

**Application
for a
Certificate of Environmental Compatibility**

**SunDog Solar 230kV
Generation Tie Line Project**

Prepared for:
**State of Arizona
Power Plant and Transmission Line Siting Committee**

Submitted by:
SunDog Energy Center LLC

**December 2023
Case No. TBD**

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INTRODUCTION

Pursuant to Arizona Revised Statutes (ARS) 40-360 et seq., SunDog Energy Center LLC (SunDog or Applicant), an affiliate of Invenergy LLC, submits this application for a Certificate of Environmental Compatibility (CEC) for the proposed SunDog 230-kilovolt (kV) alternating current generation intertie transmission line (Generation Tie Line) (herein called the Project). The proposed Project is designed to deliver power from the adjacent SunDog Solar Energy Center, a proposed 200-megawatt (MW) solar photovoltaic facility (Solar Facility) with a 200-MW battery storage system. The Solar Facility would also include the construction of a proposed onsite substation (Project Substation).

The Applicant proposes to construct and operate the Project to connect the Solar Facility to the regional electrical grid via the existing Pinal Central Substation. Although the Solar Facility and the Project Substation are mentioned in this Application, the Applicant seeks a CEC only for the Generation Tie Line.

Project Overview

The proposed Project consists of an approximate 1.7-mile-long 230kV Generation Tie Line. The Project is needed to serve the proposed Solar Facility and to allow connection of the Solar Facility to the regional electrical grid. The Generation Tie Line engineering design would be finalized in the detailed design phase after land negotiations and permitting are complete. Existing information, including typical structures, proposed substation facilities, and structure diagrams representative of the Generation Tie Line, is presented in Exhibit G.

Generation Tie Line Route

The proposed Generation Tie Line route would originate at the Project Substation and be routed east for about 0.6 miles, then turn south for about 0.4 miles, paralleling Alexis Lane. From there, the Generation Tie Line would be routed east for approximately 0.5 miles, continuing parallel to Alexis Lane. From there, the Generation Tie Line would be routed 0.05 miles south, then 0.15 miles east, and then 0.07 miles southeast until it reaches the point of interconnection (POI), the Pinal Central Substation (Figure 1).

Proposed Corridor

The Applicant has included a proposed variable-width Project corridor (Figure 2) to allow for siting flexibility in coordination with landowners and utility and other operators in the region. The proposed Project corridor would vary from 100 feet wide to 600 feet wide.

Purpose and Need

The Project is needed to connect the Solar Facility and the electricity generated thereby to the regional electrical transmission grid via the Pinal Central Substation for use by electric customers. The purpose of this CEC application is to secure approval of the Project that would connect the Solar Facility to the regional transmission system at the existing Pinal Central Substation.

The Project has been identified as an optimal location based on the recognized need to interconnect renewable energy sources to local electrical utilities, the existence of compatible adjacent and nearby land uses, and the proximity to the existing Pinal Central Substation. The location reduces the need for a long

Generation Tie Line or costly system upgrades and sites the proposed facilities in an area of existing and planned compatible land uses.

Environmental and Public Siting Process

Siting Process

The Applicant completed a siting process that focused on the identification of possible transmission routes to interconnect the proposed Solar Facility to the existing Pinal Central Substation. The Generation Tie Line route was selected based on the consideration of numerous variables. The Applicant sited the Generation Tie Line to safely avoid existing and planned transmission lines, safely cross existing roadway rights-of-way, and be adjacent to existing transmission line and other linear infrastructure to the extent practicable. The Applicant also removed a preliminarily identified alternative Generation Tie Line route segment after receiving feedback from Pinal County.

Public Outreach Process

The Applicant has coordinated with stakeholders, including agencies, municipalities, and the public, to provide Project information and opportunities for comment.

Additional information regarding public outreach can be found in Exhibit J of this Application.

Summary of Environmental Compatibility

After conducting an environmental analysis and minimizing or avoiding environmental impacts based on the factors outlined in ARS § 40-360.06, the Applicant believes the Project to be environmentally compatible. The Project would use little water and would produce no carbon or other emissions while working to meet Arizona's growing electricity demand.

Additionally, as discussed in the following sections, the Project

- would be compatible with existing plans in the vicinity of the proposed site,
- would not disturb any areas of unique biological wealth and would not impact special-status species,
- would have limited visual effects and limited impacts to known archaeological or historical sites of significance,
- is compatible with recreation opportunities in the area, and
- is not anticipated to result in significant impacts associated with noise or signal interference.

Conclusion

This Application includes the environmental analysis and documentation relevant to the Project as specified by Arizona Administrative Code (AAC) R14-3-219. SunDog is committed to avoiding and minimizing environmental impacts and believes the Project is environmentally compatible. SunDog therefore respectfully requests that the Power Plant and Transmission Line Siting Committee (Committee) grant, and the Arizona Corporation Commission (Commission) approve, a CEC for the construction of the Generation Tie Line to interconnect the Solar Facility to the Pinal Central Substation.

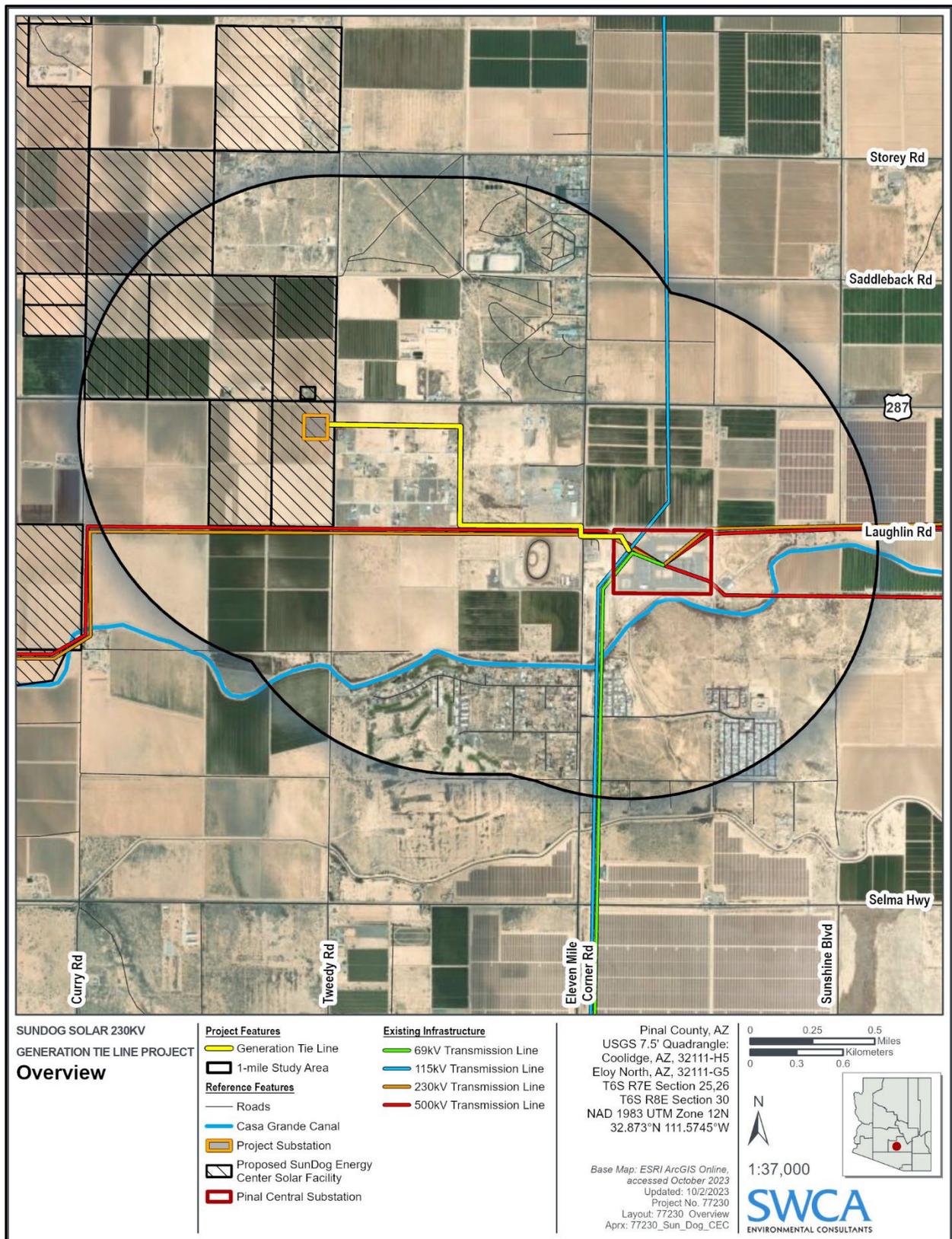


Figure 1. Proposed Project.



Figure 2. Project corridor map.

**Application For
Certificate of Environmental Compatibility**

1. Name and address of the Applicant

SunDog Energy Center LLC
One South Wacker Drive, Suite 1800
Chicago, IL 60606

2. Name, address, and telephone number of a representative of the applicant who has access to technical knowledge and background information concerning this application, and who will be available to answer questions or furnish additional information

Katie DeSpain
Associate, Renewable Development
Invenergy
1401 17th Street, Suite 1100
Denver, CO 80202
(303) 557-4493
KDeSpain@invenergy.com

3. Date on which the applicant filed a Ten Year Plan in compliance with A.R.S. § 40-360.02, in which the facilities for which this application is made were described

The Applicant filed a Ten Year Plan in Docket E-99999A-21-0009 on January 31, 2023.

4. Description of the proposed facility, including:

a. With respect to an electric generating plant:

The Project does not include an electrical generating plant.

b. With respect to a proposed transmission line:

i. Nominal voltage for which the line is designed; description of the proposed structures and switchyards or substations associated therewith; and purpose for constructing said transmission line

(1) Nominal voltage:

The nominal voltage for the proposed Generation Tie Line is 230kV alternating current, single circuit.

(2) Description of the proposed structures:

The Generation Tie Line will be constructed using galvanized or weathered steel or wood monopole and multipole structures, with an estimated 25 feet of ground clearance. Near the Project Substation, the Project would use dead-end structures. The transmission structures are expected to have an aboveground height of 70 - 90 feet and will be spaced 600 - 700 feet apart. Conceptual drawings for typical structure types can be found in Exhibit G.

(3) Description of proposed switchyards and substations:

The approximately 2-acre Project Substation, proposed within an approximate 5.5-acre site, will convert power from 34.5kV to 230kV. The Project Substation will include a

control enclosure, 34.5kV switchgear, two step-up power transformers to increase the voltage to 230kV, disconnect switches, bus and line bay, and an A-frame or H-frame dead-end structure. The Project Substation would be enclosed by a chain-link security fence. Consistent with current practice of the Commission and the Siting Committee, the Applicant is not requesting authorization for the Project Substation.

(4) Purpose for constructing said transmission line:

The purpose of the Generation Tie Line is to deliver electrical power generated by a new 200-MW photovoltaic solar energy generating facility and stored by a new 200-MW battery energy storage facility to the regional transmission grid for customer use.

ii. Description of geographical points between which the transmission line will run the straight-line distance between such points and the length of the transmission line for each alternative route for which the application is made

(1) Description of geographical points between which the transmission line will run:

The Project Substation is proposed to be in the northeast corner of parcel 401-15-001D in the northeast quarter of Section 26, Township 6 South, Range 7 East. The Generation Tie Line will originate at the Project Substation and would be routed east for approximately 0.6 miles, then turn south for approximately 0.4 miles, paralleling Alexis Lane. From there, the Generation Tie Line would be routed east for approximately 0.5 miles, continuing to parallel Alexis Lane. From there, the Generation Tie Line would be routed 0.05 miles south, then 0.15 miles east, and then 0.07 miles southeast until it reaches the POI, the Pinal Central Substation.

(2) Straight-line distance between such points:

For the Generation Tie Line, the straight-line distance between the Project Substation and the existing Pinal Central Substation is approximately 1.3 miles.

(3) Length of the transmission line for each alternative route:

The length of the Generation Tie Line is approximately 1.7 miles.

iii. Nominal width of right-of-way required, nominal length of spans, maximum height of supporting structures and minimum height of conductor above ground

(1) Nominal width of right-of-way required:

The Generation Tie Line right-of-way (ROW) will be up to 100 feet wide within the requested variable-width corridor. The Generation Tie Line ROW will have a reduced width when it is located on the Pinal County Fairgrounds and Event Center, the details of which are being coordinated with Pinal County. The variable-width corridor is being requested to facilitate landowner coordination, allow for minor adjustments to the location of structures to achieve site-specific mitigation objectives, and meet site-specific engineering requirements.

(2) Nominal length of spans:

The span length between structures will vary depending on terrain, constraints, and other factors but will be approximately 600 - 700 feet.

(3) Maximum height of supporting structures:

The maximum height above ground of the supporting structures is anticipated to be approximately 90 feet.

(4) Minimum height of conductor above ground:

The minimum height of conductor above the existing grade will be 25 feet.

- iv. To the extent available, the estimated costs of proposed transmission line and route, stated separately. (If application contains alternative routes, furnish an estimate for each route and a brief description of the reasons for any variations in such estimates.)**

The estimated cost of equipment for the Generation Tie Line is approximately \$2.5 to \$4 million. The estimated cost of land for the Generation Tie Line is approximately \$1.75 million, contingent upon the agreement to be signed with Pinal County.

- v. Description of proposed route and switchyard locations. (If application contains alternative routes, list routes in order of applicant's preference with a summary of reasons for such order of preference and any changes such alternative routes would require in the plans reflected in (i) through (iv) hereof.)**

The Generation Tie Line route is described generally in (ii) above and is depicted in Figure 1. The Applicant sited the Generation Tie Line to safely avoid existing and planned transmission lines, safely cross existing roadway rights-of-way, and be adjacent to existing transmission line and other linear infrastructure to the extent practicable.

- vi. For each alternative route for which application is made, list the ownership percentages of land traversed by the entire route (federal, state, Indian, private, etc.).**

The Generation Tie Line will entirely be on privately owned land, except for those portions crossing public road ROWs at South Tweedy Road, and Eleven Mile Corner Road.

- 5. List the areas of jurisdiction [as defined in A.R.S. § 40-360(1)] affected by each alternative site or route and designate those proposed sites or routes, if any, which are contrary to the zoning ordinances or master plans of any of such areas of jurisdiction.**

The Generation Tie Line is on private land under the jurisdiction of Pinal County and the City of Coolidge, Arizona. The Generation Tie Line in unincorporated Pinal County is zoned as General Rural (GR) and General Business Zone (CB-2). The Generation Tie Line in Coolidge is zoned as Agricultural (AG). The proposed route of the Generation Tie Line does not violate any current zoning ordinances or master plans of the relevant jurisdictions.

- 6. Describe any environmental studies applicant has performed or caused to be performed in connection with this application or intends to perform or cause to be performed in such connection, including the contemplated date of completion.**

The Applicant has evaluated publicly available desktop data and field data related to biological resources, visual resources, cultural resources, recreational resources, land use, noise levels, and communications signals to assess the potential impacts that may result from the construction, operation, and maintenance of the Project. These evaluations are included in Exhibits B, C, D, E, F, H, and I of this application.

/s/ Laura Miner

Laura Miner, Authorized Signatory, SunDog Energy Center LLC

I HEREBY CERTIFY that on this twentieth day of December 2023, I have delivered to the Arizona Corporation Commission twenty-five (25) copies of this Application for a Certificate of Environmental Compatibility.

EXHIBIT A. LOCATION MAP AND LAND USE MAPS

In accordance with Arizona Administrative Code Rules of Practice and Procedure R14-3-219, Exhibit 1, the applicant provides the following location maps and land use information:

*Where commercially available**, 1) a topographic map, 1:250,000 scale, showing any proposed transmission line route longer than 50 miles and the adjacent area; and 2) a topographic map, a scale of 1:62,500, for routes shorter than 50 miles showing any proposed transmission line route and the adjacent area.*

Where commercially available, a topographic map, 1:62,500 scale, of each proposed transmission line route longer than 50 miles showing that portion of the route within two miles of any subdivided area. The general land use plan within the area shall be shown on a 1:62,500 map required for Exhibit A-3, and for the map required by this Exhibit A-4, which shall also show the areas of jurisdiction affected and any boundaries between such areas of jurisdiction. If the general land use plan is uniform throughout the area depicted, it may be described in the legend in lieu of an overlay.

***If a topographic map is not commercially available, a map of similar scale, which reflects prominent or important physical features of the area in the vicinity of the proposed site or route, shall be substituted.*

Land Use Overview

The following exhibits are required by the Arizona Corporation Commission's *Rules of Practice and Procedure* R14-3-219 to support the land use studies conducted for this Application:

- Exhibit A-1 illustrates the land ownership and surface jurisdiction for the location of proposed Project and land within 1 mile of the Project (Study Area).
- Exhibit A-2 illustrates existing land use within the Study Area.
- Exhibit A-3 illustrates future land use within the Study Area.

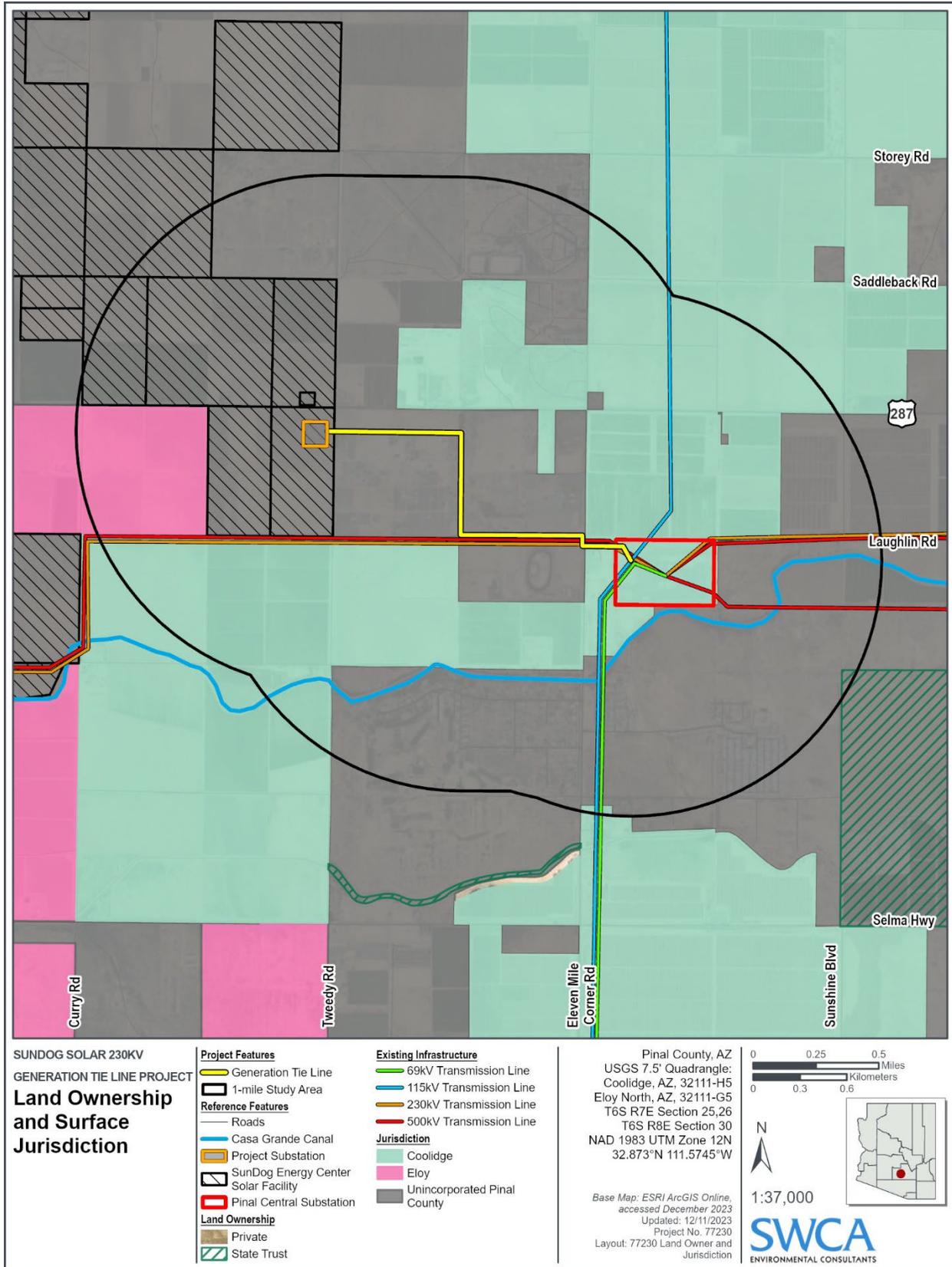


Exhibit A-1. Land ownership and surface jurisdiction.

