., electrical system standards and lighting protection standards). Consider further training for additional health and safety risks from the solar energy project and its ancillary facilities.	X			
		• Establishing measures to document training activities and reporting of serious accidents to appropriate agencies.	X			
		• Assessing cancer and noncancer risks to workers and the general public from exposure to facility emission sources that exceed threshold levels	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
Health and Safety (cont.)	HS 1-1 (cont.)	• Considering implementation of measures to reduce site emissions and the cancer and noncancer from exposure to facility emissions.	X			See above response.
		• Implementing a reporting structure for accidental release of hazardous substances to the environment where project developers shall document the event, including a root cause analysis, a description of appropriate corrective actions taken, and a characterization of the resulting environmental or health and safety impacts. Documentation of the event shall be provided to the permitting agencies and other Federal and state agencies within 30 days.	X			
		• Considering manufacturer requirements, and Federal and state standards, when establishing safety zones or setbacks for solar facilities and associated transmission lines.	X			
		• Project developers coordinating with the BLM and appropriate agencies (e.g., the DOE and Transportation Security Administration [TSA]) to address critical infrastructure and key resource vulnerabilities at solar facilities in order to minimize and plan for potential risks from natural events, sabotage, and terrorism.	X			
	HS 2-1	Solar facilities shall be characterized, sited and designed, and constructed to minimize risk to health and safety.				The Project would require all construction and operation subcontractors to operate under a health and safety program that is approved by OSHA and BLM industry standards. A Health and Safety Plan would be developed in conjunction with the POD.
		(a) Methods to minimize risk to health and safety may include, but are not limited to, the following:				
		• Designing electrical systems to meet all applicable safety standards (e.g., National Electrical Code [NEC]) and to comply with the interconnection requirements of the transmission system operator.	X			
		• Complying with applicable FAA regulations, including lighting requirements, to avoid or minimize potential safety issues associated with proximity to airports, military bases or training areas, or landing strips.	X			
		• Considering temporary fencing and other measures for staging areas, storage yards, and excavations during construction or decommissioning activities to limit public access to health and safety risks.	X			
		• Planning for traffic management of site access to ensure that traffic flow would not be unnecessarily affected and that specific issues of concern (e.g., the locations of school bus routes and stops) are identified and addressed. Planning may include measures such as informational signs and temporary lane configurations. Planning shall be coordinated with local planning authorities.	X			
		• Considering use of alternative dielectric fluids that do not contain sulfur hexafluoride (SF6) to reduce the global warming potential.	X			
		• Considering measures to reduce occupational EMF exposures, such as backing electrical generators with iron to block the EMF, shutting down generators when work is being done near them, and otherwise limiting exposure time and proximity while generators are running.	X			
	HS 3-1	Compliance with the terms and conditions for health and safety shall be monitored by the project developer. Consultation with the BLM shall be maintained through operations and maintenance of the project, employing an adaptive management strategy and modifications, as necessary and approved by the BLM.	X			

Resource	PDF #	Programmatic Design Feature (PDF)	Applicable to the Project?			Comments
			Yes	No	Need More Information	
National Scenic and Historic Trails, Suitable Trails, and Study Trails	NSHT 1-1	Project developers shall consult with the BLM and the trail administering agency early in the project planning to help determine the proposed project's conformance with trail management prescriptions and other potential trail-related constraints.				The nearest identified trail is the Old Spanish National Historic Trail, 28 miles north of the Project site. Due to the distance to this trail, no impacts are anticipated.
		(a) Assessing conformance to trail management prescriptions and other potential trail related constraints shall include, but is not limited to, the following:				
		• Considering National Trail management corridors established through the land use planning process as exclusion areas (see Section 2.2.2.1 of the Final Solar PEIS) in order to prevent substantial interference with the nature and purposes of designated National Scenic and Historic Trails, and to make efforts to avoid activities incompatible with trail purposes (NTSA Sec. 7(c)). Where no National Trail management corridor is established in a land use plan, or in adequate protections for suitable trails or trails under study, an accepted National Trail inventory process must be conducted by the applicant, in consultation with the trail administering agency. The inventory process will identify the potential area of adverse impact on the resources, qualities, values, and associated settings, and the primary use or uses of the trails within the viewshed; prevent substantial interference; and determine any areas unsuitable for development. Residual impacts on trails will be avoided, minimized, and/or mitigated to the extent practicable according to program policy standards.		X		
		• Determining the size of the area of possible adverse impact through the results of the required inventory, in consultation with the trail administering agency. There is no current established minimum or maximum limit on the size of the area of possible adverse impact. Other design feature requirements and coordination requirements, such as those for Cultural Resources, Recreation and Visitor Services, Visual Resources, or NLCS must also be met.		X		
		• Review adequacy of information from National Scenic or Historic Trail inventory projects underway during the development of the Solar PEIS by the BLM at the field office level in coordination with the trail administering agency, and application of the data to determine the area of possible adverse impact for any anticipated development. Such inventory projects may reveal unanticipated or undocumented remnants, artifacts, trail tread or trace, the location of high potential historic sites and high-potential route segments, trail features, and/or the associated settings for National Scenic or Historic Trails adjacent to or within SEZ.		X		
		• Applying on-site or off-site mitigation for any residual adverse impact according to program policy standards, and mitigation or impact reduction measures identified for related program areas in this document.		X		

Attachment D: Supporting Biological Resource Information

Arizona Environmental Online Review Tool Report

Arizona Game and Fish Department Mission
To conserve Arizona's diverse wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations.