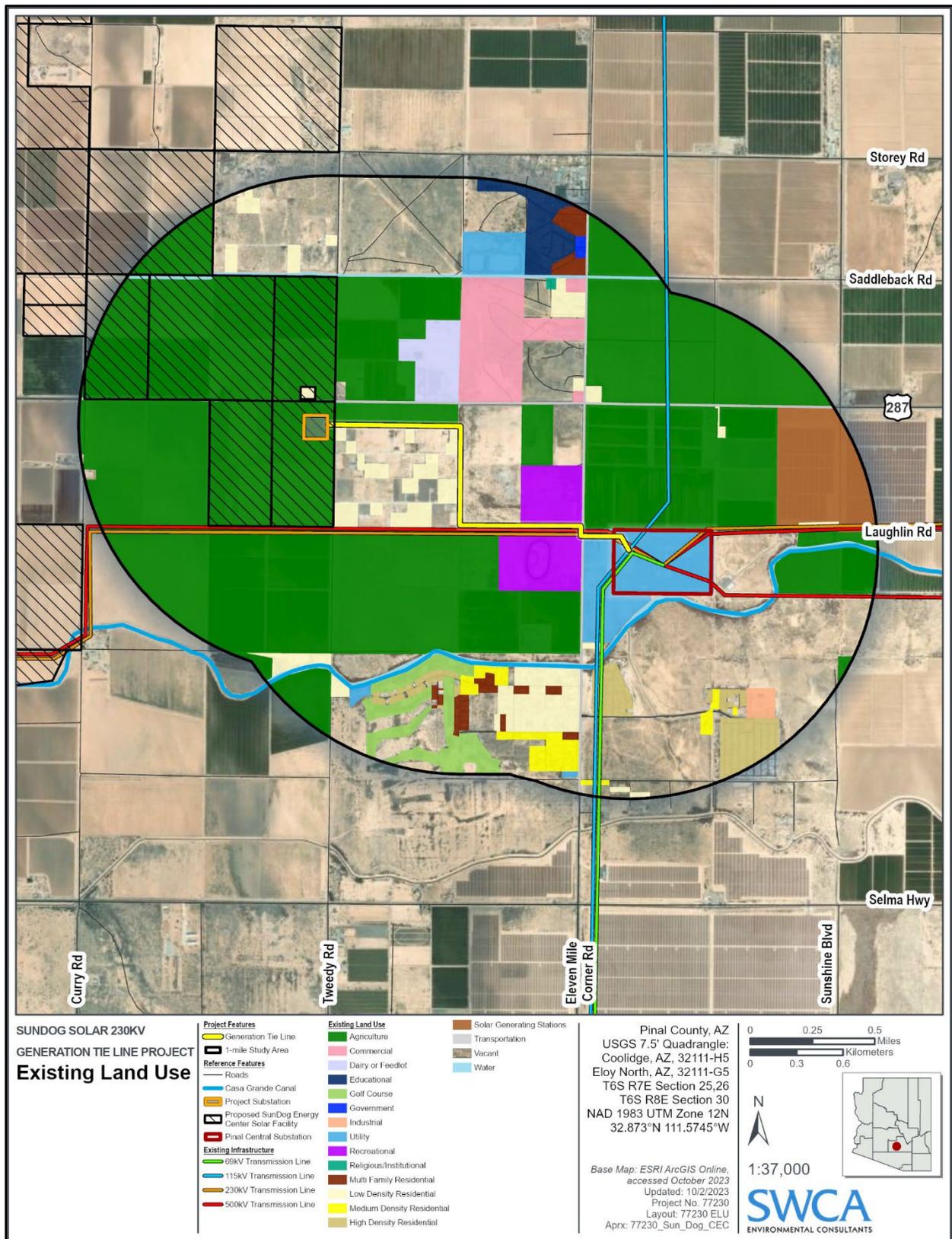


Exhibit A-2. Existing land use.

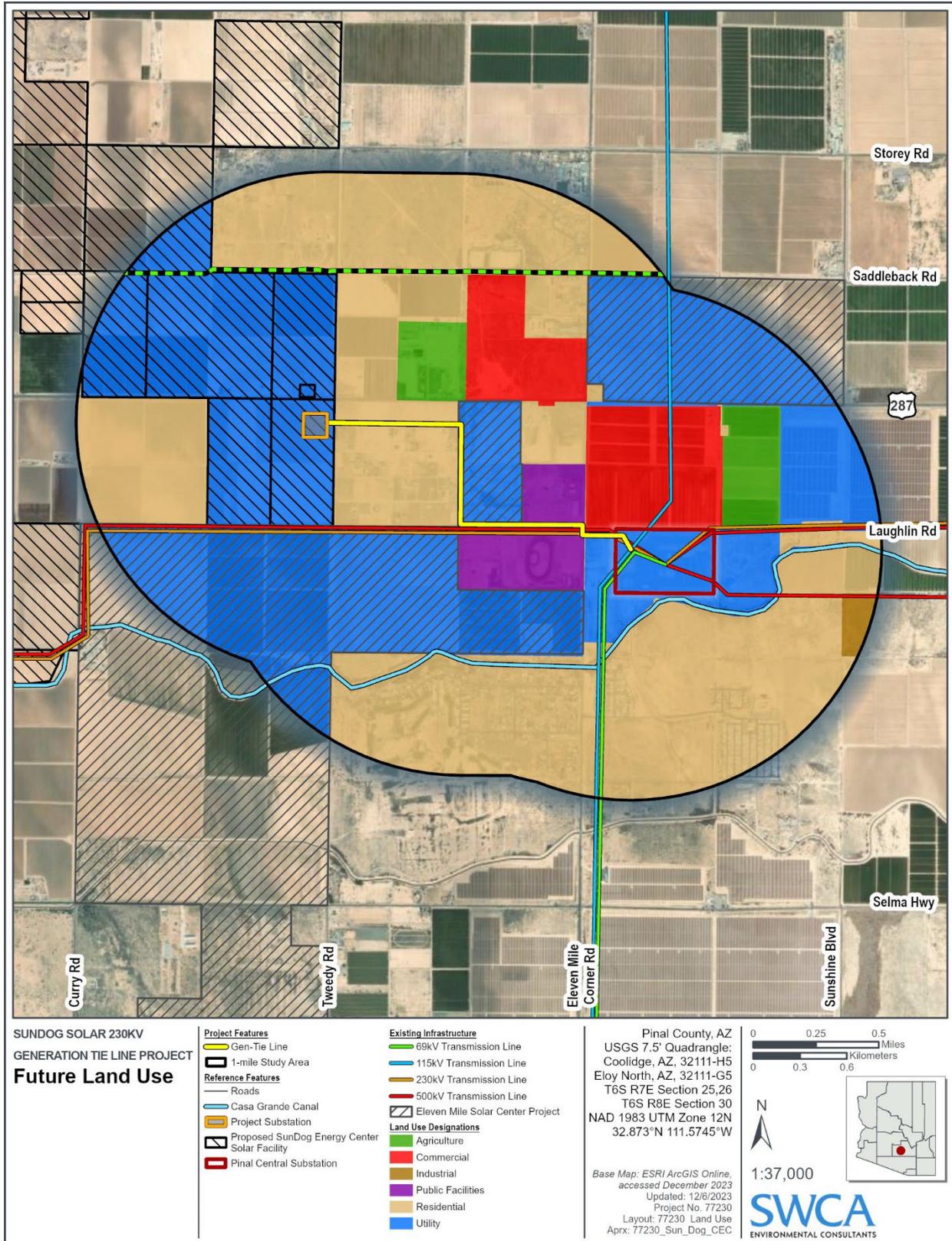


Exhibit A-3. Future land use.

EXHIBIT B. ENVIRONMENTAL STUDIES

As stated in the Arizona Corporation Commission Rules of Practice and Procedure R14-3-219, Exhibit 1:

Attach any environmental studies which applicant has made or obtained in connection with the proposed site(s) or route(s). If an environmental report has been prepared for any federal agency or if a federal agency has prepared an environmental statement pursuant to Section 102 of the National Environmental Policy Act, a copy shall be included as a part of this exhibit.

Introduction

SWCA Environmental Consultants (SWCA) was retained by the Applicant to complete environmental analyses for the Project, which include the evaluation of land use as well as biological, visual, cultural, and recreation resources within the Project and a 1-mile-radius buffer around the Generation Tie Line (herein called the Study Area). The Project Area, which consists of the Generation Tie Line, is located within unincorporated Pinal County, Arizona, and Coolidge, Arizona. The 1-mile Study Area includes lands in unincorporated Pinal County, Coolidge, and Eloy, Arizona. Land ownership within the Study Area consists of privately owned land and Arizona State Land Department-administered lands. This exhibit provides a detailed inventory and evaluation of existing and planned land use within the Study Area. Biological, visual, cultural resource, recreational, and noise evaluations are discussed in Exhibits C, D, E, F, and I.

Land Use

Inventory

The methodology used for this land use inventory included field verification and a review of desktop data, such as maps, aerial imagery, general plans, and other supportive documents, including the Pinal County *We Create Our Future: Pinal County Comprehensive Plan* (Comprehensive Plan) (Pinal County 2021) and the City of Coolidge *2025 General Plan: The Future Today* (2025 General Plan) (City of Coolidge 2014), the Maricopa Association of Governments Land Use Explorer (Maricopa Association of Governments 2023), and the Pinal County interactive mapping service (Pinal County 2023a). The inventory also included communication with government agencies, municipalities, and other stakeholders within the Study Area to gather information regarding further development plans or known development projects. Additional information regarding coordination with these entities can be found in Exhibit H.

Jurisdiction and Land Ownership

The Study Area includes lands under the jurisdiction of Pinal County, the City of Coolidge, and the City of Eloy. Land ownership within the Study Area consists of privately-owned land and Arizona State Land Department-administered lands, as shown in Exhibit A-1.

Existing Land Use

The primary existing land uses within the Study Area are agricultural, residential, utilities, and vacant land. Other land uses in the Study Area include commercial, dairy or feedlot, educational, golf course, government, industrial, other utility, recreational, religious/institutional, solar power-generating facilities,

transportation, and water. Overall, the Study Area can be described as mixed use in character with utilities, agriculture, public facilities, residential, and vacant land being the primary uses. There are three 500kV transmission lines, two 230kV transmission lines, one 115kV transmission line, and one 69kV transmission line within the Study Area. The existing land uses within the Study Area are displayed on Exhibit A-2 and described in detail below.

Agricultural – Agriculture, consisting primarily of irrigated row crops, is largely present throughout the Study Area.

Residential – Rural residences are scattered throughout the Study Area, with some more dense residential areas near the southern portion of the Study Area associated with the golf course.

Vacant – Vacant lands are scattered throughout the Study Area, with most vacant land in the central, southern, and northern portions of the Study Area.

Commercial – Commercial uses within the Study Area include a tractor dealership and a motorcycle training center.

Dairy or Feedlot – This existing land use is an inactive cattle lot near the central portion of the Study Area.

Educational – This land use is associated with the Mary C. O’Brien Elementary School, near the northern portion of the Study Area.

Golf Course – This land use is associated with the Tierra Grande Golf Course, near the southern portion of the Study Area.

Government – This land use is associated with the Pinal County Housing Authority building and the Pinal County Educational Service Agency, both near the northern portion of the Study Area.

Industrial – This land use is associated with a water treatment facility in the southeastern portion of the Study Area.

Utility – This land use is associated with three 500kV transmission lines, two 230kV transmission lines, one 115kV transmission line, one 69kV transmission line, the Pinal Central Substation, and the Western Area Power Administration ED-2 Substation.

Public Facilities/Recreational – This land use is associated with the Pinal County Fairgrounds and the Central Arizona Speedway, both near the central portion of the Study Area.

Religious/Institutional – This land use is associated with the Live Love Ministries, near the northern portion of the Study Area.

Solar Generating Stations – This land use is associated with Pinal Central Energy Center, in the eastern portion of the Study Area.

Transportation – This land use is associated with several major named roadways, including Saddleback Road, State Route (SR) 287, Laughlin Road, Eleven Mile Corner Road, Tweedy Road, Curry Road, and Sunshine Boulevard, throughout the Study Area.

Water – The main water facilities in the Study Area are two irrigation canals. The Casa Grande Canal is south of the project along East Earley Road, and the other is an unnamed canal to the north along West Casa Bonita and East Saddleback Roads.

Future Land Use

Data discussed in this section were derived from the Comprehensive Plan (Pinal County 2021), 2025 General Plan (City of Coolidge 2014), and the Pinal County interactive mapping service (Pinal County 2023a).

Future land uses within the Study Area are mapped on Exhibit A-3 and are primarily mixed use, business park, utility infrastructure, and solar generating facilities. Notably, the Eleven Mile Solar Center Project would be interspersed throughout much of the Study Area. The Eleven Mile Solar Center Project began construction in 2023 and is estimated to begin operation in 2024.

On July 17, 2023, the Applicant sent letters to the relevant jurisdictions to provide Project information and request new or additional information on plans or planned developments within the Study Area. Table H-1 in Exhibit H provides a list of recipients. Exhibits H-1a and H-1b in Exhibit H provide a copy of the letter, and Exhibits H-2a through H-2d and H-3 include the written responses.

Impact Assessment and Results

Land use impacts may be defined as restrictions on a land use that would result from the construction or operation of the Project or incompatibility with existing land use plans. Typically, restrictions on a land use would result from right-of-way (ROW) or easement acquisition across a property. To minimize land use impacts, Project routes were sited to generally follow existing linear features, such as existing transmission lines, roadways, canals, and existing ROWs, where feasible.

The Generation Tie Line would be entirely on privately owned land in unincorporated Pinal County and Coolidge, Arizona. It would parallel existing linear features (such as existing roads and transmission lines) to the extent practicable and would cross parcels with existing agricultural, vacant, utility, and recreational land uses. All these existing land uses are compatible with the Generation Tie Line (see Exhibit F for a detailed discussion of the existing recreational uses crossed by the Generation Tie Line).

The Comprehensive Plan identifies the Generation Tie Line in unincorporated Pinal County as being within the “Moderate Low Density Residential” and “General Public Facilities/Services” land use designations. One of the overarching goals in the Comprehensive Plan is to “Encourage, coordinate and support commercial and industrial land uses in appropriate areas to maximize adequate services including transportation, water, sewer, fire suppression and utilities” (Pinal County 2021). The “General Public Facilities/Services” designation is defined as “large public and quasi-public facilities that require significant space such as power plants, landfills, solid waste transfer stations, wastewater facilities, water campuses, and concentrations of public buildings” (Pinal County 2021). Therefore, the Generation Tie Line is compatible with the existing Comprehensive Plan land use designations. The Generation Tie Line in unincorporated Pinal County is zoned as General Rural (GR) and General Business Zone (CB-2). The list of permitted uses in the GR zoning district include “Public and quasi-public uses: ...public or private utility and facilities...” (Pinal County 2023b). The list of permitted uses in CB-2 zoning district include “Water, telephone or telegraph distribution, installation or electrical receiving or distribution station (within or without a building)...” (Pinal County 2023b). Therefore, the Generation Tie Line is compatible with the existing unincorporated Pinal County zoning districts.

The 2025 General Plan identifies the Generation Tie Line within the city of Coolidge as in the “Industrial and Manufacturing” land use designation, which include land uses (such as manufacturing, industrial, and production activities and transportation related activities) that would implicitly require electrical transmission infrastructure to construct and operate (City of Coolidge 2014). Therefore, the Generation Tie Line is compatible with the existing 2025 General Plan land use designation. The Generation Tie Line

in the City Coolidge is zoned as Agricultural (AG). According to the City of Coolidge Zoning Code states “Individual public utility installations above ground are considered accessory buildings” (City of Coolidge 2009). As accessory buildings are permitted in the AG zoning district, the Generation Tie Line project is considered a permitted use in the AG zoning district.

Literature Cited

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EXHIBIT C. AREAS OF BIOLOGICAL WEALTH

As stated in the Arizona Corporation Commission Rules of Practice and Procedure R14-3-219, Exhibit 1:

Describe any areas in the vicinity of the proposed site or route which are unique because of biological wealth or because they are habitats for rare and endangered species. Describe the biological wealth or species involved and state effects, if any, the proposed facilities will have thereon.

Introduction

SWCA conducted a biotic resource review to identify areas of biological wealth and the rare and endangered species that may occur at or in the vicinity of the Project. SWCA consulted data sources including:

- Topographical maps, aerial photographs, and land use, land cover, and elevation data
- The U.S. Fish and Wildlife Service (USFWS) species list for the proposed Project obtained from the USFWS online Information for Planning and Consultation (IPaC) system (Exhibit C-1)
- Species information obtained from the USFWS Environmental Conservation Online System, the Arizona Game and Fish Department (AGFD) Online Environmental Review Tool (Exhibit C-2), and other relevant online sources.

The AGFD Online Environmental Review Tool database query establishes a buffer beyond the Study Area to search for occurrence records and the presence of modeled habitat. The size of the buffer depends on the type of project being considered. For this Project, the buffer is 5 miles beyond the Project Area. This buffer fully encompasses the 1-mile-radius Study Area, and the analysis in Exhibit C is limited to the 1-mile Study Area.

An SWCA biologist with expertise in the biology of flora and fauna of the region completed field surveys for the Project. All plant and wildlife species observed in the Project Area and Study Area during the June 30, 2023, site visit were recorded (see Exhibit D for a complete list). The site was assessed to determine whether habitat features for species protected under federal, state, or local regulations were present in the Project Area and Study Area.

Laws and Policies

Applicable laws and policies regarding special-status species in Arizona include the following:

- The USFWS administers the **Endangered Species Act of 1973 (ESA), as amended**, which protects wildlife species listed as endangered (or as threatened if a 4(d) rule applies) from “take” (generally, directly, or indirectly harming or disturbing listed species). However, the ESA does not provide the same take protections for listed plant species, except on federal land. The ESA also allows for the designation of critical habitat for listed species, although designation of critical habitat is not required. Critical habitat is an administrative designation of a defined area with specific characteristics important to the survival and recovery of a listed species. Designation of critical habitat can affect federal actions but not state or private actions without a federal nexus.