Project Name:

Atlas Wind & Leo Solar

Project Description:

Proposed wind and solar facility in Region 3 that encompasses two areas of land, one west of Oatman and one north of Hwy 68 east of Lake Mohave.

Project Type:

Energy Storage/Production/Transfer, Energy Production (generation), wind power facility (new)

Contact Person:

Tiffany Sprague

Organization:

AZ Game and Fish Dept

On Behalf Of:

BLM

Project ID:

HGIS-16873

Please review the entire report for project type and/or species recommendations for the location information entered. Please retain a copy for future reference.

Disclaimer:

1. This Environmental Review is based on the project study area that was entered. The report must be updated if the project study area, location, or the type of project changes.
2. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area. This review is also not intended to replace environmental consultation (including federal consultation under the Endangered Species Act), land use permitting, or the Departments review of site-specific projects.
3. The Departments Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. HDMS data contains information about species occurrences that have actually been reported to the Department. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. HabiMap Arizona data, specifically Species of Greatest Conservation Need (SGCN) under our State Wildlife Action Plan (SWAP) and Species of Economic and Recreational Importance (SERI), represent potential species distribution models for the State of Arizona which are subject to ongoing change, modification and refinement. The status of a wildlife resource can change quickly, and the availability of new data will necessitate a refined assessment.

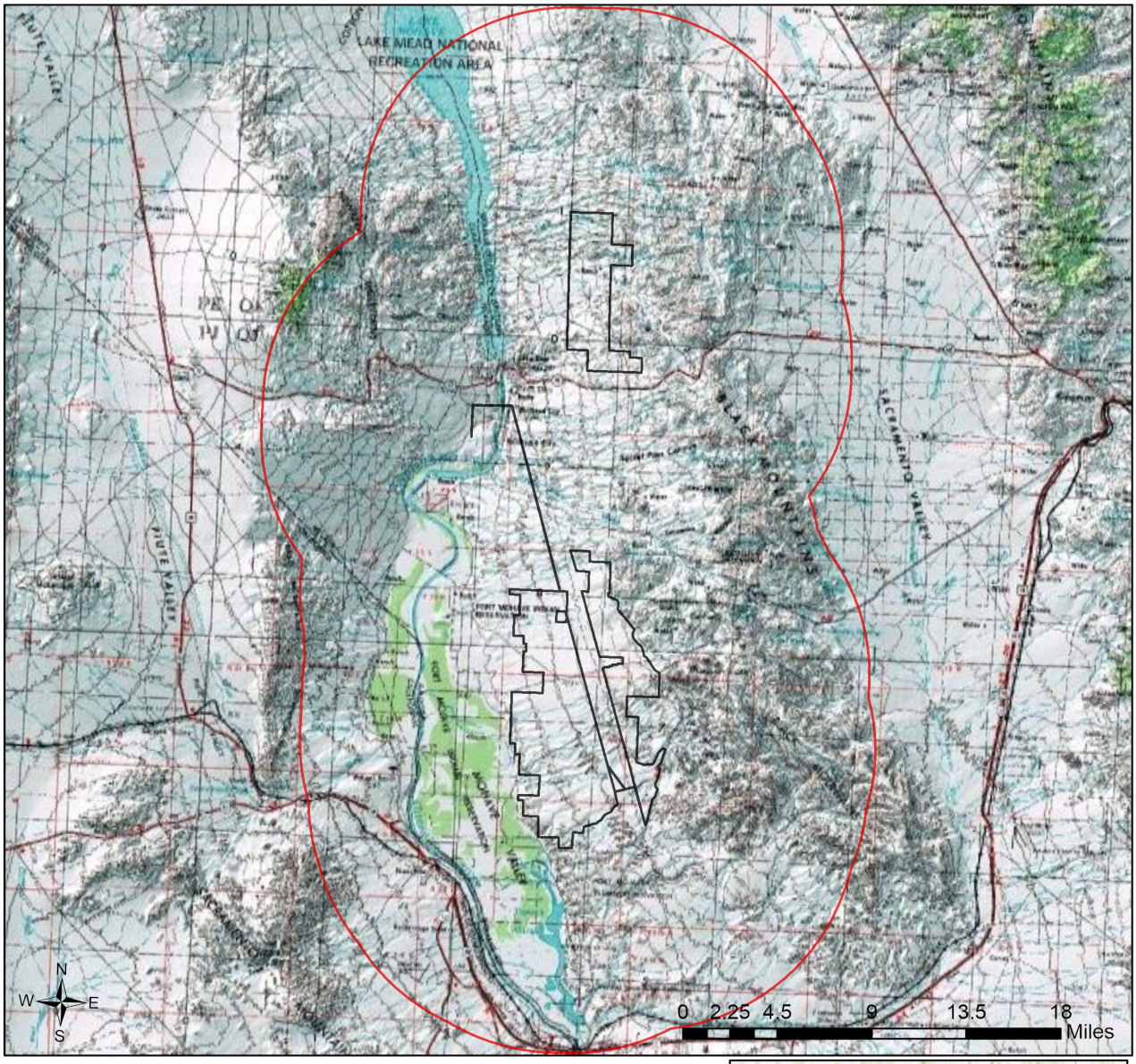
Locations Accuracy Disclaimer:
Project locations are assumed to be both precise and accurate for the purposes of environmental review. The creator/owner of the Project Review Report is solely responsible for the project location and thus the correctness of the Project Review Report content.