- The **Migratory Bird Treaty Act (MBTA)** provides for the protection of migratory birds and prohibits their unlawful take or possession. The act bans “taking” any native birds; “taking” can mean killing a wild bird or possessing parts of a wild bird, including feathers, nests, or eggs. Exceptions are allowed for hunting game birds and for research purposes, both of which require permits.
- The **Bald and Golden Eagle Protection Act (BGEPA)** prohibits any form of possession or taking of bald eagles (*Haliaeetus leucocephalus*) or golden eagles (*Aquila chrysaetos*). A 1962 amendment to the MBTA created a specific exemption for possession of an eagle or eagle parts (e.g., feathers) for religious purposes of Native American tribes. The amendment provided for not only the preservation of the golden eagle but also the preservation of Native American cultural practices.
- The AGFD manages and conserves wildlife in Arizona. Arizona does not have a counterpart to the federal ESA, but nearly all take of wildlife is regulated in some manner through the **AGFD’s hunting and fishing license system**. A list of rare species (**Wildlife Species of Concern [WSC]**) was created in 1996 without creating any specific statutory protections for those species (AGFD 1996); however, hunting regulations are used to provide some protection. Although WSC is no longer a valid category, AGFD continues to track these species because of an existing Memorandum of Understanding between the USFWS and AGFD. Generally, no hunting or capture of WSC is allowed, with some exceptions for managed recreational fisheries of native fish (AGFD 2017) and recreational capture of certain reptiles (AGFD 2015).
- Arizona prepared a Comprehensive Wildlife Conservation Strategy in 2006 (AGFD 2006), later renamed to the **Arizona Wildlife Conservation Strategy (AWCS)** (2022–2032), through a state-federal partnership and grant program. The AWCS was updated in 2022 (AGFD 2022). The State Wildlife Action Plan (SWAP) identifies **Species of Greatest Conservation Need (SGCN)** in several tiers. Tier 1 species are those that the AGFD has deemed vulnerable and fall into a categorization of either federally listed as endangered or threatened under the ESA; those that have been recently removed from the ESA and require post-delisting monitoring; those specifically covered under a signed agreement such as a Candidate Conservation Agreement (CCA), Candidate Conservation Agreement with Assurances (CCAA), Conservation Strategy and Assessment, or Strategic Conservation Plan; or those for which the AGFD has determined the protection of a closed season is warranted. Tier 2 represents the remainder of the species meeting the AGFD’s vulnerability criteria, including species that are not listed but are regionally rare or declining, species with a U.S. range primarily in Arizona that are dependent on conservation efforts within the state, and other species with identified conservation issues that may warrant management action and do not meet the criteria for Tier 1 listing. Tier 3 species are those for which existing data were insufficient to score one or more vulnerability criteria because substantial data gaps and unknown conservation status but where conservation concern may be warranted. Species identified as WSC in 1996 are included as SGCNs in the SWAP and are addressed as SGCNs in Table C-1 and the discussion in this exhibit.
- The **AWCS** also denotes **Conservation Opportunity Areas (COAs)** as of December 2022 (AGFD 2022). The COAs were created to help implement the AWCS and should be considered voluntary guidance for specific areas where conservation efforts would be most effective, based on species and habitat expertise, as well as wildlife and spatial data. These COAs are representative of specific areas that show strong potential for substantial improvements for wildlife and associated habitats. COAs are divided into categories of terrestrial and aquatic. Terrestrial COAs focus on geographic areas determined to have high conservation value and strong potential for successful conservation efforts. Aquatic COAs are strictly focused on conservation of aquatic resources, particularly native fish species (AGFD 2023a). COAs reflect the best areas for conservation and were determined without regard to jurisdiction or

landownership. In addition, COAs will not be subject to any new regulations nor do they have any regulatory effect (AGFD 2022).

- Native plants in Arizona are managed by the Arizona Department of Agriculture (ADA) under the **Arizona Native Plant Law** (ANPL) (ARS 3-903; AAC R3-3-208), which regulates harvest, salvage, and transport of plants. Harvest or salvage of most plant species may be permitted or required, and fees may be assessed on State land. Plants listed in the Highly Safeguarded category may be taken or salvaged only for scientific or conservation purposes. The ANPL identifies a lengthy list of plant species—largely cacti, agave, yucca, and desert trees—that are susceptible to removal for collection, landscaping, sale, or other commercial uses. The ANPL states that these plants shall not be taken, transported, or possessed from any land without permission and a permit from the ADA; it also requires notification before land clearing even if the plants will be destroyed.
- The ADA administers the **state noxious weed law** under AAC R3-4-245. Arizona maintains a list of noxious weeds in three categories: Class A, Class B, and Class C (ADA 2023). Class A species are those that are not known to occur in Arizona and are of limited distribution, and are of high priority for quarantine, control, or mitigation. Class B noxious weeds are species known to occur but are of limited distribution in Arizona and may be high-priority pests for quarantine, control, or mitigation if a significant threat to crop, commodity, or habitat exists. Class C noxious weeds are plant species that are widespread but may be recommended for active control based on risk assessment.

Inventory

An SWCA biologist with expertise in the biology of flora and fauna of the region surveyed the Study Area on June 30, 2023. All plants and wildlife observed were recorded during the survey efforts. In addition, the biologist documented existing conditions and noted any habitat features that may be important to special-status species or related to areas of biological wealth in the Project Area and Study Area.

On July 17, 2023, SWCA queried the USFWS IPaC database to generate an unofficial list of ESA-listed species that have the potential to occur in the Study Area (see Exhibit C-1) (USFWS 2023a). In addition, the AGFD Online Environmental Review Tool (OERT) was queried on July 17, 2023, to generate a list of special-status species with records within 5 miles of the Project Area and a list of SGCNs with modeled suitable habitat intersecting the Project Area (see Exhibit C-2) (AGFD 2023b).

Summary of Occurrence

The USFWS and AGFD identified several endangered, threatened, candidate, and other special-status species that are known to occur or could occur in the region (i.e., within the Study Area for USFWS and within the Project Area plus a 5-mile buffer for AGFD). These special-status species and the likelihood of their being present in the vicinity of the Generation Tie Line are addressed below in six sections: 1) Areas of Biological Wealth, 2) Federally Listed Threatened and Endangered Species, 3) Bald and Golden Eagles, 4) Other Special-Status Species, 5) State-Protected Native Plants, and 6) Noxious Weeds (AGFD 2023b; USFWS 2023a).

Areas of Biological Wealth

No designated or proposed critical habitat occurs within the Project Area or Study Area (USFWS 2023a).

No Important Bird Areas (IBAs) occur within the Project Area or Study Area. The closest IBA, the Lower Salt and Gila Rivers Ecosystem IBA, is approximately 36.9 miles northeast of the Study Area in Alamo Canyon-Queen Creek (Audubon 2023).

No COAs or wildlife corridors/linkages occur within the Project or Study Area.

The Arizona Riparian Council definition of a riparian area is as follows: “Riparian is defined as vegetation, habitats, or ecosystems that are associated with bodies of water (streams or lakes) or are dependent on the existence of perennial, intermittent, or ephemeral surface or subsurface water drainage” (AGFD 2019). Pinal County provides nonregulatory guidelines intended to aid in identifying, protecting, and reducing impacts to riparian areas throughout Pinal County. The guidelines can be found in the *Pinal County Riparian Area Guidelines* (AGFD 2019). To aid in the identification of potential riparian areas, Pinal County used remote sensing data to prepare a geospatial dataset, which is included in the AGFD OERT query results. The OERT query results indicated that a small area within the Study Area was modeled as potential riparian habitat. A review of aerial imagery and the results of the site reconnaissance confirmed that no riparian habitat is present within the Study Area.

No areas of biological wealth were identified as being present within the Study Area.

Federally Listed Threatened and Endangered Species

One species listed as threatened and one candidate species were identified in the USFWS species list for the Study Area (USFWS 2023a). The ESA-listed threatened species is yellow-billed cuckoo (*Coccyzus americanus*). The candidate species identified in the USFWS species list is the monarch butterfly (*Danaus plexippus*). Although the USFWS species list did not identify the Southwestern willow flycatcher (*Empidonax traillii extimus*) or Yuma Ridgway’s rail (*Rallus obsoletus yumanensis*), these species have occurrence records within proximity to Project Area and, therefore, potential for occurrence of these species is addressed below (see Exhibit C-2). The species’ federal status and potential for occurrence in the vicinity of the Project are presented in Table C-1.

BALD EAGLE (*HALIAEETUS LEUCOCEPHALUS*) AND GOLDEN EAGLE (*AQUILA CHRYSAETOS*)

Bald eagle and golden eagle are protected under both the MBTA and the BGEPA of 1940, as amended (16 United States Code 668–668d or 50 Code of Federal Regulations 22).

The bald eagle is protected under the MBTA and BGEPA and is an SGCN Tier 1 species. Nests are generally placed in large deciduous or coniferous trees or cliffs, with a commanding view of the area, less than 1 mile from appropriate aquatic foraging conditions (e.g., perennial rivers or lakes containing fish) (Buehler 2000). The species communally roosts in the winter in large (15–60 m in height) deciduous or coniferous trees, which tend to be near aquatic foraging sites (<50 m) but may be more than 6 miles from aquatic foraging sites, particularly in areas sheltered from adverse weather conditions with unusually high prey or carcass availability (Buehler 2000; USFWS 2007, 2013). Wintering/nonbreeding individuals and juveniles are typically associated with breeding habitats; however, they may range widely in search of food, shelter, and reduced human presence (Buehler 2000).

The Project Area and Study Area are within the nonbreeding range of the species, and agricultural fields may provide foraging resources. The Project Area and Study Area do not contain characteristic nesting or roosting habitats. The nearest documented nesting areas are over 44 miles away, east of North Bush Highway along the Salt River (Southwestern Bald Eagle Management Committee 2022).

Golden eagles are protected under the MBTA and BGEPA, and as an SGCN Tier 2 species. They require large, open hunting grounds adjacent to mountainous canyonland and rimrock terrain of open desert, grassland, and forested areas (Katzner et al. 2020; Marzluff et al. 1997). The presence of sizable shrub (e.g., sagebrush [*Artemisia* spp.], rabbitbrush [*Chrysothamnus* spp.]) patches is an essential component of golden eagle home ranges (Marzluff et al. 1997). Nests are placed in rugged terrain (e.g., cliffs), less often in tall trees and on human-made structures (e.g., transmission towers) (Katzner et al. 2020).

Wintering/nonbreeding individuals and juveniles are typically associated with breeding habitats; however, they may range widely in search of food (Katzner et al. 2020). The nearest known breeding area for the golden eagle is in Yuma County, Arizona, in the Mohawk Mountains, approximately 121 miles southwest of the evaluation area (McCarty et al. 2020). Although the Project Area and Study Area do not contain suitable nesting habitat for golden eagle and are outside the species’ predicted year-round range (AGFD 2002), individuals may forage or move through.

Table C-1. Evaluation of Federally Listed and BGEPA Species within the Study Area

Common Name (Scientific Name)	Status	Range or Habitat Requirements	Occurrence Status
Birds			
Bald eagle (<i>Haliaeetus leucocephalus</i>)	BGEPA	Occur in aquatic habitats with open water or Southwest arid regions with available food and roost sites. The range for non-breeding bald eagles extends throughout Arizona, except for the south-central portion of the state; breeding eagles occur in limited, fragmented locations of central, east-central, and west-central portions of the state.	May occur. The Project Area and Study Area do not contain preferred breeding or roosting habitats but are within non-breeding range with forage potential occurring in the agricultural fields throughout the Study Area.
Golden eagle (<i>Aquila chrysaetos</i>)	BGEPA	Found in mountainous canyon land, rimrock terrain of open desert, grassland, and forested areas. Year-round range includes all of Arizona.	May occur. Although suitable nesting habitat is not present in the Project Area or Study Area, eagles may forage or move through the area.
Southwestern willow flycatcher (<i>Empidonax traillii extimus</i>)	E	Found in dense riparian habitats along streams, rivers, and other wetlands where cottonwood, willow, boxelder (<i>Acer negundo</i>), saltcedar (<i>Tamarix</i> spp.), Russian olive (<i>Elaeagnus angustifolia</i>), buttonbush (<i>Cephalanthus</i> spp.), and arrowweed (<i>Pluchea sericea</i>) are present. Nests are found in thickets of trees and shrubs, primarily those that are 13 to 23 feet tall, among dense, homogeneous foliage. Habitat occurs at elevations below 8,500 feet above mean sea level (amsl).	Unlikely to occur. The Project and Study Area does not contain riparian habitat suitable for species occurrence.
Yellow-billed cuckoo (<i>Coccyzus americanus</i>)	T	Typically found in riparian woodland vegetation (cottonwood [<i>Populus</i> sp.], willow [<i>Salix</i> sp.], or saltcedar [<i>Tamarix ramosissima</i>]) at elevations below 6,600 feet amsl. Dense understory foliage appears to be an important factor in nest site selection. The highest concentrations in Arizona are along the Agua Fria, San Pedro, upper Santa Cruz, and Verde River drainages and Cienega and Sonoita Creeks.	Unlikely to occur. Suitable habitat for this species is not present in the Project Area or Study Area. The nearest potentially suitable habitat is about 4.6 miles southeast of the Study Area in the Picacho Reservoir.
Yuma Ridgway’s rail (<i>Rallus obsoletus yumanensis</i>)	E	Found in dense emergent riparian vegetation below 4,500 feet amsl. Requires wet substrate (mudflat, sandbar) with dense herbaceous or woody vegetation for nesting and foraging.	Unlikely to occur. The Project and Study Areas do not contain riparian vegetation suitable for species occurrence.

Common Name (Scientific Name)	Status	Range or Habitat Requirements	Occurrence Status
Insects			
Monarch butterfly (<i>Danaus plexippus</i>)	C	Habitat is complex. Generally, breeding areas are virtually all patches of milkweed (<i>Asclepias</i> sp.) or other members of the milkweed family. The species occurs throughout Arizona during the summer and migrates to winter in Mexico and California, although small numbers do overwinter in the low deserts of southwestern Arizona.	May occur. This species may be present as transients during migration or as occasional individuals passing through the Study Area enroute to larval food plants or nectar resources. No plants in the milkweed family were observed in the Project Area for larval use, but nectar sources are available for foraging and migration (Western Monarch Milkweed Mapper 2023).

Note: This table lists the species named in the USFWS official species list (USFWS 2023a) and the Arizona Online Environmental Review Tool (AGFD 2023b).

Source: AGFD (2023b); eBird (2023); USFWS (2023b). Notes regarding documentation within 5 miles of the evaluation area are from AGFD (2023b).

BGEPA = Bald and Golden Eagle Protection Act

C = candidate; E = endangered; T = threatened, EXPN = experimental non-essential population.

Other Special-Status Species

Other special-status species include the following:

- Birds of Conservation Concern (BCC), which are bird species beyond those designated as federally threatened or endangered, that represent the USFWS’s highest conservation priorities. The relevant BCC for this analysis are those identified by the USFWS (2021) as occurring in Bird Conservation Region (BCR) 33. The BCC list is non-regulatory, although some agencies may give special consideration to these species.
- SGCN in Arizona, which are species identified by the AGFD as warranting heightened attention because of low and declining populations, as described in Laws and Policies above.

Some species in these categories (other than those also designated as federally threatened or endangered, candidate, EXPN, or BGEPA, which are addressed above) have occurrence records or predicted habitat modeled within 5 miles of the Project Area (AGFD 2023b). These species are discussed below and listed in Table C-2, where they are evaluated for potential occurrence based on the results of Project Area surveys, familiarity with the vicinity, and freely available information sources including the following:

- AGFD’s Heritage Data Management System (AGFD 2023c)
- Online field guide *Reptiles and Amphibians of Arizona* (Brennan 2012)
- *The Breeding Bird Atlas* (Corman and Wise-Gervais 2005)
- Online field guide *All About Birds* (Cornell Lab of Ornithology 2023)
- eBird (2023)
- Google Earth (2023)
- USFWS Environmental Conservation Online System (ECOS) website (USFWS 2023b)

Table C-2. Other Special-Status Species with Potential to Occur in the Vicinity of the Study Area

Common Name (<i>Scientific Name</i>)	Habitat and Notes	Status*		Occurrence Status	
		Federal	State (Tier)	Project Area	Study Area
Amphibians					
Lowland leopard frog (<i>Lithobates yavapaiensis</i>)	Found in rocky streams, canyon habitats surrounded by conifer forests, or ponds and stream pools. Usually found in areas with desert scrub biotic communities. Greatest threats to species continuation include habitat alteration, fragmentation, and introduction of nonnative competitor fish, crayfish, and frogs. Species dispersal has been shown to remain within a few kilometers of aquatic breeding sites.	–	SGCN (1)	Unlikely to occur. Suitable habitat is not present within the Project Area.	Unlikely to occur. Suitable habitat is not present within the Study Area.
Sonoran Desert toad (<i>Inciilius alvarius</i>)	Found in Sonoran desertscrub, semidesert grasslands, oak, and occasionally pine-oak woodland habitats up to about 5,800 feet amsl. Associated with major rivers, and edges of agriculture; although often tied to permanent water, can be found miles from water during summer monsoon season, in some areas.	–	SGCN (2)	May occur. Suitable habitat (i.e., agricultural edge habitat) for species occurrence and potential breeding occurs within the Project Area.	May occur. Suitable habitat (i.e., agricultural edge habitat) for species occurrence and potential breeding occurs within the Study Area.
Birds					
American bittern (<i>Botaurus lentiginosus</i>)	Found primarily in large freshwater brackish marshes, including lake and pond edges. Also known to occur in areas with dense vegetation cover such as shrubby marshes, bogs, wet meadows, and, on occasion, hayfields	MBTA	SGCN (2)	Unlikely to occur. No suitable habitat present within Project Area.	Unlikely to occur. No suitable habitat is present within the Study Area.
American kestrel (<i>Falco sparverius</i>)	Found in open and semi-open habitats, frequently found in prairies, deserts, wooded streams, burned forest, and agricultural areas. Known to nest in natural holes in trees, abandoned woodpecker cavities, cavities in buildings or cliffs, and similar sites.	MBTA BCC [†]	SGCN (2)	May occur. The Project Area contains suitable habitat for foraging; however, no suitable nesting sites are present in the Project Area.	May occur. The Study Area contains suitable habitat for foraging and occurrence records within 5 miles of the Study Area (AGFD 2023).
American peregrine falcon (<i>Falco peregrinus anatum</i>)	Found in various habitats including tundra, moorlands, steppe, seacoasts, forests, and urban areas. Nests on ledges of rocky cliffs or crags.	MBTA	SGCN (1)	May occur. The Project Area contains suitable habitat for foraging; however, no suitable nesting sites are present in the Project Area.	May occur. The Study Area contains suitable habitat for foraging. Potential for nesting is unlikely because of the lack of suitable structures.

Common Name (Scientific Name)	Habitat and Notes	Status*		Occurrence Status	
		Federal	State (Tier)	Project Area	Study Area
Bendire's thrasher (<i>Toxostoma bendirei</i>)	Found in desert habitats with a mix of relatively large scrubs/cacti and open ground or open woodland with scattered shrubs and trees. Not typically found in riparian woodland areas, the species avoids continuous shrublands and grasslands. Commonly found in areas with desert scrub biotic communities. Nesting is known to occur in low trees, shrubs, and cacti including mesquite (<i>Prosopis</i> spp.), cholla (<i>Cylindropuntia</i> spp.), yucca (<i>Yucca</i> sp.), paloverde (<i>Parkinsonia</i> sp.), and saltbush (<i>Atriplex</i> sp.).	MBTA BCC	SGCN (2)	May occur. The Project Area contains suitable habitat for species occurrence, foraging and potential nesting.	May occur. The Study Area contains suitable habitat for species occurrence, foraging and potential nesting. Occurrence records exist within 5 miles of the Study Area (AGFD 2023).
Brewer's sparrow (<i>Spizella breweri</i>)	A shrub obligate species strongly associated with sagebrush (<i>Artemisia</i> sp.) over most of its range. Found in areas with scattered shrubs and short grasses. Known to nest in sagebrush or cacti from a few centimeters to roughly 1 m from the ground. During its nonbreeding migratory season, frequently found in low desert, arid-adapted vegetation including desert scrub, sagebrush, and Creosotebush (<i>Larrea tridentata</i>).	MBTA	SGCN (2)	May occur. The Project Area does contain suitable habitat for species occurrence, foraging and potential nesting sites.	May occur. The Study Area does contain suitable habitat for species occurrence, foraging and potential nesting sites.
Bullock's Oriole (<i>Icterus bullockii</i>)	Found in open woodland, deciduous forest edge, riparian woodland, and among scattered trees and orchards.	MBTA	SGCN (2)	Unlikely to occur. The Project Area does not contain appropriate habitat for species occurrence.	May occur. The Study Area contains appropriate habitat for species occurrence, foraging and potential nesting and has occurrence records within the Study Area (eBird 2023).
Cactus wren (<i>Campylorhynchus brunneicapillus</i>)	Nonmigratory species often found in arid desert habitat with biotic communities including cholla, mesquite, and sage scrub. Nesting is known to occur in thorny trees and shrubs, although they have been observed nesting in buildings in the past.	MBTA BCC [†]	SGCN (2)	May occur. The Project Area does contain suitable habitat for species occurrence, foraging, and nesting within the Project Area.	May occur. The Study Area contains suitable habitat for species occurrence, foraging, and potential nesting.

Common Name (Scientific Name)	Habitat and Notes	Status*		Occurrence Status	
		Federal	State (Tier)	Project Area	Study Area
Chestnut-collared longspur (<i>Calcarius ornatus</i>)	Found in the Great Plains in native prairie habitat consisting of mixed-grass and shortgrass uplands. Has also been observed in riparian areas in more arid habitats.	MBTA BCC [†]	SGCN (2)	Unlikely to occur. The Project Area is outside of the species' known range and does not contain suitable habitat for species occurrence.	Unlikely to occur. The Study Area is outside of the species known range and does not contain suitable habitat for species occurrence.
Costa's hummingbird (<i>Calypte costae</i>)	Found in Sonoran and Mojave deserts scrub near washes of native desert vegetation or rocky slopes of saguaros (<i>Carnegiea gigantea</i>) and Creosotebush lowlands.	MBTA BCC	SGCN (2)	May occur. The Project Area contains suitable habitat for species occurrence, foraging, and potential nesting.	May occur. The Study Area contains suitable habitat for species occurrence, foraging, and potential nesting.
Elf owl (<i>Micrathene whitneyi</i>)	Known to occupy diverse habitats. In the Sonoran Desert, they are known to use desert ironwood (<i>Olneya tesota</i>), ocotillo (<i>Fouquieria splendens</i>), paloverde, and saguaro. Nesting most often occurs saguaro and other columnar cacti, Fremont cottonwood (<i>Populus fremontii</i>), honey mesquite (<i>Prosopis glandulosa</i>), and Goodding's willow (<i>Salix gooddingii</i>).	MBTA	SGCN (3)	Unlikely to occur. The Project Area does not contain suitable habitat for species occurrence.	Unlikely to occur. The Study Area does not contain suitable habitat for species occurrence.
Ferruginous hawk (<i>Buteo regalis</i>)	Favors open scrublands, woodlands, and grasslands.	MBTA BCC [†]	SGCN (2)	May occur. Winter foraging habitat is present in the Project Area.	May occur. Winter foraging habitat is present within the Study Area.
Gila woodpecker (<i>Melanerpes uropygialis</i>)	Occurs in Sonoran deserts scrub with saguaros present, or riparian woodlands with mature trees.	MBTA BCC	SGCN (2)	May occur. Suitable habitat for species occurrence and foraging is present within the Project Area. Occurrence records exist within the Project Area (eBird 2023).	May occur. Suitable habitat for species occurrence and foraging is present within the Study Area. Occurrence records exist within the Project Area (eBird 2023).
Gilded flicker (<i>Colaptes chrysoides</i>)	Found in Sonoran deserts scrub with saguaros present, or riparian woodlands with mature trees.	MBTA BCC	SGCN (2)	Unlikely to occur. No suitable habitat is present within the Project Area.	May occur. Suitable habitat is present within the Study Area. Occurrence records exist within the Study Area (eBird 2023).

Common Name (Scientific Name)	Habitat and Notes	Status*		Occurrence Status	
		Federal	State (Tier)	Project Area	Study Area
Gray flycatcher (<i>Empidonax wrightii</i>)	Commonly found in pinyon-juniper woodlands, less frequently observed in open ponderosa or pine-oak woodland	MBTA	SGCN (2)	Unlikely to occur. The Project Area is outside of the species' known range and does not contain habitat suitable for species occurrence.	May occur. The Study Area contains habitat suitable for species occurrence. Occurrence records exist within the Study Area (eBird 2023).
Harris's hawk (<i>Parabuteo unicinctus</i>)	Found in savannas, open woodlands, and semi-desert habitats. Frequently observed near water sources, both natural and human-made. Often uses saguaro for nesting sites	MBTA BCC [†]	SGCN (2)	May occur. The Project Area contains suitable habitat for foraging.	May occur. The Study Area contains suitable habitat for foraging.
Inca dove (<i>Columbina inca</i>)	Found in open country with scattered trees or shrubs, most frequently in arid or semi-arid conditions, and around cultivated areas including farmlands, parks, and gardens.	MBTA	SGCN (2)	May occur. The Project Area contains suitable habitat for foraging.	May occur. The Study Area contains suitable habitat for foraging.
Lincoln's sparrow (<i>Melospiza lincolni</i>)	Found near bogs, wet meadows, riparian areas, predominantly in northern and montane habitats. Winters in central Arizona; prefers dense, brushy areas, often near water.	MBTA	SGCN (2)	Unlikely to occur. No habitat is present in the Project Area for species occurrence.	Unlikely to occur. No habitat is present within the Study Area for species occurrence.
Loggerhead shrike (<i>Lanius ludovicianus</i>)	Found in open areas with scattered trees and shrubs. Frequently observed in savannas and desert scrub biotic communities.	MBTA BCC [†]	SGCN (2)	May occur. Suitable habitat for species occurrence, foraging, and potential nesting is present within the Project Area.	May occur. Suitable habitat for species occurrence, foraging, and potential nesting is present within the Study Area.
Mountain plover (<i>Charadrius montanus</i>)	Nonbreeding visitor to Arizona; in winter prefers dry plains and agricultural fields.	MBTA BCC-nb	SGCN (2)	May occur. The Project Area contains dry plains and agricultural areas suitable for species occurrence and winter foraging.	May occur. The Study Area contains agricultural areas suitable for species occurrence and winter foraging.
Prairie falcon (<i>Falco mexicanus</i>)	Found in open areas, predominantly in mountainous areas, steppes, plains, or prairies. Nonbreeding wintering individuals have been known to forage in agricultural fields	MBTA BCC [†]	SGCN (2)	May occur. The Project Area contains agricultural lands suitable for species occurrence and winter foraging.	May occur. The Study Area contains agricultural lands suitable for species occurrence and winter foraging.

Common Name (Scientific Name)	Habitat and Notes	Status*		Occurrence Status	
		Federal	State (Tier)	Project Area	Study Area
Savannah sparrow (<i>Passerculus sandwichensis</i>)	Nonbreeding winter visitor to Arizona. Use fields, pastures, and golf courses.	MBTA BCC [†]	SGCN (2)	May occur. The Project Area contains suitable habitat for species occurrence and winter foraging in the form of agricultural fields.	May occur. Suitable habitat for species occurrence and winter foraging is present in the form of agricultural fields within the Study Area.
Sagebrush sparrow (<i>Artemisiospiza nevadensis</i>)	Found in shrubby, open flats and sagebrush plains.	MBTA	SGCN (3)	May occur. The Project Area contains habitat suitable for species occurrence, foraging, and potential nesting. Occurrence records exist within the Project Area (eBird 2023).	May occur. The Study Area contains habitat suitable for species occurrence, foraging, and potential nesting. Occurrence records exist within the Study Area (eBird 2023).
Sprague's pipit (<i>Anthus spragueii</i>)	Prefers open sandy coastal beaches and barren shores of inland saline lakes or river bars.	MBTA BCC	SGCN (2)	Unlikely to occur. No habitat is present in the Project Area.	Unlikely to occur. No habitat is present within the Study Area.
Swainson's hawk (<i>Buteo swainsoni</i>)	Found in savanna, open pine-oak woodland, and cultivated lands with scattered trees. Typically nests in solitary trees, bushes, or small groves.	MBTA	SGCN (2)	Unlikely to occur. No habitat is present in the Project Area.	May occur. The Study Area does contain suitable habitat for species occurrence and foraging.
Swainson's thrush (<i>Catharus ustulatus</i>)	Found in coniferous forests, mixed hardwood-conifer forests, riparian woodlands, aspen forests, and occasionally coastal scrub	MBTA	SGCN (2)	Unlikely to occur. No habitat is present in the Project Area.	Unlikely to occur. No habitat is present in the Study Area.
Verdin (<i>Auriparus flaviceps</i>)	Found in arid, desert habitats, frequently observed in mesquite and Creosotebush vegetation. Known to nest in shrubs, small trees, and cacti.	MBTA BCC	SGCN (2)	Known to occur. Species was observed within the Project Area during site visit.	May occur. The Study Area does contain suitable habitat for species occurrence, foraging, and potential nesting.
Vesper sparrow (<i>Pooecetes gramineus</i>)	Found in open areas with short, sparse grass and scattered shrubs. Uncommon wintering occurrence in central and southern Arizona.	MBTA BCC [†]	SGCN (2)	May occur. The Project Area contains suitable habitat for nonbreeding individual occurrence and foraging.	May occur. The Study Area contains suitable habitat for nonbreeding individual occurrence and foraging.

Common Name (Scientific Name)	Habitat and Notes	Status*		Occurrence Status	
		Federal	State (Tier)	Project Area	Study Area
Western burrowing owl (<i>Athene cunicularia hypugaea</i>)	Found in open areas with low brush cover, including grasslands, agricultural margins and desert scrub. Year-round resident or migratory.	MBTA BCC	SGCN (2)	May occur. Agricultural land and desert scrub provides suitable habitat for species occurrence, foraging, and potential for burrow nesting in the Project Area.	May occur. Agricultural land provides suitable habitat for species occurrence in the Study Area. Burrow nesting is likely in the Study Area because of the presence of irrigation canals in the area.
Western screech-owl (<i>Megascops kennicottii</i>)	Commonly found in broadleaf and riparian woodland, particularly within deciduous forests that border canyons and other drainages.	MBTA BCC ⁺	SGCN (2)	Unlikely to occur. The Project Area does not provide suitable habitat for species occurrence.	Unlikely to occur. The Study Area does not provide suitable habitat for species occurrence.
Reptiles					
Sonoran desert tortoise (<i>Gopherus morafkai</i>)	Occurs primarily on rocky, and often steep, hillsides and bajadas of Mohave and Sonoran desertscrub, typically at elevations below 7,800 feet amsl. May occur, but is less likely to occur, in desert grassland, juniper woodland, and interior chaparral habitats and even pine communities.	–	SGCN (1)	Unlikely to occur. The Project Area does not provide suitable habitat for species occurrence.	Unlikely to occur. The Study Area does not provide suitable habitat for species occurrence.
Variable sandsnake (<i>Chilomeniscus stramineus</i>)	Found in sandy, sandy-gravelly, or loamy soils of flats, dunes, hummocks, and arroyos. Found in deserts, uplands with paloverde and saguaro, and thornscrub habitats.	–	SGCN (2)	May occur. Suitable foraging and breeding habitat is present within the Project Area.	May occur. Suitable foraging and breeding habitat is present within the Study Area.
Mammals					
Antelope jackrabbit (<i>Lepus alleni</i>)	Found in arid grassy areas with scattered large shrubs, foothills, mesas, and bajadas.	–	SGCN (2)	May occur. Suitable foraging and nesting habitat is present within the Project Area.	May occur. Suitable foraging and nesting habitat is present within the Study Area.
Brazilian (Mexican) free-tailed bat (<i>Tadarida brasiliensis</i>)	Found in a variety of habitats with ranges across the United States. Often found roosting in caves, mines, and cliff crevices. Known to forage in agricultural land.	–	SGCN (2)	May occur. The Project Area contains suitable foraging habitat although no suitable roosting habitat was observed in the Project Area.	May occur. The Study Area contains suitable foraging habitat although no suitable roosting habitat is present in the Study Area.

Common Name (Scientific Name)	Habitat and Notes	Status*		Occurrence Status	
		Federal	State (Tier)	Project Area	Study Area
Cave myotis (<i>Myotis velifer</i>)	Typically found in desert scrub with Creosotebush, brittlebush (<i>Encelia</i> sp.), paloverde, and cacti, but sometimes found up to pine-oak communities, between 300 and 5,000 feet amsl. Roosts in caves, tunnels, mine shafts, and under bridges, and occasionally in buildings within a few miles of water.	–	SGCN (2)	May occur. The Project Area contains suitable foraging habitat although no suitable habitat for roosting was observed within the Project Area.	May occur. The Study Area contains suitable foraging habitat although no suitable habitat for roosting is present within the Study Area.
Gray-collared chipmunk (<i>Neotamias cinereicollis</i>)	Found in high mountains, clearings, and pine, spruce, and fir forest edges. Most common where pine and Douglas-fir overlap.	–	SGCN (2)	Unlikely to occur. The Project Area is not within range of this species and does not contain suitable habitat for occurrence.	Unlikely to occur. The Study Area is not within range of this species and does not contain suitable habitat for occurrence.
Greater western mastiff bat (<i>Eumops perotis californicus</i>)	Occurs in lower and upper Sonoran desertscrub near cliffs. Prefers rugged, rocky canyons with abundant crevices at elevations from 240 to 8,475 feet amsl. Prefers crowding into tight crevices at least 1 foot deep x at least 2 inches wide. Colonies prefer deeper crevices, to 10 or more feet. Prefers to forage over large open bodies of water.	–	SGCN (2)	Unlikely to occur. No suitable habitat for roosting or foraging occurs within the Project Area.	Unlikely to occur. No suitable habitat for roosting or foraging occurs within the Study Area.
Hispid cotton rat (<i>Sigmodon hispidus</i>)	Found in dense, grassy fields and roadside edges. Has been found in bushy areas along streams or ponds, in agricultural fields, and in desert scrub with little grass.	–	SGCN (2)	May occur. There is suitable foraging and nesting habitat for species occurrence within the Project Area.	May occur. There is suitable foraging and nesting habitat for occurrence and occurrence records exist within the Study Area.
Hoary bat (<i>Lasiurus cinereus</i>)	Found in deciduous and coniferous woodlands. Foraging occurs near open waterways and along riparian corridors.	–	SGCN (2)	Unlikely to occur. Suitable habitat for foraging or roosting is not present in the Project Area.	Unlikely to occur. Suitable habitat for foraging or roosting is not present in the Study Area.
Pale Townsend's big-eared bat (<i>Corynorhinus townsendii pallascens</i>)	Found throughout Arizona in a variety of vegetation communities and prefers to use roost sites, such as caves, mines, or abandoned buildings, with open ceilings instead of cracks or crevices. They typically forage no more than 5 miles from the roost site.	–	SGCN (1)	May occur. The species may use the Project Area for foraging. No roosting habitat is present.	May occur. The species could use the Study Area for foraging, and roosting habitat is present in abandoned buildings.
Pocketed free-tailed bat (<i>Nyctinomops femorosaccus</i>)	Found in desert scrub. Roosts in rock crevices and caves and in buildings at times.	–	SGCN (2)	May occur. The species may use the Project Area for foraging. No roosting habitat is present.	May occur. The species may use the Study Area for foraging. No roosting habitat is present.

Common Name (Scientific Name)	Habitat and Notes	Status*		Occurrence Status	
		Federal	State (Tier)	Project Area	Study Area
Western yellow bat (<i>Lasius xanthinus</i>)	Found in arid habitats along riparian corridors. Known to roost in palm trees, cottonwood, and yucca. Forages over open water.	–	SGCN (2)	Unlikely to occur. The Project Area does not provide suitable roosting or foraging habitat.	May occur. The Study Area contains suitable foraging and roosting (i.e., palm trees) habitat for species occurrence.
Yuma myotis (<i>Myotis yumanensis</i>)	Found in a variety of habitats including riparian, desert scrub, moist woodlands, and forests. Prefer cliffs and rocky walls near water. Known to roost in caves, mines, cliff crevices, and buildings. Foraging occurs along forested edges of streams, ponds, and lakes.	–	SGCN (2)	Unlikely to occur. The Project Area does not provide suitable roosting or foraging habitat.	Unlikely to occur. The Study Area does not provide suitable roosting or foraging habitat.

Source: Range or habitat information is from AGFD (2023b, 2023c); Brennan (2012); Corman and Wise-Gervais (2005); Cornell Lab of Ornithology (2023); eBird (2023); NatureServe (2023); and USFWS (2023a, 2023b).

Note: Notes regarding documented occurrences, other than observations made during SWCA's Project-specific surveys, are from AGFD (2023a, 2023b).

* Federal Status Definitions

BCC = Bird of Conservation Concern.

BCC[†] = Bird of Conservation Concern for regions other than BCR 33. Included in table because they are also Arizona SGCN.

BCC-nb = Bird of Conservation Concern with nonbreeding status.

BGEPA = Bald and Golden Eagle Protection Act.

ESA = Endangered Species Act.

MBTA = Migratory Bird Treaty Act.

– = No federal status.

State Status Definitions

SGCN = Species of Greatest Conservation Need; species identified by AGFD (2012) as having conservation priority. Tier 2 species are those categorized as "vulnerable" but not fitting the Tier 1 criteria for highest priority. Tier 3 species are those for which existing data were insufficient to score one or more vulnerability criteria.

BIRDS OF CONSERVATION CONCERN

The Project Area and Study Area are within BCR 33 (USFWS 2021), for which 27 BCC species are listed. A query of the AGFD Online Environmental Review Tool found modeled habitat for 18 of these species in the Project Area (AGFD 2023b) (see Exhibit C-2). Of these 18 species, five may occur in the Project and Study Areas but were not observed during field studies: Bendire's thrasher (*Toxostoma bendirei*), Costa's hummingbird (*Calypte costae*), Gila woodpecker (*Melanerpes uropygialis*), mountain plover (*Charadrius montanus*), and western burrowing owl (*Athene cunicularia hypugaea*) (see Table C-2). Mountain plover would only potentially occur within the Study Area as a nonbreeding species during winter months (see Table C-2). One BCC species, gilded flicker (*Colaptes chrysoides*), may occur in the Study Area but not the Project Area. One BCC species, verdin (*Auriparus flaviceps*), is known to occur in the Project Area. Birds that are BCC for regions other than BCR 33 but that are classified as SGCN in Arizona are considered in the following section. Other birds may be attracted to the agricultural areas in the Study Area for nesting, roosting, or foraging.

SPECIES OF GREATEST CONSERVATION NEED

Thirty species categorized as SGCN Tier 1 or 2 (excluding those federally listed species that have already been addressed in the previous section) may occur within the proposed Study Area (see Table C-2). One species categorized as SGCN 3 also may occur within the proposed Study Area. Of these 31 species, 26 are known to occur or may occur in the Project Area, of which one is an amphibian, 18 are birds, one is a reptile, and six are mammals (see Table C-2). The amphibian species that may occur in the Project

Area is Sonoran Desert toad (*Incilius alvarius*). The bird species that are known to occur or may occur in the Project Area are American kestrel (*Falco sparverius*), American peregrine falcon (*Falco peregrinus anatum*), Bendire's thrasher, Brewer's sparrow (*Spizella breweri*), cactus wren (*Campylorhynchus brunneicapillus*), Costa's hummingbird, ferruginous hawk (*Buteo regalis*), Gila woodpecker, Harris's hawk (*Parabuteo unicinctus*), Inca dove (*Columbina inca*), loggerhead shrike (*Lanius ludovicianus*), mountain plover, prairie falcon (*Falco mexicanus*), savannah sparrow (*Passerculus sandwichensis*), sagebrush sparrow (*Artemisiospiza nevadensis*), verdin (*Auriparus flaviceps*), vesper sparrow (*Poocetes gramineus*), and western burrowing owl. The reptile species that may occur in the Project Area is the variable sandsnake (*Chilomeniscus stramineus*). The mammal species that may occur in the Project Area are antelope jackrabbit (*Lepus alleni*), Mexican free-tailed bat (*Tadarida brasiliensis*), cave myotis (*Myotis velifer*), hispid cotton rat (*Sigmodon hispidus*), pale Townsend's big-eared bat (*Corynorhinus townsendii pallescens*), and pocketed free-tailed bat (*Nyctinomops femorosaccus*).