Recommendations Disclaimer:

1. The Department is interested in the conservation of all fish and wildlife resources, including those species listed in this report and those that may have not been documented within the project vicinity as well as other game and nongame wildlife.
2. Recommendations have been made by the Department, under authority of Arizona Revised Statutes Title 5 (Amusements and Sports), 17 (Game and Fish), and 28 (Transportation).
3. Potential impacts to fish and wildlife resources may be minimized or avoided by the recommendations generated from information submitted for your proposed project. These recommendations are preliminary in scope, designed to provide early considerations on all species of wildlife.
4. Making this information directly available does not substitute for the Department's review of project proposals, and should not decrease our opportunity to review and evaluate additional project information and/or new project proposals.
5. Further coordination with the Department requires the submittal of this Environmental Review Report with a cover letter and project plans or documentation that includes project narrative, acreage to be impacted, how construction or project activity(s) are to be accomplished, and project locality information (including site map). Once AGFD had received the information, please allow 30 days for completion of project reviews. Send requests to:
   Project Evaluation Program, Habitat Branch
   Arizona Game and Fish Department
   5000 West Carefree Highway
   Phoenix, Arizona 85086-5000
   Phone Number: (623) 236-7600
   Fax Number: (623) 236-7366
   Or
   PEP@azgfd.gov
6. Coordination may also be necessary under the National Environmental Policy Act (NEPA) and/or Endangered Species Act (ESA). Site specific recommendations may be proposed during further NEPA/ESA analysis or through coordination with affected agencies

Atlas Wind & Solar

USA Topo Basemap With Locator Map



Buffered Project Boundary

Project Boundary

Project Size (acres): 46,700.04

Lat/Long (DD): 34.9403 / -114.5092

County(s): Mohave

AGFD Region(s): Kingman

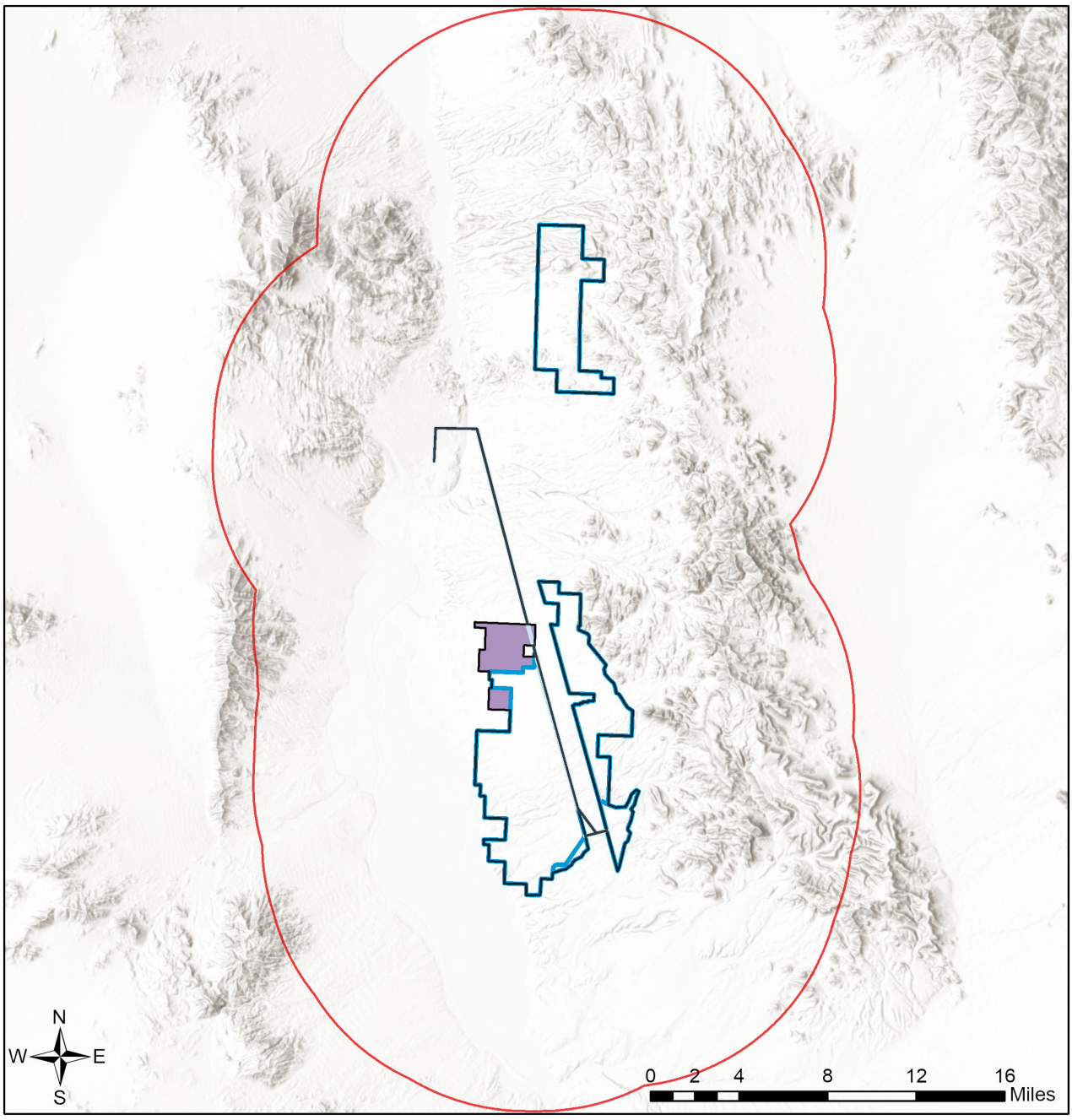
Township/Range(s): T17N, R20W; T17N, R21W; T18N, R20W +