In addition, four bird species, Bullock's oriole (*Icterus bullockii*), gilded flicker, gray flycatcher (*Empidonax wrightii*), and Swainson's hawk (*Buteo swainsoni*), and one mammal, western yellow bat (*Lasiurus xanthinus*), may occur in the Study Area but are unlikely to occur in the Project Area.

No SGCN fish species are likely to occur within 5 miles of the proposed Project Area.

One species listed as SGCN Tier 3 has the potential to occur within 5 miles of the Project Area: the sagebrush sparrow (*Artemisiospiza nevadensis*). The sagebrush sparrow may occur in both the Project Area and Study Area.

STATE-PROTECTED NATIVE PLANTS

The ANPL identifies a list of plant species—largely cacti, agave, yucca, and desert trees—that are susceptible to removal for collection, landscaping, sale, or other commercial uses. The ANPL states that these plants shall not be taken, transported, or possessed from any land without permission and a permit from the ADA; it also requires notification prior to land clearing even if the plants will be destroyed. Two plant species covered under the ANPL were observed in the Project Area and the Study Area during surveys: Englemann pricklypear (*Opuntia engelmannii*) and velvet mesquite (*Prosopis velutina*).

NOXIOUS WEEDS

Arizona maintains a list of noxious weeds in three categories: Class A, Class B, and Class C (ADA 2023). Class A species are those that are not known to occur in Arizona and are of limited distribution, and are of high priority for quarantine, control, or mitigation. Class B noxious weeds are species known to occur but of limited distribution in Arizona and may be high-priority pests for quarantine, control, or mitigation if a significant threat to crop, commodity, or habitat exists. Class C noxious weeds are species of plants that are widespread but may be recommended for active control based on risk assessment. Stinknet (*Oncosiphon pilulifer*), a Class B noxious weed, and saltcedar (*Tamarix* spp.), a Class C noxious weed, were observed in the Project Area and the Study Area during the site visit. Measures will be taken to avoid spreading noxious weeds in the Study Area.

Summary of Potential Effects

Areas of Biological Wealth

Neither the Project Area nor the Study Area intersects any designated or proposed critical habitat, wildlife refuges, wildlife corridors, linkage corridors, or COAs. No other areas of biological wealth were identified as being present in the Project Area or Study Area.

The proposed Project Area would result in minimal disturbance to the landscape, which has already been entirely converted from natural vegetation to agricultural, industrial, and residential land use. The small disturbance footprint and relatively short time frame of construction would minimize migratory species avoidance and migratory stop-over habitat loss. As such, any loss of vegetation from construction activities would not contribute meaningfully to habitat fragmentation or decrease connectivity between habitats.

Federally Listed Threatened and Endangered Species

The Project Area and Study Area are within the known range of the monarch butterfly, a candidate species for listing under the ESA. No ESA-listed species are likely to occur within the Project Area or Study Area.

Habitat in the Study Area may be suitable for use by monarch butterfly, a candidate species. No milkweed (*Asclepias* or *Funastrum* spp.) was observed or has been recorded in the Study Area; however, monarch butterflies may use other plants found in the Study Area for foraging but not for reproduction (USFWS 2020; Western Monarch Milkweed Mapper 2023). As such, any potential Project impacts to the monarch butterfly would be minor. A very small portion of suitable dispersal or foraging habitat would be lost, relative to the total amount of habitat in the vicinity. Individuals may experience injury, mortality, change of behavior, or loss of forage as a result of the Project. Individuals would be expected to largely shift activity to nearby suitable habitat.

Bald Eagle (Haliaeetus leucocephalus) and Golden Eagle (Aquila chrysaetos)

No suitable bald eagle nesting habitat and no tall trees or cliffs suitable for eagle perching are within the Project Area or Study Area. However, there is potential foraging habitat for bald eagles within irrigation canals, ponds, and agricultural areas present in the Study Area. Additionally, the Project is within the non-breeding range of the bald eagle, and this species may move through the Project Area and Study Area (see Table C-1). The Project Area does not appear to contain nesting sites for golden eagles (i.e., cliffs) (Google Earth 2023), but individuals may fly over the Project Area and Study Area while foraging (see Table C-1). These species were not documented by SWCA during related surveys in the Study Area during June 2023. No significant impacts would be expected to bald or golden eagles as a result of this Project.

Other Special-Status Species

The following sections refer to species with special status that are not federally listed or candidates for federal listing.

SPECIAL-STATUS MAMMAL SPECIES

Six special-status mammals may occur within the Study Area: antelope jackrabbit, Brazilian free-tailed bat, cave myotis, hispid cotton rat, pale Townsend's big-eared bat, and pocketed free-tailed bat. The Project Area is unlikely to support suitable roosting habitat for most bat species. No palm trees, large riparian trees, or suitable building structures occur in the Project Area, and therefore, no bat roosts would be expected to be removed or destroyed as a result of the Project. Bats using trees or buildings as day roosts within the Study Area have the potential to be negatively impacted by noise, leading to behavior changes or loss of fitness for individuals. Impacts would be minor as no trees used for day roosts are present within at least 600 feet of the Project Area where construction noise would be most prominent. Trees used for day roosts may be present outside the Study Area.

Bat species can collide with human-made structures during long-distance migration. Migrating bats often fly high above ground level and do not actively echolocate. However, during normal foraging activity, bats actively use echolocation and are typically able to detect and avoid features such as overhead transmission lines (Arnett et al. 2015). No information suggests that transmission lines in a setting such as the Study Area would pose a risk to bats.

Artificial lighting may affect the ability of nocturnal wildlife (e.g., bats or nocturnal mammal species) to navigate (Davies et al. 2013). Because the Project would be constructed in a largely human-modified environment, surrounded by agricultural, industrial, and residential land uses, the Project is not likely to contribute meaningfully to impacts related to light pollution that would affect nocturnal wildlife.

Project construction activities could cause death or injury to terrestrial mammal species, particularly individuals that may be sheltering in underground burrows instead of fleeing. Project construction could cause behavior changes, as individuals would be expected to flee from an increase of noise, vibration, and human presence within the Project vicinity. These behavior changes could increase depredation, decrease foraging success, reduce reproductive success, and result in loss of fitness for that individual from increased metabolic output. Noise, vibration, and human presence would be temporary during construction and would cease with completion of construction.

The loss and degradation of mammal habitat from short- and long-term Project activities would be minor as abundant habitat for small mammals occurs in the vicinity of the Project and Study Areas. Similarly, because of the available habitat outside the Project Area, any loss of vegetation from construction activities would not contribute meaningfully to habitat fragmentation for special-status mammals or decrease connectivity between habitat patches. Construction of the Project would result in an increase of fugitive dust. The fugitive dust during construction could change mammal behavior (e.g., reducing the amount of foraging due to area disturbances). The likelihood and severity of impacts from construction would decrease with increasing distance from the Project Area.

SPECIAL-STATUS AMPHIBIAN SPECIES

One special-status amphibian species may occur within the Study Area: the Sonoran Desert toad. Potential impacts to special-status amphibian species include death, injury, or impacts arising from behavior changes would be similar to those described for terrestrial mammals. Potential impacts from the loss, degradation, and fragmentation of amphibian habitat from Project activities would be the same as those described for terrestrial mammals. Special-status amphibian individuals would be expected to experience similar impacts from increased fugitive dust during construction as mammals.

SPECIAL-STATUS BIRD SPECIES

Bald eagles may forage within the Study Area during the nonbreeding season; however, they would likely be drawn toward the Picacho Reservoir riparian areas approximately 4.62 miles southeast of the Project Area and not toward the Project Area. Because of the relatively small area of foraging habitat potentially impacted compared with an individual bald eagle's home range and the abundance of similar foraging habitat outside of the Project Area, no significant impacts to bald eagles resulting from the Project would be expected. Golden eagles may forage in the Project and Study Areas, but no nesting habitat is present. Because of the relatively small area of foraging habitat potentially impacted compared with an individual golden eagle's home range and the abundance of similar foraging habitat outside of the Project Area, no significant impacts to golden eagles resulting from the Project would be expected.

One bird species, mountain plover occurs in the vicinity of the Project only for wintering or migration and therefore has no potential for nesting impacts (see Table C-2).

Potential impacts to special-status bird species could include changes in behavior because of Project-related noise, vibration, and the presence of workers and equipment; loss of breeding and foraging habitat; and impacts to nesting species. Potential impacts to nesting birds and their eggs covered under the MBTA, including burrow nests of the western burrowing owl, would be avoided and/or minimized either by limiting ground-clearing/vegetation removal activities to outside the breeding season (generally March to September with raptors breeding generally January to June) or through surveys to identify active nests and placement of buffers around those active nests until the young fledge or the nest fails.

Transmission lines can pose a collision risk to birds, including raptors (Avian Power Line Interaction Committee [APLIC] 2012). However, many factors influence whether birds are likely to collide with a specific transmission line. To minimize that risk, the Applicant will design the Project to incorporate reasonable measures to minimize collision or electrocution of and impacts to avian species. Such measures will be accomplished through incorporation of APLIC guidelines set forth in *Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006* (APLIC 2006) and *Reducing Avian Collisions with Power Lines: the State of the Art in 2012* (APLIC 2012).

Transmission and distribution lines can also cause bird electrocution, although the risk is highest with lower voltage lines. Electrocution occurs when a bird simultaneously contacts energized and grounded electrical components. High-voltage lines require spacing between those components that cannot be spanned even by very large birds so that electrocution risk is precluded almost entirely (APLIC 2012).

SPECIAL-STATUS REPTILE SPECIES

One special-status reptile species may occur within the Study Area, the variable sandsnake. Potential Project-related impacts to special-status reptile species would include changes in behavior due to the presence of workers and equipment, including moving away from sources of noise and vibration; the potential for individuals being crushed or buried during ground-disturbing activities; the loss of habitat; and increased predation due to an increase in perches provided by the additional power poles to be installed. Special-status reptile individuals would be expected to have similar impacts from increased fugitive dust during construction as mammals.

SPECIAL-STATUS FISH SPECIES

There are currently no special-status fish species known or expected to occur within the Study Area. The Project would not impact special-status fish species because no habitat for special-status fish species is present in the Project Area. Project activities would not impact perennial water outside of the Study Area.

State-Protected Native Plants

Plant species protected under the ANPL could be removed in accordance with applicable laws during the Project's vegetation-clearing activities. However, as the Generation Tie Line would occupy a relatively small area compared with that of nearby disturbances (e.g., agriculture and development), the loss of vegetation in the Study Area would result in minor impacts to protected native plants.

Noxious Weeds

Measures will be taken to avoid introducing or spreading noxious weeds in the Project Area, and therefore the Project would be unlikely to contribute to an increase of noxious weeds, in extent or abundance, in the vicinity of the Project.

Mitigation Measures

The following mitigation measures would reduce the potential for impacts to special-status species as a result of the Project:

- Transmission lines pose a risk of collisions and electrocution for birds, particularly raptors. To minimize that risk, the Applicant will design the Project's interconnection facilities to incorporate reasonable measures to minimize electrocution of and impacts to avian species following the guidelines outlined in *Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006* (APLIC 2006) and *Reducing Avian Collisions with Power Lines: The State of the Art in 2012* (APLIC 2012).
- If vegetation-disturbing activities are planned during the migratory bird nesting season (March–September or January–June for raptors), measures to avoid any active bird nests within the Project Area, such as preconstruction surveys for migratory bird nests by a qualified biologist, should be taken to maintain compliance with the MBTA.
- If western burrowing owls are identified in the Project Area, measures to avoid any active burrows should be taken. Because some burrowing owls are year-round residents, surveys for this species should be conducted prior to initiation of ground disturbance and vegetation removal activities. Further the AGFD's *Burrowing Owl Project Clearance Guidance for Landowners* (Arizona Burrowing Owl Working Group 2009) should be followed.
- If trenching is included as part of Project construction, the following should be considered to minimize injury to wildlife: when trenches cannot be backfilled immediately, the escape ramps, which can be short lateral trenches or wooden planks sloping to the surface, should be constructed at least every 90 meters (m); trench slopes should be less than 45 degrees (1:1); and any trenches left open overnight should be inspected to remove wildlife prior to backfilling.
- The recommendations in AGFD's *Guidelines for Solar Development in Arizona* (AGFD 2009) and the AGFD's *Wildlife Compatible Fencing Guidelines* (AGFD 2023e) should be reviewed and implemented for the Project, as applicable and feasible, to minimize impacts to wildlife and their habitats.
- If native plants listed under the ANPL are present in the Project Area, the ADA Notice of Intent to Clear Land form should be submitted prior to ground clearing. The submittal time frame depends on the acreage of the area to be cleared, as noted on the form.
- To minimize the introduction and spread of invasive species and noxious weeds, standard best management practices (BMPs) will be used during construction. These BMPs can include measures such as cleaning equipment prior to and following mobilization to the Project Area.

Conclusion

The proposed Project is not likely to significantly affect any rare, endangered, or special-status species. No ESA-listed species are likely to occur in the Project Area or Study Area, and, therefore, no impacts to these species are expected as a result of the proposed Project. The Project Area does not intersect any areas of biological wealth and, therefore, no impacts to areas of biological wealth are anticipated as a result of project construction. The Project has the potential to have minor impacts on non-ESA listed special-status amphibian, bird, reptile, and mammal species.

The risk that electrical infrastructure poses to birds would be addressed by following the guidelines outlined in *Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006* (APLIC 2006) and *Reducing Avian Collisions with Power Lines: The State of the Art in 2012* (APLIC 2012) as design features for the Project, and preconstruction surveys for migratory bird nests would aid in compliance with the MBTA.

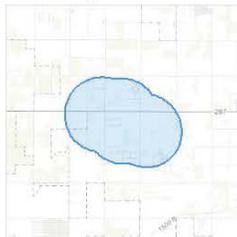
IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Pinal County, Arizona



Local office

Arizona Ecological Services Field Office

☎ (602) 242-0210

🏠 (602) 242-2513

9828 North 31st Ave

#c3

Phoenix, AZ 85051-2517

NOT FOR CONSULTATION

Exhibit C-1a. U.S. Fish and Wildlife Service IPaC report.

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act requires Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are not shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see [FAQ](#)).
2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Birds

NAME	STATUS
Yellow-billed Cuckoo <i>Coccyzus americanus</i> There is final critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/3911	Threatened

Insects

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

There are no documented cases of eagles being present at this location. However, if you believe eagles may be using your site, please reach out to the local Fish and Wildlife Service office.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>

Exhibit C-1b. U.S. Fish and Wildlife Service IPaC report

- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply). To see a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the [Eagle Act](#) should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <https://www.fws.gov/program/migratory-birds/species>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern \(BCC\)](#) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bendire's Thrasher <i>Toxostoma bendirei</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9435	Breeds Mar 15 to Jul 31
Gila Woodpecker <i>Melanerpes uropygialis</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/5960	Breeds Apr 1 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

Exhibit C-1c. U.S. Fish and Wildlife Service IPaC report.

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (-)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

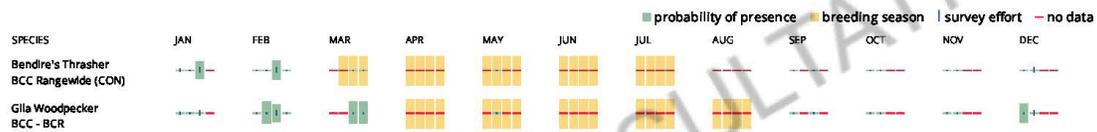
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (-)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the [Probability of Presence Summary](#). [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource List includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the [Probability of Presence Summary](#) and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the [RAIL Tool](#) and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern \(BCC\)](#) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Exhibit C-1d. U.S. Fish and Wildlife Service IPaC report.

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER POND

[PUBHx](#)

RIVERINE

[R2UBHx](#)

[R4SBHx](#)

A full description for each wetland code can be found at the [National Wetlands Inventory website](#)

NOTE: This initial screening does not replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data Limitations

Exhibit C-1e. U.S. Fish and Wildlife Service IPaC report.

The Service's objective of mapping wetlands and deepwater habitats is to produce recommendations based on information on the location, type and size of these resources. The maps are prepared from the analysis of high resolution imagery. Wetlands are identified based on vegetation, hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may reveal, in addition to the wetland boundaries or the situation as indicated in such maps, other features.

The accuracy of maps in interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Mistaken identification is deemed to be a function of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland features are excluded from the Wetland mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These include in-channel meadows or submersed aquatic vegetation that are found in the interior and adjacent zones of wetlands and marshes, coastal wetlands, some deepwater reef communities (coral or herbivore worm reefs) that have also been excluded from the imagery. These include, because of their depth, seagrass beds and other features.

Data provenance

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in the imagery. There is no attempt in either the design or products of the imagery, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning applicable agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

Exhibit C-1f. U.S. Fish and Wildlife Service IPAC report.

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:

SunDog Solar CEC

User Project Number:

77230

Project Description:

Developing an up to 200 megawatt utility-scale photovoltaic solar and battery energy storage system (BESS), and an associated step-up substation and 230-kV overhead, generation inter-tie transmission line

Project Type:

Energy Storage/Production/Transfer, Energy Production (generation), photovoltaic solar facility (new)

Contact Person:

Lyndsey Bradshaw

Organization:

SWCA Environmental Consultants

On Behalf Of:

PRIVATE

Project ID:

HGIS-19838

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

Exhibit C-2a. Arizona Environmental Online Review Tool report.

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 Department's review of site-specific projects.
3. The Department's 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. Arizona Wildlife Conservation Strategy (AWCS), specifically Species of Greatest Conservation Need (SGCN), 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.

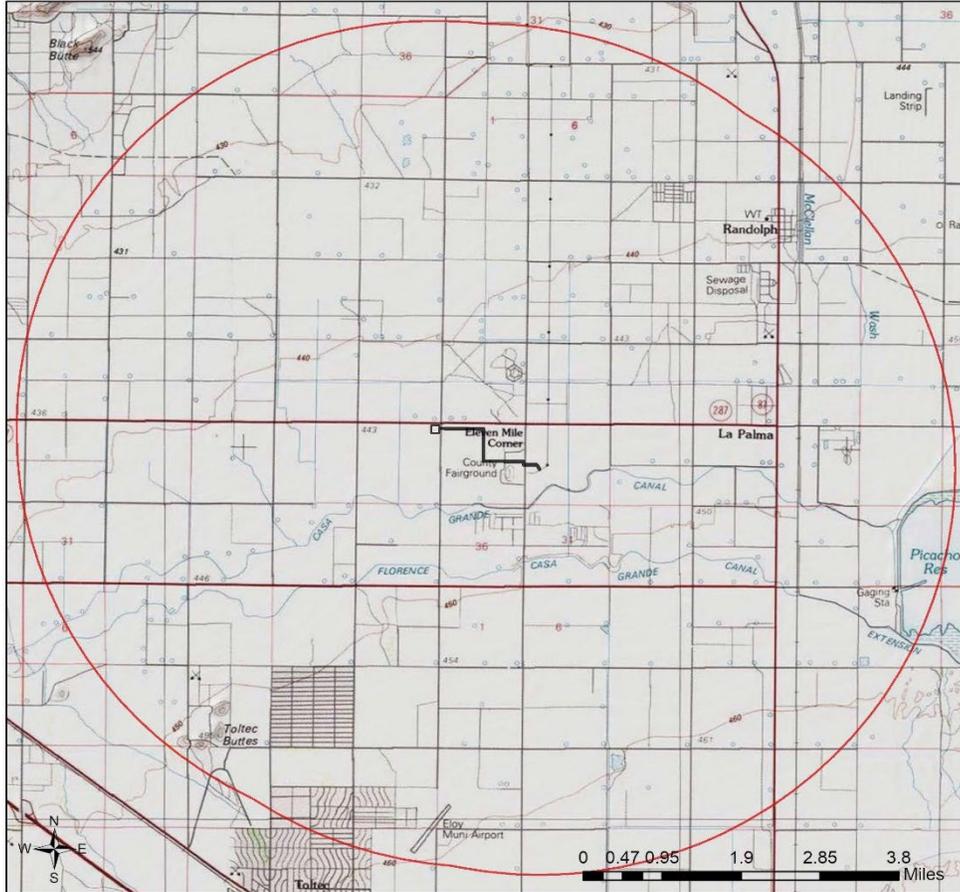
Exhibit C-2b. Arizona Environmental Online Review Tool report.