USGS Quad(s): BOUNDARY CONE; BURNS SPRING +

Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community

Atlas Wind & Solar

Web Map As Submitted By User



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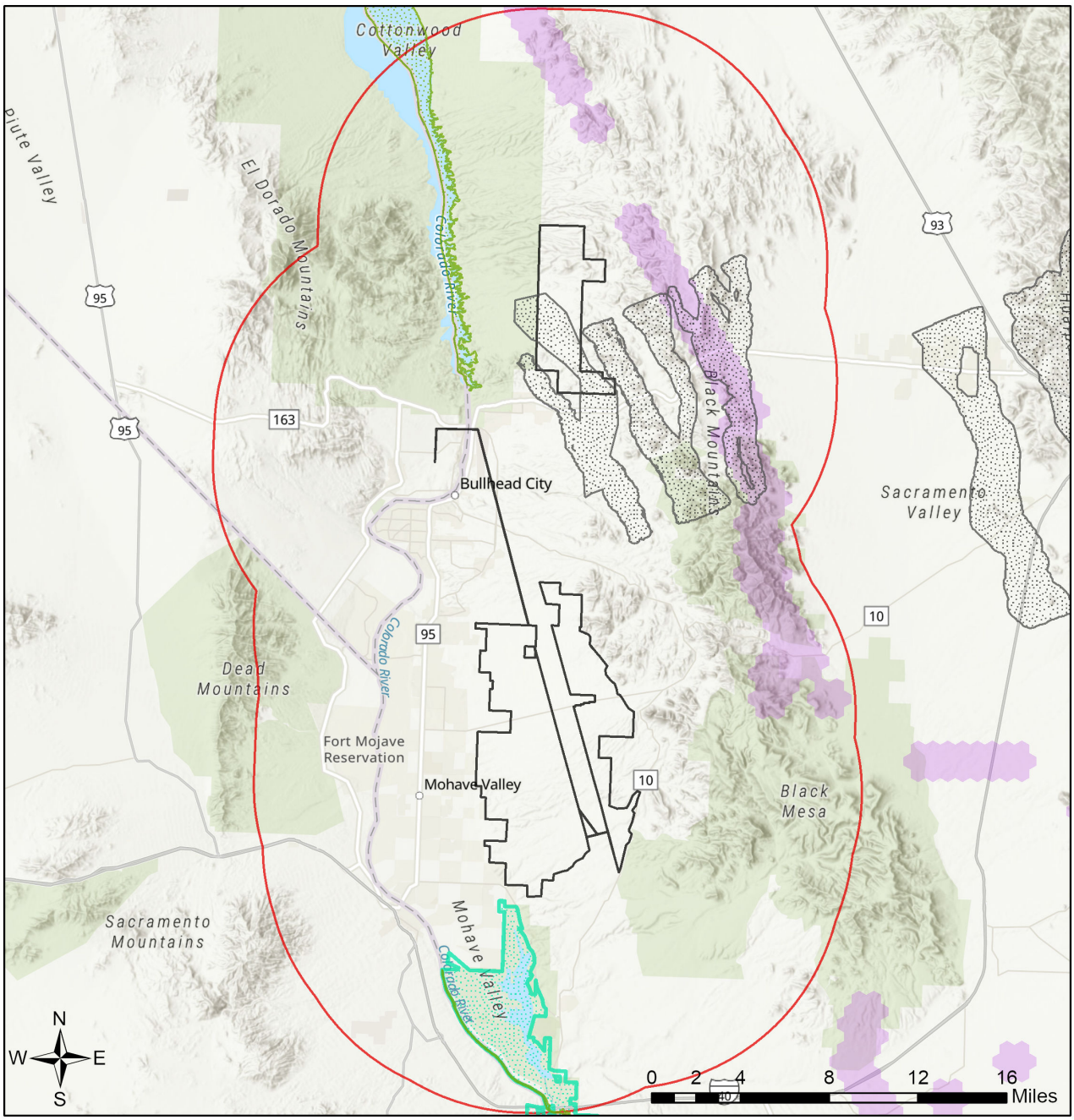
Atlas Wind & Solar

Important Areas



Project Size (acres): 46,700.04

Lat/Long (DD): 34.9403 / -114.5092

County(s): Mohave

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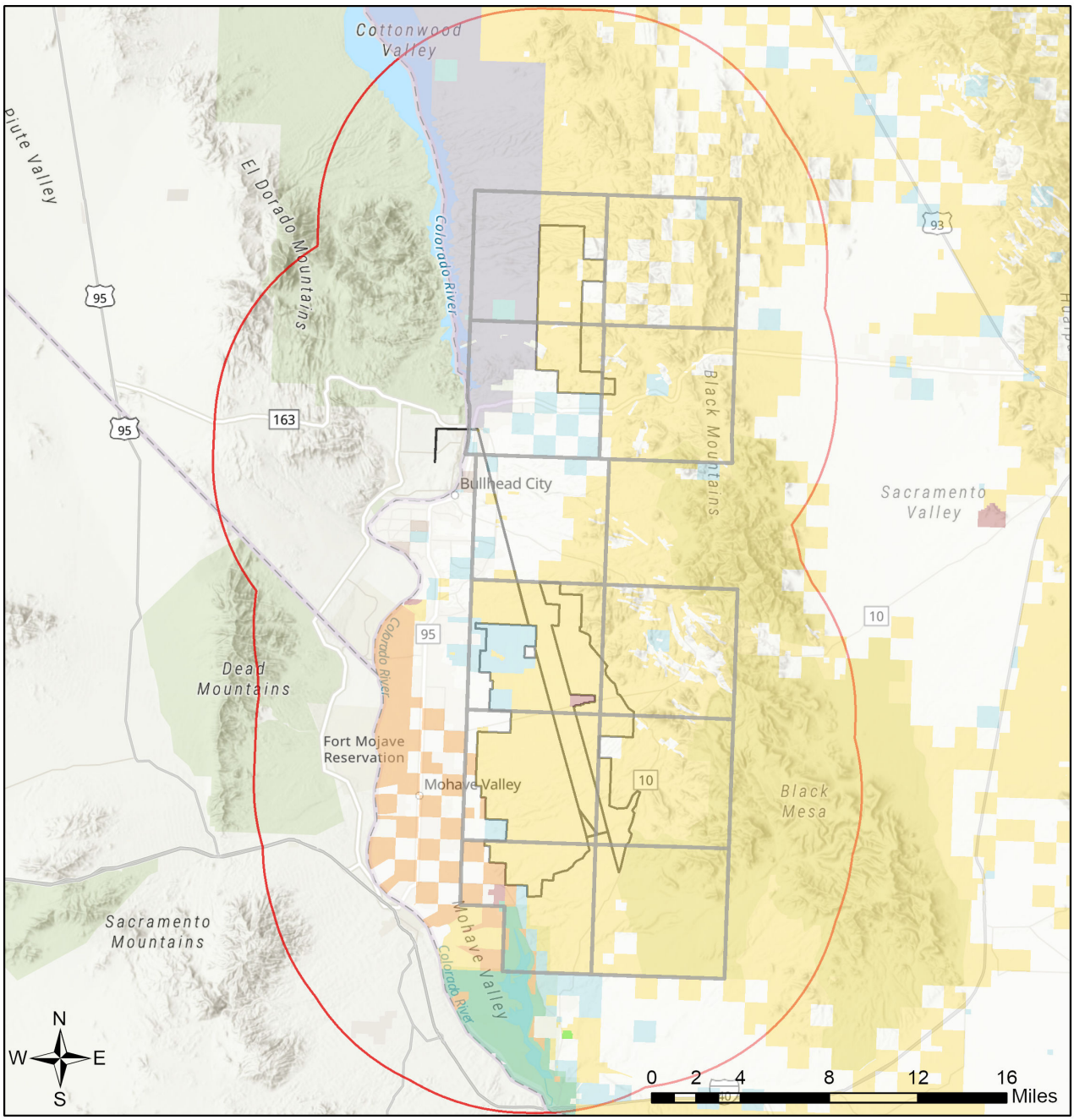
Township/Range(s): T17N, R20W; T17N, R21W; T18N, R20W +

USGS Quad(s): BOUNDARY CONE; BURNS SPRING +

Atlas Wind & Solar

Township/Ranges and Land Ownership



Project Size (acres): 46,700.04

Lat/Long (DD): 34.9403 / -114.5092

County(s): Mohave

AGFD Region(s): Kingman

Township/Range(s): T17N, R20W; T17N, R21W; T18N, R20W +

USGS Quad(s): BOUNDARY CONE; BURNS SPRING +

Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community
Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