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

Exhibit C-2c. Arizona Environmental Online Review Tool report.

SunDog Solar CEC USA Topo Basemap With Locator Map



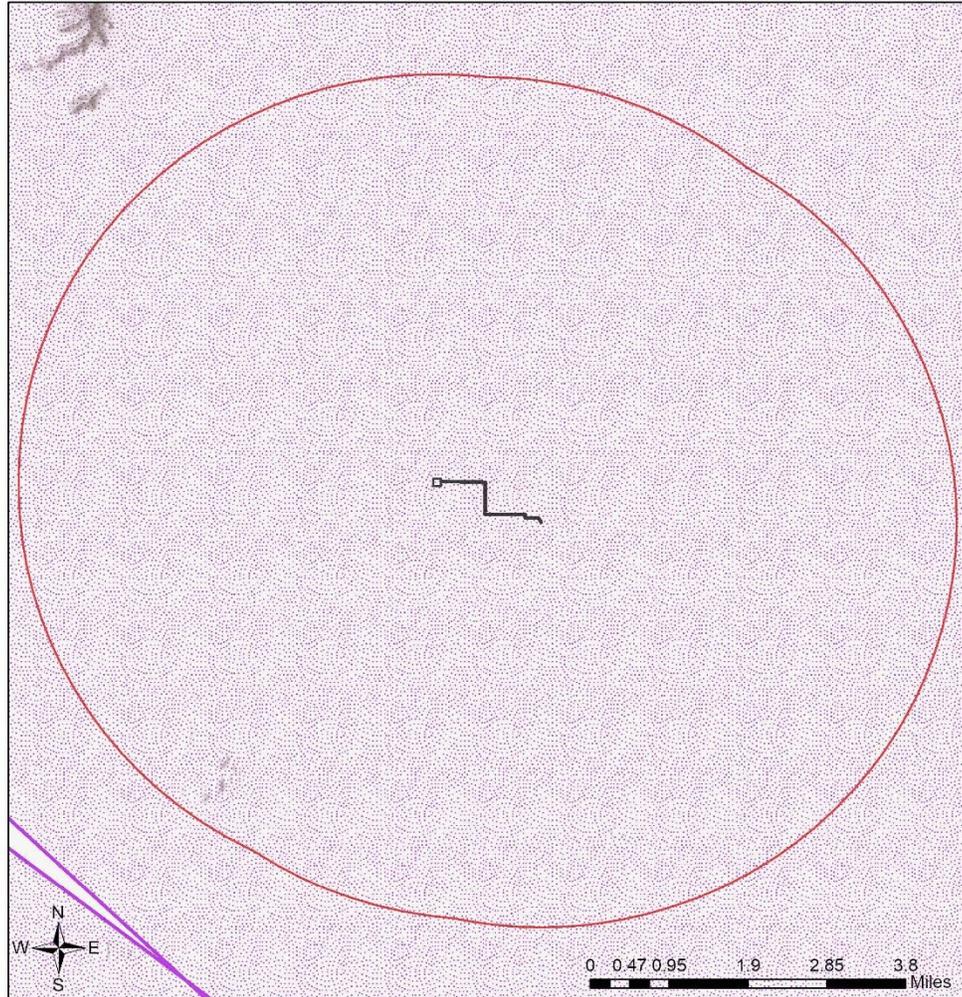
-  Buffered Project Boundary
 -  Project Boundary
- Project Size (acres): 26.18
Lat/Long (DD): 32.8724 / -111.5753
County(s): Pinal
AGFD Region(s): Mesa
Township/Range(s): T6S, R7E; T6S, R8E
USGS Quad(s): COOLIDGE; ELOY NORTH

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



Exhibit C-2d. Arizona Environmental Online Review Tool report.

SunDog Solar CEC Web Map As Submitted By User



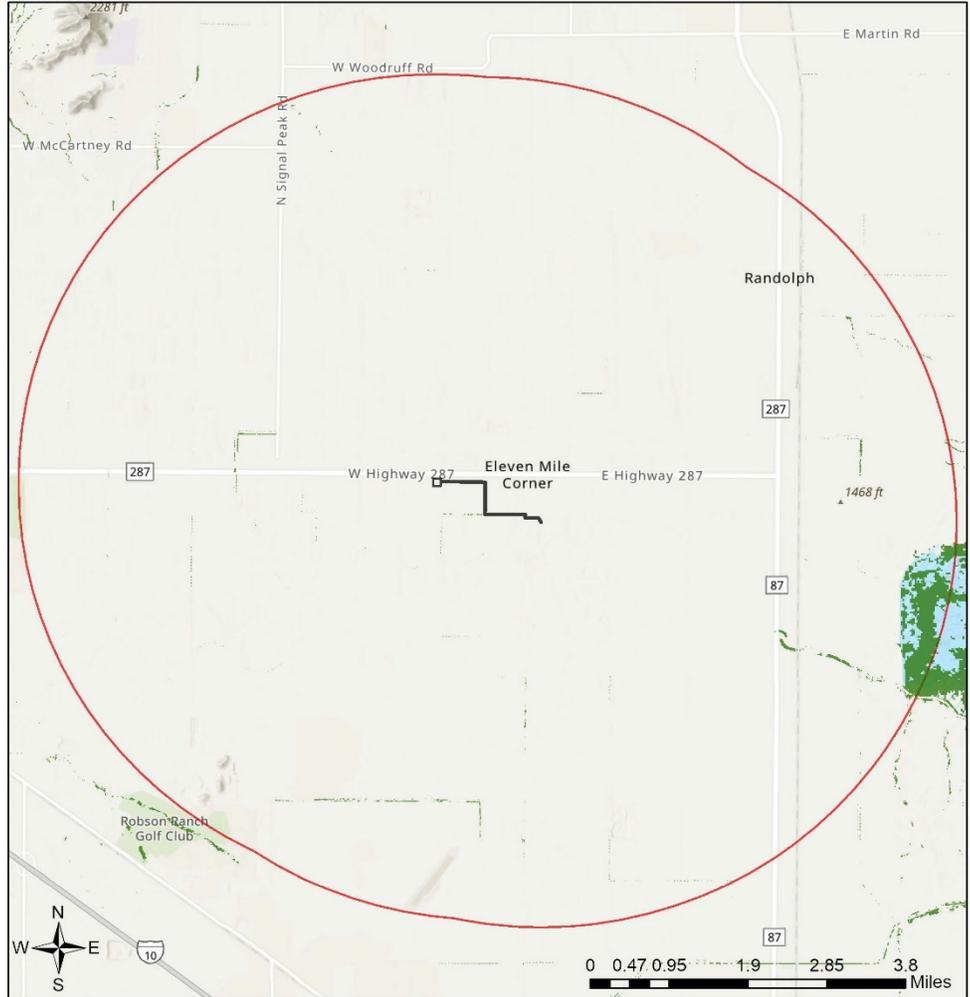
- Critical Habitat
- Important Bird Areas
- Special Areas
- Buffered Project Boundary
- Project Boundary

Project Size (acres): 26.18
Lat/Long (DD): 32.8724 / -111.5753
County(s): Pinal
AGFD Region(s): Mesa
Township/Range(s): T6S, R7E; T6S, R8E
USGS Quad(s): COOLIDGE; ELOY NORTH

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

Exhibit C-2e. Arizona Environmental Online Review Tool report.

SunDog Solar CEC Important Areas



- Buffered Project Boundary
- Project Boundary
- Important Bird Areas
- Critical Habitat
- Pinal County Riparian
- Important Connectivity Zones
- Wildlife Connectivity

Project Size (acres): 26.18
 Lat/Long (DD): 32.8724 / -111.5753
 County(s): Pinal
 AGFD Region(s): Mesa
 Township/Range(s): T6S, R7E; T6S, R8E
 USGS Quad(s): COOLIDGE; ELOY NORTH

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

Exhibit C-2f. Arizona Environmental Online Review Tool report.

SunDog Solar CEC Township/Ranges and Land Ownership



- | | | |
|---------------------------|------------------------|---|
| Buffered Project Boundary | National Park/Mon. | Project Size (acres): 26.18 |
| Project Boundary | Private | Lat/Long (DD): 32.8724 / -111.5753 |
| AZ Game & Fish Dept. | State & Regional Parks | County(s): Pinal |
| BLM | State Trust | AGFD Region(s): Mesa |
| BOR | US Forest Service | Township/Range(s): T6S, R7E; T6S, R8E |
| Indian Res. | Wildlife Area/Refuge | USGS Quad(s): COOLIDGE; ELOY NORTH |
| Military | Township/Ranges | Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatasysteisen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community |
| Mixed/Other | | Sources: Esri, HERE, Garmin, FAO, NOAA, USGS. © OpenStreetMap contributors, and the GIS User Community |

Exhibit C-2g. Arizona Environmental Online Review Tool report.

Special Status Species Documented within 5 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
<i>Athene cucularia hypugaea</i>	Western Burrowing Owl	SC	S	S		2
<i>Coccyzus americanus</i>	Yellow-billed Cuckoo (Western DPS)	LT	S	S		1
<i>Empidonax traillii extimus</i>	Southwestern Willow Flycatcher	LE		S		1
<i>Falco sparverius</i>	American Kestrel					2
<i>Rallus obsoletus yumanensis</i>	Yuma Ridgway's Rail	LE		S		1
<i>Sigmodon hispidus</i>	Hispid Cotton Rat					2

Note: Status code definitions can be found at <https://www.azgfd.com/wildlife/planning/wildlife-guidelines/status-definitions/>

Special Areas Documented that Intersect with Project Footprint as Drawn

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Riparian Area	Riparian Area					

Note: Status code definitions can be found at <https://www.azgfd.com/wildlife/planning/wildlife-guidelines/status-definitions/>

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
<i>Anthus spragueii</i>	Sprague's Pipit	SC				2
<i>Aquila chrysaetos</i>	Golden Eagle			S		2
<i>Artemisiospiza nevadensis</i>	Sagebrush Sparrow					
<i>Athene cucularia hypugaea</i>	Western Burrowing Owl	SC	S	S		2
<i>Auriparus flaviceps</i>	Verdin					2
<i>Botaurus lentiginosus</i>	American Bittern					2
<i>Buteo regalis</i>	Ferruginous Hawk	SC		S		2
<i>Buteo swainsoni</i>	Swainson's Hawk					2
<i>Calcarius ornatus</i>	Chestnut-collared Longspur					2
<i>Calypte costae</i>	Costa's Hummingbird					2
<i>Campylorhynchus brunneicapillus</i>	Cactus Wren					2
<i>Catharus ustulatus</i>	Swainson's Thrush					2
<i>Charadrius montanus</i>	Mountain Plover	SC				2
<i>Chilomeniscus stramineus</i>	Variable Sandsnake					2
<i>Coccyzus americanus</i>	Yellow-billed Cuckoo (Western DPS)					
<i>Colaptes chrysoides</i>	Gilded Flicker			S		2
<i>Columbina inca</i>	Inca Dove					2
<i>Corynorhinus townsendii pallescens</i>	Pale Townsend's Big-eared Bat	SC	S	S		1
<i>Empidonax wrightii</i>	Gray Flycatcher					2
<i>Eumops perotis californicus</i>	Greater Western Bonneted Bat					
<i>Falco mexicanus</i>	Prairie Falcon					2

Exhibit C-2h. Arizona Environmental Online Review Tool report.

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
Falco peregrinus anatum	American Peregrine Falcon					
Falco sparverius	American Kestrel					2
Gopherus morafkai	Sonoran Desert Tortoise	CCA	S	S		1
Icterus bullockii	Bullock's Oriole					2
Inoilius alvarius	Sonoran Desert Toad					2
Lanius ludovicianus	Loggerhead Shrike	SC				2
Lasiurus cinereus	Hoary Bat					2
Lasiurus xanthinus	Western Yellow Bat		S			2
Lepus alleni	Antelope Jackrabbit					2
Lithobates yavapaiensis	Lowland Leopard Frog	SC	S	S		1
Megascops kennicottii	Western Screech-owl					
Melanerpes uropygialis	Gila Woodpecker					2
Melospiza lincolni	Lincoln's Sparrow					2
Micrathene whitneyi	Elf Owl					
Myotis velifer	Cave Myotis	SC		S		2
Myotis yumanensis	Yuma Myotis	SC				2
Neotamias cinereicollis	Gray-collared Chipmunk					
Nyctinomops femorosaccus	Pocketed Free-tailed Bat					2
Parabuteo unicinctus	Harris's Hawk					2
Passerculus sandwichensis	Savannah Sparrow					2
Pooecetes gramineus	Vesper Sparrow					2
Spizella breweri	Brewer's Sparrow					2
Tadarida brasiliensis	Brazilian Free-tailed Bat					
Toxostoma bendirei	Bendire's Thrasher					2

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					
Zenaida asiatica	White-winged Dove					
Zenaida macroura	Mourning Dove					

Exhibit C-2i. Arizona Environmental Online Review Tool report.

Project Type: Energy Storage/Production/Transfer, Energy Production (generation), photovoltaic solar facility (new)

Project Type Recommendations:

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.

Minimization and mitigation of impacts to wildlife and fish species due to changes in water quality, quantity, chemistry, temperature, and alteration to flow regimes (timing, magnitude, duration, and frequency of floods) should be evaluated. Minimize impacts to springs, in-stream flow, and consider irrigation improvements to decrease water use. If dredging is a project component, consider timing of the project in order to minimize impacts to spawning fish and other aquatic species (include spawning seasons), and to reduce spread of exotic invasive species. We recommend early direct coordination with Project Evaluation Program for projects that could impact water resources, wetlands, streams, springs, and/or riparian habitats.

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.

Exhibit C-2j. Arizona Environmental Online Review Tool report.

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/>).

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:

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	Tucson Sub-Office	Flagstaff Sub-Office
9828 North 31st Avenue # C3	201 N. Bonita Suite 141	SW Forest Science Complex
Phoenix, AZ 85051-2517	Tucson, AZ 85745	2500 S. Pine Knoll Dr.
Phone: 602-242-0210	Phone: 520-670-6144	Flagstaff, AZ 86001
Fax: 602-242-2513	Fax: 520-670-6155	Phone: 928-556-2157
		Fax: 928-556-2121

This review has identified riparian areas within the vicinity of your project. During the planning stage of your project, avoid, minimize, or mitigate any potential impacts to riparian areas identified in this report. Riparian areas play an important role in maintaining the functional integrity of the landscape, primarily by acting as natural drainages that convey water through an area, thereby reducing flood events. In addition, riparian areas provide important movement corridors and habitat for fish and wildlife. Riparian areas are channels that contain water year-round or at least part of the year. Riparian areas also include those channels which are dry most of the year, but may contain or convey water following rain events. All types of riparian areas offer vital habitats, resources, and movement corridors for wildlife. The Pinal County Comprehensive Plan (i.e. policies 6.1.2.1 and 7.1.2.4), Open Space and Trails Master Plan, Drainage Ordinance, and Drainage Design Manual all identify riparian area considerations, guidance, and policies. Guidelines to avoid, minimize, or mitigate impacts to riparian habitat can be found at <https://www.azgfd.com/wildlife/planning/wildlifeguidelines/>. Based on the project type entered, further consultation with the Arizona Game and Fish Department and Pinal County may be warranted.

Exhibit C-2k. Arizona Environmental Online Review Tool report.

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/species/of/greatest/concern/need/burrowingowlmanagement/>.



Exhibit C-21. Arizona Environmental Online Review Tool report.

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EXHIBIT D. BIOLOGICAL RESOURCES

As stated in the Arizona Corporation Commission Rules of Practice and Procedure R14-3-219, Exhibit 1:

List the fish, wildlife, plant life, and associated forms of life in the vicinity of the proposed site or route and describe the effects, if any, the proposed facilities will have thereon.

Introduction

The Project Area for this review comprises the Generation Tie Line corridor. The Study Area comprises the Project Area plus a 1-mile-radius buffer. To identify the plant and wildlife species that may occur in the vicinity of the proposed Project, SWCA consulted publicly available data sources, including the following:

- Topographical maps and aerial photographs
- AGFD Online Environmental Review Tool (AGFD 2023a)
- *Biotic Communities: Southwestern United States and Northwestern Mexico* (Brown 1994)
- Regional checklists, reports, and publications (e.g., Brennan and Holycross 2006; eBird 2023; Hoffmeister 1986; iNaturalist 2023; Kesner and Marsh 2010)

In addition, an SWCA biologist with expertise in the biology of flora and fauna of the region surveyed the Study Area on June 30, 2023. All plant and wildlife species observed in the Study Area during this survey were recorded. The site was assessed to determine whether habitat features for species protected under federal, state, or local regulations were present in the Project Area and Study Area.

Results

Ecological Setting

The Project Area and Study Area are within the Lower Colorado River Valley subdivision of the Sonoran Desertscrub biotic community (Brown 1994) at elevations ranging from approximately 1,454 to 1,469 feet above mean sea level (amsl). The Project Area is directly south of SR 287, approximately 6.38 miles east of Interstate 10, approximately 4.20 miles northeast of Toltec Buttes, and approximately 6.17 miles southeast of Black Butte. Land uses in the Study Area include active or inactive agriculture fields with low-density residential structures, electrical generation infrastructure, canals, paved and unpaved roadways, the Tierra Grande Golf Course, and undisturbed desert. The Tierra Grande Golf Course contains sources of water and vegetation that may attract a large diversity of species to the area. The Phoenix metropolitan area lies approximately 48.7 miles northwest of the Study Area, and the Picacho Reservoir lies approximately 4.65 miles to the southeast of the Project Area. Land uses immediately outside of the Study Area include agriculture, undisturbed desert, and electrical generation infrastructure. The Project Area and Study Area are flat to open topography. No natural bodies of water are present within the Study Area. Unnamed canals are present within the Project Area and Study Area, and an evaporation pond managed by Pinal County and a golf course pond are also present within the Study Area.

Vegetation

The Project Area and Study Area have been disturbed by roadways, agricultural fields, canals, residential homes, the existing Pinal Central Substation, and other solar generating facilities. The Project Area and Study Area also contain Sonoran desertscrub dominated by velvet mesquite (*Prosopis velutina*), burroweed (*Ambrosia dumosa*), fourwing saltbush (*Atriplex canescens*), and cattle saltbush (*Atriplex polycarpa*). Other native and nonnative species were observed in the Project Area. Two noxious weed species, saltcedar (*Tamarix* spp.), a Class C noxious weed, and stinknet (*Oncosiphon piluliferum*), a Class B noxious weed, are present in the Project Area. Noxious weed species listed by ADA are discussed in Exhibit C.