Special Status Species Documented within 10 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Astragalus lentiginosus var. ambiguus	Freckled Milk-vetch	SC				
Athene cunicularia hypugaea	Western Burrowing Owl	SC	S	S		1B
Bat Colony						
Catharus ustulatus	Swainson's Thrush					1B
Catostomus latipinnis	Flannelmouth Sucker	CCA		S		1A
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)	LT	S	S		1A
Corynorhinus townsendii pallescens	Pale Townsend's Big-eared Bat	SC	S	S		1B
Cylindropuntia echinocarpa	Golden Cholla				SR	
Danaus plexippus	Monarch	C		S		
Echinomastus johnsonii	Johnson's Fishhook Cactus				SR	
Empidonax traillii extimus	Southwestern Willow Flycatcher	LE				1A
Eumops perotis californicus	Greater Western Bonneted Bat	SC		S		1B
Falco peregrinus anatum	American Peregrine Falcon	SC	S	S		1A
Gila elegans	Bonytail Chub	LE				1A
Gopherus morafkai	Sonoran Desert Tortoise	CCA	S	S		1A
Haliaeetus leucocephalus (wintering pop.)	Bald Eagle - Winter Population	SC, BGA	S	S		1A
Haliaeetus leucocephalus pop. 3	Bald Eagle - Sonoran Desert Population	SC, BGA	S	S		1A
Heloderma suspectum	Gila Monster					1A
Idionycteris phyllotis	Allen's Lappet-browed Bat	SC	S	S		1B
Lithobates onca	Relict Leopard Frog	CCA		S		1A
Macrotus californicus	California Leaf-nosed Bat	SC		S		1B
Penstemon bicolor ssp. roseus	Cerbat Beardtongue	SC		S	SR	
Pseudacris hypochondriaca	Baja California Treefrog					1B
Pyrgulopsis conica	Kingman Springsnail	SC		S		1A
Rallus obsoletus yumanensis	Yuma Ridgway's Rail	LE		S		1A
Sigmodon arizonae plenus	Colorado River Cotton Rat					1B
Tadarida brasiliensis	Brazilian Free-tailed Bat					1B
Thamnophis eques megalops	Northern Mexican Gartersnake	LT	S			1A
Xyrauchen texanus	Razorback Sucker	LE, PT				1A

Note: Status code definitions can be found at https://www.azgfd.com/wildlife/planning/wildlifeguidelines/statusdefinitions/
.

Special Areas Documented that Intersect with Project Footprint as Drawn

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Fort Mohave Indian Reservation	Fort Mohave Indian Reservation					

Special Areas Documented that Intersect with Project Footprint as Drawn

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Mount Perkins - Warm Springs Linkage Design	Wildlife Connectivity					

Note: Status code definitions can be found at https://www.azgfd.com/wildlife/planning/wildlifeguidelines/statusdefinitions/
.

Species of Greatest Conservation Need Predicted that Intersect with Project Footprint as Drawn, based on Predicted Range Models

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Ammospermophilus harrisii	Harris' Antelope Squirrel					1B
Anthus spragueii	Sprague's Pipit	SC				1A
Aquila chrysaetos	Golden Eagle	BGA		S		1B
Athene cunicularia hypugaea	Western Burrowing Owl	SC	S	S		1B
Botaurus lentiginosus	American Bittern					1B
Buteo regalis	Ferruginous Hawk	SC		S		1B
Calypte costae	Costa's Hummingbird					1C
Castor canadensis	American Beaver					1B
Cistothorus palustris	Marsh Wren					1C
Colaptes chrysoides	Gilded Flicker			S		1B
Corynorhinus townsendii pallescens	Pale Townsend's Big-eared Bat	SC	S	S		1B
Empidonax traillii extimus	Southwestern Willow Flycatcher	LE				1A
Euderma maculatum	Spotted Bat	SC	S	S		1B
Eumops perotis californicus	Greater Western Bonneted Bat	SC		S		1B
Falco peregrinus anatum	American Peregrine Falcon	SC	S	S		1A
Gopherus morafkai	Sonoran Desert Tortoise	CCA	S	S		1A
Haliaeetus leucocephalus	Bald Eagle	SC, BGA	S	S		1A
Heloderma suspectum	Gila Monster					1A
Ixobrychus exilis	Least Bittern					1C
Lasiurus blossevillii	Western Red Bat		S			1B
Lasiurus xanthinus	Western Yellow Bat		S			1B
Laterallus jamaicensis coturniculus	California Black Rail	SC		S		1B
Lithobates onca	Relict Leopard Frog	CCA		S		1A
Lontra canadensis sonora	Southwestern River Otter	SC				1B
Macrotus californicus	California Leaf-nosed Bat	SC		S		1B
Melanerpes uropygialis	Gila Woodpecker					1B
Melospiza lincolnii	Lincoln's Sparrow					1B
Melozone aberti	Abert's Towhee		S			1B
Myotis occultus	Arizona Myotis	SC		S		1B
Myotis velifer	Cave Myotis	SC		S		1B
Myotis yumanensis	Yuma Myotis	SC				1B

Species of Greatest Conservation Need Predicted that Intersect with Project Footprint as Drawn, based on Predicted Range Models

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Oreoscoptes montanus	Sage Thrasher					1C
Oreothlypis luciae	Lucy's Warbler					1C
Passerculus sandwichensis	Savannah Sparrow					1B
Perognathus longimembris	Little Pocket Mouse	No Status				1B
Pseudacris hypochondriaca	Baja California Treefrog					1B
Rallus limicola	Virginia Rail					1C
Rallus obsoletus yumanensis	Yuma Ridgway's Rail	LE				1A
Setophaga petechia	Yellow Warbler					1B
Sphyrapicus nuchalis	Red-naped Sapsucker					1C
Spizella breweri	Brewer's Sparrow					1C
Tadarida brasiliensis	Brazilian Free-tailed Bat					1B
Toxostoma lecontei	LeConte's Thrasher			S		1B
Troglodytes pacificus	Pacific Wren					1B
Vireo bellii arizonae	Arizona Bell's Vireo					1B
Vulpes macrotis	Kit Fox	No Status				1B

Species of Economic and Recreation Importance Predicted that Intersect with Project Footprint as Drawn

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Callipepla gambelii	Gambel's Quail					
Odocoileus hemionus	Mule Deer					
Ovis canadensis nelsoni	Nelson Desert Bighorn Sheep					
Puma concolor	Mountain Lion					
Zenaida asiatica	White-winged Dove					
Zenaida macroura	Mourning Dove					

Project Type: Energy Storage/Production/Transfer, Energy Production (generation), wind power facility (new)

Project Type Recommendations:
Fence recommendations will be dependent upon the goals of the fence project and the wildlife species expected to be impacted by the project. General guidelines for ensuring wildlife-friendly fences include: barbless wire on the top and bottom with the maximum fence height 42", minimum height for bottom 16". Modifications to this design may be considered for fencing anticipated to be routinely encountered by elk, bighorn sheep or pronghorn (e.g., Pronghorn fencing would require 18" minimum height on the bottom). Please refer to the Department's Fencing Guidelines located on Wildlife Friendly Guidelines page, which is part of the Wildlife Planning button at https://www.azgfd.com/wildlife/planning/wildlifeguidelines/.

During the planning stages of your project, please consider the local or regional needs of wildlife in regards to movement, connectivity, and access to habitat needs. Loss of this permeability prevents wildlife from accessing resources, finding mates, reduces gene flow, prevents wildlife from re-colonizing areas where local extirpations may have occurred, and ultimately prevents wildlife from contributing to ecosystem functions, such as pollination, seed dispersal, control of prey numbers, and resistance to invasive species. In many cases, streams and washes provide natural movement corridors for wildlife and should be maintained in their natural state. Uplands also support a large diversity of species, and should be contained within important wildlife movement corridors. In addition, maintaining biodiversity and ecosystem functions can be facilitated through improving designs of structures, fences, roadways, and culverts to promote passage for a variety of wildlife. Guidelines for many of these can be found at: https://www.azgfd.com/wildlife/planning/wildlifeguidelines/.

Consider impacts of outdoor lighting on wildlife and develop measures or alternatives that can be taken to increase human safety while minimizing potential impacts to wildlife. Conduct wildlife surveys to determine species within project area, and evaluate proposed activities based on species biology and natural history to determine if artificial lighting may disrupt behavior patterns or habitat use. Use only the minimum amount of light needed for safety. Narrow spectrum bulbs should be used as often as possible to lower the range of species affected by lighting. All lighting should be shielded, canted, or cut to ensure that light reaches only areas needing illumination.

Minimize the potential introduction or spread of exotic invasive species, including aquatic and terrestrial plants, animals, insects and pathogens. Precautions should be taken to wash and/or decontaminate all equipment utilized in the project activities before entering and leaving the site. See the Arizona Department of Agriculture website for a list of prohibited and restricted noxious weeds at https://www.invasivespeciesinfo.gov/unitedstates/az.shtml and the Arizona Native Plant Society https://aznps.com/invas for recommendations on how to control. To view a list of documented invasive species or to report invasive species in or near your project area visit iMapInvasives - a national cloud-based application for tracking and managing invasive species at https://imap.natureserve.org/imap/services/page/map.html.

- To build a list: zoom to your area of interest, use the identify/measure tool to draw a polygon around your area of interest, and select “See What’s Here” for a list of reported species. To export the list, you must have an account and be logged in. You can then use the export tool to draw a boundary and export the records in a csv file.

The Department recommends that wildlife surveys are conducted to determine if noise-sensitive species occur within the project area. Avoidance or minimization measures could include conducting project activities outside of breeding seasons.

For any powerlines built, proper design and construction of the transmission line is necessary to prevent or minimize risk of electrocution of raptors, owls, vultures, and golden or bald eagles, which are protected under state and federal laws. Limit project activities during the breeding season for birds, generally March through late August, depending on species in the local area (raptors breed in early February through May). Conduct avian surveys to determine bird species that may be utilizing the area and develop a plan to avoid disturbance during the nesting season. For underground powerlines, trenches should be covered or back-filled as soon as possible. Incorporate escape ramps in ditches or fencing along the perimeter to deter small mammals and herpetofauna (snakes, lizards, tortoise) from entering ditches. In addition, indirect affects to wildlife due to construction (timing of activity, clearing of rights-of-way, associated bridges and culverts, affects to wetlands, fences) should also be considered and mitigated.