No broadleaf deciduous riparian vegetation communities (i.e., communities containing willow [*Salix* sp.], cottonwood [*Populus* sp.], or ash [*Fraxinus* sp.], etc.), were observed during surveys of the Project Area.

Wildlife Species

Bird species observed in the Study Area during surveys included curve-billed thrasher (*Toxostoma curvirostre*), Gambel's quail (*Callipepla gambelii*), great-tailed grackle (*Quiscalus mexicanus*), house finch (*Haemorhous mexicanus*), mourning dove (*Zenaida macroura*), verdin (*Auriparus flaviceps*), and white-winged dove (*Zenaida asiatica*). Verdin is addressed in Exhibit C.

Habitat for bat species or potential bat roost sites (abandoned buildings, or palm trees) has the potential to be present in the Study Area but was not observed during surveys. No habitat or potential roost sites for bat species were identified within the Project Area.

Species that may occur in the Study Area are listed in Table D-1 (mammals), Table D-2 (birds), Table D-3 (reptiles), and Table D-4 (amphibians). Species were considered for their potential to occur as follows: A list of mammal species typical of Lower Colorado River Valley subdivision of the Sonoran Desertscrub biotic community evaluated for this report included mammals found in Table 4.1 of *Mammals of Arizona* (Hoffmeister 1986). Bird species evaluated in this report include those listed for Sonoran Desertscrub in Appendix II of *Biotic Communities Southwestern United States and Northwestern Mexico* (Brown 1994) and a list of Sonoran Desert Birds in iNaturalist (2023). Reptiles and amphibians evaluated in this report were taken from a list of commonly occurring species in the Lower Colorado River Valley subdivision of the Sonoran Desertscrub biotic community in *Amphibians and Reptiles in Arizona* (Brennan and Holycross 2006). Finally, fish species evaluated in this report were taken from the list of species in the Central Arizona Project from the *Central Arizona Project Fish Monitoring Final Annual Report* (Kesner and Marsh 2010).

Some species from these lists of typical species overlap special-status species evaluated in Exhibit C, and these species have been removed from consideration in Exhibit D because they have already been addressed. Occurrence records were obtained from the AGFD Online Environmental Review Tool (AGFD 2023a), *Mammals of Arizona* (Hoffmeister 1986), eBird (2023), and the *Breeding Bird Atlas* (Corman and Wise-Gervais 2005).

Mammals

Small, medium-sized, and large terrestrial mammal species may occur in the Project Area and Study Area. Bat species have the potential to disperse or migrate through or forage within the Project Area and Study Area. Palm trees and abandoned buildings were not observed in the portions of the Study Area adjacent to the Generation Tie Line alignment; however, these types of potential bat roosts have the

potential to occur in the Study Area (Google Earth 2023). Special-status bat species are addressed in Exhibit C.

Table D-1. Mammal Species that May Occur or Are Known to Occur in the Study Area

Common Name (Scientific Name)	Habitat
Arizona pocket mouse (<i>Perognathus amplus</i>)	Found in desert scrub habitats.
Black-tailed jackrabbit* (<i>Lepus californicus</i>)	Occurs in open habitats with scattered patches of shrubs, including plains, fields, and deserts.
Cactus mouse (<i>Peromyscus eremicus</i>)	Found in deserts and pinyon-juniper (<i>Pinus</i> spp.- <i>Juniperus</i> spp.) woodland, Occurs in rocky, sandy, or loamy soils. Found in rock heaps, stone walls, burrows, woodrat houses, and brush fences.
Coyote (<i>Canis latrans</i>)	Occurs in all habitat types, including agricultural, urban, and suburban areas.
Deer mouse (<i>Peromyscus maniculatus</i>)	Upland and riparian habitats, including open areas, brushlands, and coniferous and deciduous forests.
Desert cottontail* (<i>Sylvilagus audubonii</i>)	Found in grasslands, brushlands, edges of foothill woodlands, willow thickets, and occasionally in cultivated fields or under buildings.
Desert kangaroo rat (<i>Dipodomys deserti</i>)	Occurs in low deserts, often sandy soil with sparse vegetation including alkali sink, shadscale scrub, and Creosotebush (<i>Larrea tridentata</i>).
Desert pocket mouse (<i>Chaetodipus penicillatus</i>)	Occurs in sparsely vegetated sandy desert floors.
Javelina (=collared peccary) (<i>Pecari tajacu</i>)	Found in deserts, shrublands, cities, and agricultural areas.
Merriam's kangaroo rat (<i>Dipodomys merriami</i>)	Occurs in low deserts in sparsely vegetated areas.
Mule deer (<i>Odocoileus hemionus</i>)	Occurs in mountains and lowlands, often associated with successional vegetation.
Raccoon (<i>Procyon lotor</i>)	Occurs in varying habitats, often along streams and shorelines.
Rock pocket mouse (<i>Chaetodipus intermedius</i>)	Occurs in lower grasslands and deserts. Commonly found in Creosotebush, mesquite, saltbush, and Creosotebush-lechuguilla areas.
Round-tailed ground squirrel* (<i>Xerospermophilus tereticaudus</i>)	Found in Sonoran desertscrub, alkali sink, and Creosotebush communities in low, flat areas and avoids rocky hills
Western harvest mouse (<i>Reithrodontomys megalotis</i>)	Occurs in a wide variety of habitats in places with adequate cover. Often lives in areas with adequate grass cover, along streams, bottomlands, along fences, or around irrigated areas.
White-throated woodrat (<i>Neotoma albigula</i>)	Found in brushlands, rocky cliffs, Creosotebush scrub, mesquite-yucca (<i>Prosopis</i> spp.– <i>Yucca</i> spp.), and pinyon-juniper woodland.
Bat Species	
Big brown bat (<i>Eptesicus fuscus</i>)	Occurs in variable habitat, from ponderosa pine (<i>Pinus ponderosa</i>) forests, pinyon-juniper woodlands, the lower edge of spruce-fir (<i>Picea</i> spp.– <i>Abies</i> spp.) forests, and Lower Sonoran zones. Migratory; found throughout the state in summer and in southern Arizona in the winter. Roosts in buildings, bridge joints, mines, hollow trees, and caves.
California leaf-nosed bat (<i>Macrotis californicus</i>)	Occur in lowland desert scrub. May roost in caves, abandoned mines, or man-made structures.

Source: Range or habitat information is from AGFD (2023a, 2023b); Hoffmeister (1986); and NatureServe (2023).

*Observed in Project Area during field reconnaissance.

Birds

The Lower Colorado River Valley subdivision of the Sonoran Desertscrub biotic community generally consists of open, sparsely vegetated habitats that do not support a bird community as diverse as those found in other subdivisions of Sonoran Desertscrub (Brown 1994). However, the agricultural areas and canals in the Study Area provide additional habitat. Birds have potential to use the Project Area and Study Area for their life-history needs (i.e., foraging, nesting, or perching). Birds that are likely only to be attracted to the existing evaporation pond, golf course pond, or irrigation canals, as well as those that are just dispersing or migrating through the Study Area are not included in the following table. Table D-2 lists the bird species that may occur in the Study Area. Verdin was observed in the Project Area and is addressed in Exhibit C.

Table D-2. Bird Species that May Occur or Are Known to Occur in the Study Area

Common Name (Scientific Name)	Habitat
Anna's hummingbird (<i>Calypte anna</i>)	Occurs in chaparral, coastal scrub, oak savannas, and open woodland. Also common in urban and suburban settings.
Ash-throated flycatcher (<i>Myiarchus cinerascens</i>)	Occurs in dry scrub, open woodlands, and deserts. Cavity nester that breeds in this part of Arizona.
Black phoebe (<i>Sayornis nigricans</i>)	Usually found near water, including marshy ponds, streams, near farm ponds, and along irrigation ditches.
Black-throated sparrow (<i>Amphispiza bilineata</i>)	Found in sparsely vegetated desert scrub, most often found in desert uplands, alluvial fans, and hillsides.
Brewer's blackbird (<i>Euphagus cyanocephalus</i>)	Often occurs near human habitation. Occurs in shrubby and busy areas near water, riparian woodland, cultivated lands, and marshes. Winters south of Mogollon Rim.
Brown-headed cowbird (<i>Molothrus ater</i>)	Often associated with human-modified, fragmented landscapes, and are attracted to feedlots, pastures, and fields. Occurs in a variety of habitats including desert scrub, agricultural lands, and residential areas. Migratory; present in Arizona spring through fall.
Common raven (<i>Corvus corax</i>)	Found in most habitat types in select open areas. Regularly encountered in rural, agricultural, and urban settings. Year-round resident.
Cliff swallow (<i>Petrochelidon pyrrhonota</i>)	Feeds over pastures, fields, towns, and open areas. Nests in colonies that can be on cliffsides, caves, building eave, bridges, culverts, dams, or large trees. Nests are created with mud and dried grass at the juncture of a vertical wall and a horizontal overhang.
Cooper's hawk (<i>Accipiter cooperii</i>)	Occurs in woodlands, parks, neighborhoods, and fields, associated with trees.
Curve-billed thrasher* (<i>Toxostoma curvirostre</i>)	Found in Creosotebush desert scrub, grasslands, and residential areas.
Eurasian collared dove (<i>Streptopelia decaocto</i>)	Found in a variety of habitats from open woodland to desert scrub. Nonnative species, not protected under the MBTA.
European starling† (<i>Sturnus vulgaris</i>)	Occurs predominantly near human settlements, in rural, urban, and agricultural fields. Year-round resident.
Gambel's quail* (<i>Callipepla gambelii</i>)	Typically associated with brushy Sonoran Desert uplands and desert washes. Can also occur in residential areas and along the margins of cultivated lands. Year-round resident.
Great horned owl (<i>Bubo virginianus</i>)	Occurs in a wide variety of habitats including agricultural and residential areas as well as woodlands and orchards.
Great-tailed grackle* (<i>Quiscalus mexicanus</i>)	Occurs in partly open areas with scattered trees around human habitation. Year-round resident.
Greater roadrunner (<i>Geococcyx californianus</i>)	Occurs in open, arid country with scattered shrubs, trees, or cacti. Also common in agricultural areas and urban and suburban settings. Year-round resident.

Common Name (Scientific Name)	Habitat
Horned lark (<i>Eremophila alpestris</i>)	Found in grasslands, sandy regions, areas with scattered low shrubs, desert playas, pastures, and open cultivated areas.
House finch* (<i>Carpodacus mexicanus</i>)	Occurs in arid scrub and brush, open woodland, oak-juniper, and pine-oak habitats, and towns and cultivated lands. Year-round resident.
House sparrow† (<i>Passer domesticus</i>)	Nonnative, introduced species that occurs abundantly in cities and towns. Occurs in feedlots, agricultural areas, and urban and rural communities. Year-round resident.
Inca dove (<i>Columbina inca</i>)	Found in open country, urban, and agricultural areas. Year-round resident.
Lark Sparrow (<i>Chondestes grammacus</i>)	Found in agricultural areas, suburban gardens, oak woodlands, chaparral, and mesquite/acacia grassland.
Lesser goldfinch (<i>Spinus psaltria</i>)	Occurs in patch open habitats, including thickets, weedy fields, woodland, scrubland, and farmlands.
Lesser nighthawk (<i>Chordeiles acutipennis</i>)	Found in arid lowlands, deserts, and agricultural areas. Nests on the ground, usually beneath a shrub but sometimes out in the open. Migratory; present in Arizona spring–fall.
Mourning dove* (<i>Zenaida macroura</i>)	Occurs in a wide variety of habitats, most regularly in desert scrub, shrubby grasslands, and open woodlands. Also found in rural and urban habitats.
Northern cardinal (<i>Cardinalis cardinalis</i>)	Occurs in dense shrubby areas including overgrown fields, backyards, mesquite (<i>Prosopis</i> spp.), thickets, and ornamental landscaping.
Northern mockingbird (<i>Mimus polyglottos</i>)	Prefers open and partly open situations. Occurs in areas of scattered brush or trees to semidesert, and around towns and cultivated areas.
Phainopepla (<i>Phainopepla nitens</i>)	Occurs in Arizona during the breeding season. Found in desert washes, where they feed heavily on desert mistletoe berries.
Red-tailed hawk (<i>Buteo jamaicensis</i>)	Occurs in a wide variety of open habitats. Elevated perches are important. Year-round resident.
Red-winged blackbird (<i>Agelaius phoeniceus</i>)	Nests near water. During migration and wintering can also occur in cultivated lands, pastures, and prairies. May be year-round or migratory.
Rock pigeon† (<i>Columba livia</i>)	Introduced. Closely associated with human settlement, such as towns, parks, and agricultural areas. Year-round resident.
Swainson's hawk (<i>Buteo swainsoni</i>)	Occurs in open pine-oak woodland and cultivated lands. Migratory, breeds in Arizona.
Turkey vulture (<i>Cathartes aura</i>)	Widespread, and uses a variety of habitats. Commonly perches on rocky outcrops, cliffs, canyon walls, transmission towers, telephone poles, and tall trees. Migratory.
Western kingbird (<i>Tyrannus verticalis</i>)	Prefers open areas in many habitat types including desert, rural, and agricultural areas. Migratory.
White-crowned sparrow (<i>Zonotrichia leucophrys</i>)	Occurs in woodlands, shrubland, croplands, suburbs, old fields, and conifer woodlands.
White-winged dove* (<i>Zenaida asiatica</i>)	Habitat generalist, including desert scrub, riparian, urban, and agricultural areas. Year-round resident.

Source: Range or habitat information is from Corman and Wise-Gervais (2005), eBird (2023), and NatureServe (2023).

*Observed in Project Area during field reconnaissance.

†Nonnative species.

Reptiles

The Lower Colorado River Valley subdivision of the Sonoran Desert biotic community is home to many reptile species (Brown 1994). Species of this biotic community may occur in the portions of the Project Area and Study Area containing native vegetation, and a small number of species also tolerate developed environments. Table D-3 lists the reptile species that may occur in the Study Area.

Table D-3. Reptile Species that May Occur in the Study Area

Common Name (Scientific Name)	Habitat
Banded Gila monster (<i>Heloderma suspectum cinctum</i>)	Ranges from desert scrub to lower reaches of Great Basin Conifer Woodland and Madrean Evergreen Woodland. Commonly found above the flats in rocky drainages and rugged terrain.
Coachwhip (<i>Coluber flagellum</i>)	Typically occurs in desert scrub and semidesert grasslands. Uses a wide range of habitats including desert, prairie, scrubland, woodland, farmland, and creek valleys, generally in dry, open terrain.
Common side-blotched lizard (<i>Uta stansburiana</i>)	Typically occurs in desert scrub, semidesert grasslands, Great Basin grasslands, and interior chaparral.
Desert iguana (<i>Dipsosaurus dorsalis</i>)	Primarily found in Mohave desertscrub and Lower Colorado River Subdivision of Sonoran desertscrub, and occasionally in Arizona Upland Subdivision of Sonoran desertscrub. Occurs on flatlands and gently sloping bajadas.
Desert night snake (<i>Hypsiglena chlorophaea</i>)	Ranges from flat, open sandy deserts to steep, rocky, and wooded slopes.
Desert spiny lizard (<i>Sceloporus magister</i>)	Found in Sonoran desertscrub, Great Basin desertscrub, Semidesert grassland, interior chaparral, and woodlands.
Gopher snake (<i>Pituophis catenifer</i>)	Found in biotic communities up to Alpine Tundra. Occurs in deserts, forests, and coastal grasslands.
Long-nosed leopard lizard (<i>Gambelia wislizeni</i>)	Found in desert scrub and semidesert grasslands.
Long-nosed snake (<i>Rhinocheilus lecontei</i>)	Occurs in deserts, dry prairies, arid river valleys, thornbrush, and shrubland.
Long-tailed brush lizard (<i>Urosaurus graciosus</i>)	Primarily an inhabitant of Lower Colorado River Sonoran and Mohave desertscrub, commonly found in Creosotebush-lined desert flats with sandy soils and along drainages.
Mohave rattlesnake (<i>Crotalus scutulatus</i>)	Found in desert scrub and semidesert grassland, usual in relatively level terrain.
Ornate tree lizard (<i>Urosaurus ornatus</i>)	Occurs in most biotic communities from desert scrub to subalpine.
Sidewinder (<i>Crotalus cerastes</i>)	Typically occurs in flat, open desert with sandy or loamy soils.
Spotted leaf-nosed snake (<i>Phyllorhynchus decurtatus</i>)	Found in Creosotebush flats and washes in Sonoran desertscrub.
Tiger whiptail (<i>Aspidoscelis tigris</i>)	Occurs in a wide variety of habitats including Creosotebush flats, sandy wash, canyons, and hillsides. Found in desert scrub, semidesert grasslands, and lower reaches of chaparral.
Western banded gecko (<i>Coleonyx variegatus</i>)	Ranges from dry Creosotebush flats to rugged, rocky slopes to barren high desert plateaus.
Western patch-nosed snake (<i>Salvadora hexalepis</i>)	Found in flatlands and low valleys from desert scrub to woodlands.
Western shovel-nosed snake (<i>Chionactis occipitalis klauberi</i>)	Found in or near sandy washes or dunes in desert flats or on gently sloping bajadas.
Zebra-tailed lizard (<i>Callisaurus draconoides</i>)	Found primarily in desert scrub. Occurs in flatlands and broad, sandy washes.

Source: Range or habitat information is from AGFD (2023a; 2023b); Brennan (2012); and NatureServe (2023).

Amphibians

There are no perennial water sources within the Project Area or Study Area aside from the evaporation pond, irrigation canals, and the golf course pond. Amphibians may occur in the evaporation ponds and irrigation canals in the Project Area and in the golf course pond in the Study Area, and they have the potential to occur in any location that accumulates water, including roadside puddles or depressions following monsoon rains or within fields or canals during irrigation. During dry seasons, amphibians shelter in mud cracks, mammal burrows, or structures or may go underground to avoid desiccation. Table D-4 lists the amphibian species that may occur in the Study Area.

Table D-4. Amphibian Species that May Occur in the Study Area

Common Name (Scientific Name)	Habitat
Amphibians	
American bullfrog [†] (<i>Lithobates catesbeianus</i>)	Introduced in Arizona. Occurs in a wide variety of aquatic habitats from cattle tanks and canals to ponds, reservoirs, and marshes.
Couch's spadefoot (<i>Scaphiopus couchii</i>)	Found primarily in Sonoran and Chihuahuan deserts and associated grasslands. They can be encountered in any arid western desert valley capable of supporting rain pools that last at least 7–8 days.
Sonoran desert toad (<i>Inciilius alvarius</i>)	Found in Sonoran desertscrub, semi-desert grasslands, oak, and occasionally pine-oak woodlands up to 5,800 feet amsl.
Sonoran green toad (<i>Anaxyrus retiformis</i>)	Occurs in valleys and sparingly onto lower bajadas, typically in Lower Colorado River and Arizona Upland subdivisions of Sonoran desertscrub.
Woodhouse's toad (<i>Anaxyrus woodhousii</i>)	Found in areas near ponded permanent water, such as backwaters and slack water of lakes and irrigation ditches and canals, but can also be found at cattle tanks and other seasonal wetlands foraging in rural or urban areas near these habitats.

Sources: Range or habitat information is from AGFD (2023a); Brennan (2012); and NatureServe (2023).

[†]Nonnative species

Fish Species

There is no perennial aquatic habitat aside from the evaporation pond, irrigation canals, and the golf course pond, in or near the Study Area. The Picacho Reservoir, approximately 3.6 miles east of the Study Area, and the Gila River, approximately 9 miles north of the Study Area and which has perennial and intermittent stretches, are the nearest sources of water near the Study Area that are not human-made (i.e., a canal or evaporation pond). However, introduced fish have the potential to occur within the Project Area and Study Area in the concrete-lined canals and the golf course pond. Many of these fish represent invasive species that have been released or sportfish that have been stocked or into waterways connected to the canals. No native fish species would be expected to occur.