Based on the project type entered, coordination with State Historic Preservation Office may be required (https://azstateparks.com/).

The effects of wind development projects on wildlife, in particular birds and bats, are well documented. The Department recommends conducting raptor nest, general avian, and threatened and endangered species surveys during the appropriate breeding/migration seasons within 10 miles of the project site to determine the location of active nests, migratory pathways, and associated species potentially disturbed by project activities. Effects that should be minimized or mitigated may include direct habitat loss from the wind plant footprint, including turbine base, access road, and substation construction; indirect habitat loss from increased human presence and/or turbine operation noise; habitat alteration, such as soil erosion and construction of migration-hindering obstacles; mortality by powerline electrocution; and mortality by collision with structures, turbine blades or guy wires. The Department has developed guidelines for wind energy development which can be found on the Wildlife Friendly Guideline on our Wildlife Planning page at https://www.azgfd.com/wildlife/planning/wildlifeguidelines/. We also recommend referring to the USFWS Land-based Wind Energy Guidelines, https://www.fws.gov/node/266177. We encourage the project proponent to coordinate directly with the Project Evaluation Program to identify and develop mitigation measures for these projects.

Based on the project type entered, coordination with U.S. Fish and Wildlife Service (Migratory Bird Treaty Act) may be required (https://www.fws.gov/office/arizona-ecological-services).

Vegetation restoration projects (including treatments of invasive or exotic species) should have a completed site-evaluation plan (identifying environmental conditions necessary to re-establish native vegetation), a revegetation plan (species, density, method of establishment), a short and long-term monitoring plan, including adaptive management guidelines to address needs for replacement vegetation.

The Department requests further coordination to provide project/species specific recommendations, please contact Project Evaluation Program directly at PEP@azgfd.gov.

Project Location and/or Species Recommendations:
Analysis indicates that your project is located in the vicinity of an identified ***wildlife habitat linkage corridor***. The **Arizona Missing Linkages** represent ideal connections within or between intact blocks or core habitats. The blocks are currently disconnected or isolated and the linkages should be examined for improving permeability, or are currently intact and in need of preservation and/or enhancement. The reports provide recommendations for opportunities to preserve or enhance permeability. Project planning and implementation efforts should focus on maintaining and improving opportunities for wildlife permeability. For information pertaining to the linkage assessment and wildlife species that may be affected, please refer to: https://www.azgfd.com/wildlife/planning/habitatconnectivity/identifying-corridors/. Please contact the Project Evaluation Program (pep@azgfd.gov) for specific project recommendations.

HDMS records indicate that one or more native plants listed on the **Arizona Native Plant Law and Antiquities Act** have been documented within the vicinity of your project area. Please contact:
Arizona Department of Agriculture
1688 W Adams St.
Phoenix, AZ 85007
Phone: 602.542.4373
https://agriculture.az.gov/sites/default/files/Native%20Plant%20Rules%20-%20AZ%20Dept%20of%20Ag.pdf starts on page 44

HDMS records indicate that one or more **Listed, Proposed, or Candidate** species or **Critical Habitat** (Designated or Proposed) have been documented in the vicinity of your project. The Endangered Species Act (ESA) gives the US Fish and Wildlife Service (USFWS) regulatory authority over all federally listed species. Please contact USFWS Ecological Services Offices at https://www.fws.gov/office/arizona-ecological-services or:

Phoenix Main Office
9828 North 31st Avenue #C3
Phoenix, AZ 85051-2517
Phone: 602-242-0210
Fax: 602-242-2513

Tucson Sub-Office
201 N. Bonita Suite 141
Tucson, AZ 85745
Phone: 520-670-6144
Fax: 520-670-6155

Flagstaff Sub-Office
SW Forest Science Complex
2500 S. Pine Knoll Dr.
Flagstaff, AZ 86001
Phone: 928-556-2157
Fax: 928-556-2121

HDMS records indicate that **Peregrine Falcons** have been documented within the vicinity of your project area. Please review the Peregrine Falcon Management Guidelines at: https://s3.amazonaws.com/azgfd-portal-wordpress/PortalImages/files/wildlife/planningFor/wildlifeFriendlyGuidelines/peregrineFalconConservGuidelines.pdf.

HDMS records indicate that **Sonoran Desert Tortoise** have been documented within the vicinity of your project area. Please review the Tortoise Handling Guidelines found at: https://www.azgfd.com/wildlife/nongamemanagement/tortoise/

Tribal Lands are within the vicinity of your project area and may require further coordination. Please contact:
Fort Mojave Tribal Council
500 Merriman Avenue
Needles, CA 92363
(760) 629-4591
(760) 629-2468 (fax)

HDMS records indicate that **Western Burrowing Owls** have been documented within the vicinity of your project area. Please review the western burrowing owl resource page at: https://www.azgfd.com/wildlife/speciesofgreatestconservneed/burrowingowlmanagement/.

Attachment E: Supporting Cultural Resource Information

Contents of this attachment have been provided under separate cover due to the confidential and sensitive nature of the information.