The Central Arizona Project (CAP) canal has the potential to supply water to agricultural portions of the Project Area and Study Area through diversion into the concrete-lined canals. Fish from the larger canals could be swept into the concrete-line canals; however, these canals are unlikely to constitute suitable habitat for any of these species that would support long-term life-history functions (e.g., foraging, reproduction). The CAP canal is known to carry fish, although none of the fish caught in a 2005–2009 study were native to the Gila River basin (Kesner and Marsh 2010). The following fish were observed in the CAP canal downstream reach (i.e., south of the Fannin-McFarland Aqueduct) during the 2005–2009 study (Kesner and Marsh 2010): bluegill (*Lepomis macrochirus*), channel catfish (*Ictalurus punctatus*), common carp (*Cyprinus carpio*), flathead catfish (*Pylodictis olivaris*), grass carp (*Ctenopharyngodon idella*), green sunfish (*Lepomis cyanellus*), largemouth bass (*Micropterus salmoides*), redear sunfish (*Lepomis microlophus*), striped bass (*Morone saxatilis*), smallmouth bass (*Micropterus dolomieu*), and sunfish hybrids (family Centrarchidae).

Summary of Potential Effects

Vegetation

The Project involves work in previously developed and disturbed areas (i.e., existing roadway, existing agricultural fields) as well as in relatively disturbed Sonoran desertscrub dominated by velvet mesquite, saltbush, and burroweed. Vegetation would be removed in areas where power poles would be placed. However, the Project Area would not result in landscape level impacts to the Lower Colorado River Valley subdivision of the Sonoran Desert biotic community native vegetation because of the relatively small amount of disturbance and the abundant Sonoran desertscrub vegetation occurring in the Study Area and vicinity.

Mammal Species

Project construction activities could cause death or injury to terrestrial mammals that may not be able to flee from heavy equipment or vehicular traffic, with a higher likelihood of these impacts for individuals of species that are small, nocturnal, or fossorial. Project construction could cause behavior changes, as individuals would be expected to flee from an increase of noise, vibration, and human presence within the Project vicinity. Individuals would be expected to flee or hide, depending on the life history of the species, which could increase depredation, decrease foraging success, reduce reproductive success, and result in loss of fitness for that individual from increased metabolic output.

Project construction activities would be temporary. The loss and degradation of mammal habitat from short- and long-term Project activities would be minor as the planned disturbance within the Project Area is relatively small, and the Study Area contains abundant agricultural and undisturbed desert habitat outside of the Project Area. The small disturbance footprint and relatively short timeframe of construction would limit the migratory habitat loss for those species and would limit the avoidance of the area by migratory species. As such, any loss of vegetation from construction activities would not contribute meaningfully to habitat fragmentation for mammals or decrease connectivity between habitats.

Bat activity patterns and foraging would be unlikely to be impacted since bats are nocturnal and Project construction would occur during the day. Some roosting habitats may occur in the Study Area, but none are present in the Project Area. The loss of potential foraging habitat in the Project Area is unlikely to have individual or population-level impacts to any bat species because the area of disturbance is relatively small compared with the available foraging habitat in the Study Area.

Artificial lighting may affect the ability of nocturnal wildlife (e.g., bats or nocturnal mammal species) to navigate (Davies et al. 2013). Because the Project would be constructed in a largely human-modified environment, surrounded by agricultural, industrial, and residential land uses, the Project is not likely to contribute meaningfully to impacts related to light pollution that would affect nocturnal wildlife.

Construction of the Project would result in an increase of fugitive dust. The fugitive dust during construction could change mammal behavior (e.g., reducing the amount of foraging). The likelihood and severity of impacts from construction would decrease with increasing distance from the Project Area. These impacts would cease with completion of construction activities.

Bird Species

Birds, including raptors, can collide with power lines, resulting in injury or death (APLIC 2012). Birds that are large-bodied, are fast flyers, and have large wing spans; birds that have low maneuverability (e.g., many wading birds or waterfowl); or birds that show certain behaviors (e.g., flocking, flying at altitudes at

or below power line height, or nesting or foraging in close proximity to power lines) have a higher risk of impacts from power line collisions (APLIC 2012). Birds generally avoid collision with power lines when they are perceived by the bird, and therefore collision risk is lower in areas where multiple transmission lines are co-located, or transmission lines are placed near other infrastructure (APLIC 2012).

Power lines can also cause electrocution when a bird is able to touch both energized and grounded electrical components at the same time, which is generally more common in birds with large wing spans, birds that use power poles (e.g., perching, foraging, roosting, or nesting), or in situations where electrical configuration includes closely spaced energized and grounded components that are easily spanned by birds (APLIC 2006).

Resident, migrating, or dispersing birds would be at risk of collision or electrocution with new power poles or power lines. New infrastructure associated with the Project may increase the risk of collision. There is potential for impacts to nests, including death or injury of eggs or nestlings or nest failure from construction disturbance.

The existing evaporation pond, irrigation canals, and golf course pond would be likely to show a high bird diversity, including native and nonnative songbirds, raptors, and waterfowl. However, in most cases these species would likely be attracted by water and would not reside permanently at or near this pond owing to lack of habitat required for life history needs, including foraging, breeding, perching, or escaping predation. Although the pond is within the Project Area, impacts to any birds using this pond would likely be limited to noise, vibration, or human presence resulting from construction activities in the vicinity of the pond.

Potential impacts from increased noise, vibration, or human presence in the Project Area and from loss, degradation, and fragmentation would be the same as those described for terrestrial mammals.

The increase in potential perches for hunting from the additional power poles could improve hunting habitat for some species.

Reptile Species

Potential impacts to reptiles including death, injury, or impacts arising from behavior changes and from the loss, degradation, and fragmentation of habitat would be similar to those described for terrestrial mammals. Fossorial reptiles, reptiles that are inactive from heat or cold, and small reptiles would have a higher chance of injury or death compared with those individuals that are more mobile. Reptile species near the additional power poles could experience predation because of the increase in available perches for reptile predators.

Amphibian Species

Potential impacts to amphibians, including death, injury, or impacts arising from behavior changes and from the loss, degradation, and fragmentation of amphibian habitat, would be similar to those described for terrestrial mammals. Because the Project Area contains water sources (e.g., canals, ponds), there is potential for loss of habitat for amphibians as a result of construction activities. However, agricultural canals are abundant in the Study Area and immediate vicinity, so the overall loss of habitat would be minor.

Fish Species

Although Project activities could increase the risk of injury or death to any individual fish occurring in the concrete-lined irrigation canals during construction, most or all introduced fish in the canals would likely end up dying in the absence of construction from lack of food, depredation, or desiccation or by being swept into agricultural areas during crop irrigation. The Project would not contribute to the loss of habitat, or any population impacts because these sportfish and introduced fish have only been accidentally swept into the canals within the Study Area and would not occur there otherwise. Fish would experience no additional impacts from construction activities, with the exception that fugitive dust may infiltrate water where fish occur within the Project Area.

Mitigation Measures

The following mitigation measures are designed to reduce the risk of animal injury or spread of invasive species. For mitigation measures specific to special-status species, see Exhibit C.

- Transmission lines pose a risk of collisions and electrocution for birds, particularly raptors. To minimize that risk, the Applicant will design the Generation Tie Line to incorporate reasonable measures to minimize impacts to avian species due to electrocution or collision by following the guidelines outlined in *Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006* (APLIC 2006) and *Reducing Avian Collisions with Power Lines: The State of the Art in 2012* (APLIC 2012). Preconstruction surveys for nesting birds should be conducted by qualified biologists if vegetation-clearing activities would occur during bird nesting season (generally March–September with January–June for raptors).
- To minimize the introduction and spread of invasive species and noxious weeds, standard BMPs will be used during construction. These BMPs can include measures such as washing equipment prior to and following mobilization to the Project Area.
- If vegetation-disturbing activities are planned during the migratory bird nesting season (March–September or January–June for raptors), measures to avoid any active bird nests within the Project Area, such as preconstruction surveys for migratory bird nests by a qualified biologist, should be taken to maintain compliance with the MBTA since suitable nesting habitat for migratory bird species is present in the Project Area.
- The recommendations in AGFD’s *Guidelines for Solar Development in Arizona* (AGFD 2009) and the AGFD’s *Wildlife Compatible Fencing Guidelines* (AGFD 2023c) should be reviewed and implemented for the Project as applicable and feasible to minimize impacts to wildlife and their habitats.

Conclusion

Portions of the Project Area and Study Area occur within previously disturbed and developed areas with existing roads, residences, energy infrastructure, and agricultural fields. Existing distribution lines occur in the Project Area. Because the Project would disturb minimal vegetation within the Project Area, and there is abundant habitat in the Study Area and vicinity, impacts to general plants and wildlife would be minimal and restricted to individuals. Whereas fewer wildlife species would be expected to occur in the disturbed, developed, and in-use agricultural areas than in native desert habitat, irrigation canals and ponds likely draw animals from surrounding areas to water or prey species there, and some wildlife species are specifically attracted to agricultural fields because of the open space or higher moisture. However, disturbance within the Project Area would be minimal, and active agricultural land occurs

within the Study Area outside of the Project Area. At a landscape level, the Generation Tie Line would not significantly reduce the amount of vegetation available for wildlife use, increase habitat fragmentation, or impact any likely wildlife dispersal or migration corridors. Therefore, the proposed Project may impact individuals (both wildlife and plant) but would be unlikely to result in impacts at the population level for any species.

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EXHIBIT E. SCENIC AREAS, HISTORIC SITES AND STRUCTURES, AND ARCHAEOLOGICAL SITES

As stated in the Arizona Corporation Commission Rules of Practice and Procedure R14-3-219, Exhibit 1:

Describe any existing scenic areas, historic sites and structures or archaeological sites in the vicinity of the proposed facilities and state the effects, if any, the proposed facilities will have thereon.

Scenic Areas and Visual Resources

Overview

This section of Exhibit E addresses the inventory of and potential impacts to scenic and/or visual resources in relation to construction and operation of the Project by producing a Visual Resource Assessment (VRA). The VRA uses the following methodology identified below and includes separate discussions with regard to scenery (i.e., scenic quality) and sensitive viewers. The methodology is followed by the results of the inventory and the impact assessment, both of which include separate discussions for scenery and sensitive viewers within the context of the analysis area. The Project does not occur on land managed by the Bureau of Land Management (BLM), U.S. Forest Service, or any other agency that requires conformance with visual resource management objectives or guidelines and is not within any designated national or state scenic areas.

Methodology

The purpose of the VRA is to identify and characterize the level of visual modification in the landscape that would result from the construction and operation of the Project. Landscape modification is typically described in terms of the degree of visual contrast, which can potentially affect both scenic quality and sensitive viewers. Whereas scenic quality refers to the general characteristics and inherent aesthetic value of the landscape as a resource regardless of specific viewers, the term “sensitive viewer” refers to specific viewers and/or groups of viewers whose views could be affected by potential changes to the landscape. This assessment employed the following steps to assess the potential impacts to the visual environment and provide a completed VRA:

- Define a visual analysis area.
- Perform a desktop review to inventory designated scenic areas, identify existing land uses and future land use plans, and assess aerial imagery.
- Describe the affected environment by evaluating the existing landscape character within the analysis area to identify impacts from the introduction of Project components within the landscape.
- Identify Key Observation Points (KOPs) from where the Project may be viewed and simulations created.
- Perform a field survey by visiting each KOP, collecting site photographs, and documenting existing conditions.
- Prepare visual simulations of the Project using the KOP photographs.

- Assess the potential visual impacts of Project development based on the existing conditions observed during the field survey in concert with the visual simulations.

The analysis area for the VRA is defined as a 1-mile-wide buffer from the Project, concentrating on areas from which viewers could potentially see any part of the Project. Visual resource information and data for this VRA were developed based on desktop research, available geographic information system (GIS) data, aerial photography, and on-site field verification and photographic documentation. The data were collected for all land within the analysis area, regardless of jurisdiction, and used to develop a comprehensive understanding of the existing landscape and associated visual resources. The analysis area consists of Arizona State Trust land and private land, and is mostly used as active agricultural production, recreation, commercial, or low-density residential development use.

Impacts to both scenic quality and sensitive viewers are determined, in part, by evaluating the visual contrast the proposed features would have with the existing landscape. Visual contrast refers to the degree that the Project features would either match/repeat existing features in the landscape or contrast with existing landscape features. The degree of visual contrast considers the existing landforms, vegetation, and built features present in the landscape and is described in terms of the degree of perceptible change in the basic design elements of form, line, color, and texture that would be evident by the introduction of the Project in the landscape.

The impact thresholds for this assessment are categorized as follows:

- **High:** Project features would result in a strong degree of contrast and would appear as dominant features within the existing landscape.
- **Moderate:** Project features would result in a moderate degree of contrast and would appear as co-dominant features within the existing landscape.
- **Low:** Project features would result in a weak degree of contrast and would be subordinate to the features of the existing landscape.

SCENERY

Scenery is a measure, or the inherent aesthetic value, of the landscape based on the appearance of existing landscape features. This includes unique landforms, variable vegetation, and built features. In general terms, the scenic quality is based on the premise that landscapes with greater diversity and visual variety in landforms and vegetation are more aesthetically pleasing and therefore hold greater value. For this analysis, impacts to scenic quality were based on comparing the inventoried quality of the scenery to the anticipated quality considering any contrast introduced because of the construction and operation of the Project.

SENSITIVE VIEWERS

The concept of sensitive viewers refers to members of the public who have potential views of the Project and may be sensitive to potential changes in the surrounding scenery and in turn their existing views. Regarding sensitive viewers, the Project contrast is dependent on several factors, including viewing distance, duration of view, viewing condition, and degree of visibility. When combined, these factors indicate the overall visual dominance of the Project within the landscape.

Sensitive viewing locations around the analysis area are limited and of primarily short duration (recreation or vehicular travelers). Static viewing locations where viewers would experience the site for long durations, such as residences, were identified within the analysis area. Sensitive viewers or viewing locations that would be potentially affected by this Project include:

- Recreational areas – Pinal County Fairgrounds and Event Center, Central Arizona Raceway, and the Tierra Grande Golf Course.
- Vehicular travelers – Primary travel routes are SR 287 and Eleven Mile Corner Road. Collector routes support access to local residences and agriculture.
- Residences – Low- and medium-density residential use in the analysis area.

The term “viewing distance” refers to the viewer’s physical distance from the Project components and is predicated on the fact that one’s ability to discern details dissipates over distance. Distance zones are used to separate an analysis area into distinct classifications based on the various levels of landscape detail available to the viewer and type of project infrastructure. SWCA reviewed established agency protocols, including those published by the U.S. Forest Service, BLM, and U.S. Department of Transportation, to determine an appropriate area for each distance zone for the analysis area. The standard BLM distance zones of foreground-middle ground (0–5 miles), background (5–15 miles), and seldom seen (>15 miles) were used as a starting point. Because of the characteristics of the specific landscape and equipment being evaluated, SWCA used the following distance zone, as measured from the boundary of the Project, to represent available views from within the analysis area (Table E-1). Note that because of the identified analysis area, middle-ground and background distance zones are not available to viewers and are therefore not included.

Table E-1. Distance Zones

Name	Distance	Explanation
Foreground	0 to 1.0 mile	At this distance, a viewer can perceive details of an object with clarity. Surface textures, small features, and the full intensity and value of color can be seen on foreground objects. Large-scale landscape features remain recognizable and distinguishable as landscape patterns, colors, and textures.

The duration of view refers to the length of time and associated angle of view that the Project would be visible and is based on the idea that viewer attention is attracted to a higher degree as the duration of view increases. Viewing conditions refer to whether the viewer is looking down at the Project from a superior position, looking up at the Project from an inferior position, or viewing the Project from an elevation that is similar to that of the Project (i.e., a neutral view). The term “degree of visibility” refers to whether views of the Project would be either open and unobstructed or partially to fully obstructed by other features in the existing landscape (i.e., topography, vegetation, or built features). The degree of visibility also refers to whether the Project would be viewed against the sky (i.e., skylined) or a backdrop of landforms, vegetation, and/or built features.

Anticipated viewer sensitivities to visual changes are also discussed within the VRA, including brief discussions regarding the potential sensitivities of different types of identified viewer groups within the vicinity of the Project. Residential and recreational viewer groups are typically considered to have high sensitivities to visual changes in the landscape, whereas viewers moving along travel routes are considered to have low to moderate sensitivities to visual changes (unless traveling along a designated scenic travel route or more natural appearing areas).

Inventory Results

SCENERY

The Project is in a rural setting within the Sonoran Basin and Range Level III ecoregion, more specifically, within the Gila/Salt Intermediate Basins Level IV ecoregion (U.S. Geological Survey

[USGS] 2014). The Sonoran Basin and Range Level III ecoregion consists of generally broad, open landscapes with scattered mountains and vegetation comprising paloverde (*Parkinsonia* sp.), saguaro (*Carnegiea* sp.), and other various Sonoran Desert plants. A small number of residences are dispersed through active agricultural land, which dominates the developed portion of the analysis area.

Undeveloped land represents most of the analysis area, aside from several transmission line corridors. SR 287, a main travel route, passes through the northern portion of the analysis area for approximately 3.1 miles. Scenic views from the analysis area are mostly open and panoramic and include those of the Sacaton Mountains approximately 6 miles to the northwest, the Picacho Mountains approximately 10 miles to the southeast, and the Silver Bell Mountains approximately 28 miles to the south. The distant background consists of existing transmission infrastructure and agricultural operations. Human development within the analysis area and throughout the ecoregion is characterized as agricultural and supporting infrastructure development.

The scenic quality within the analysis area is considered low based on the general lack of visually interesting landforms and vegetation, dominant views with focal features and visually sensitive resources, or the prominence of existing built features and development that contrasts with the appearance of the natural landscape.

KOPs were chosen to represent potential views of the Project from major and minor roadways, agricultural and residential areas, a utility area (substation), and the Pinal County Fairgrounds and Event Center. Four KOPs representing typical viewing conditions of prominent Project views of components were selected. SWCA conducted in-field assessments in April 2023 at each of the KOPs and collected associated photographs, notes on the site’s visual aspects, and pertinent location information. Table E-2 lists the identified KOPs and associated viewer type and reason for inclusion in the VRA.

Table E-2. Selected KOP Locations and Sensitive Viewer Type

KOP	Location (Latitude, Longitude)	Sensitive Viewer Group/ Distance from Viewer	Reason for Inclusion
1	View facing south from the Pinal County Fairgrounds and Event Center 32.874181°N, 111.568601°W	Recreation users Proposed: 0.1 mile	Representative of recreation users at the Pinal County Fairgrounds and Event Center.
2	View facing northwest from intersection of South Tweedy Road and David Lane 32.87653°N, 111.584587°W	Vehicular travelers, residential area Proposed: 0.3 mile	Representative of views while traveling along local access roads, South Tweedy Road, and David Lane, with local access to residential and agriculture areas. Residential locations also represent longer duration views that are available to viewers adjacent to the analysis area.
3	View facing southeast from Andrew Lane 32.873727°N, 111.577959°W	Vehicular travelers, residential area Proposed: 0.3 mile	Representative of views while traveling along local access road, Andrew Lane, with local access to residential and agriculture areas.
4	View facing northeast from David Lane 653876516°N, 111.576342°W	Residential area Proposed: 0.1 mile	Representative of views while traveling along local access road, Andrew Lane, with local access to residential.

SENSITIVE VIEWERS

Residences

A small number of individual residences are within the analysis area. The nearest residential viewers are approximately 145 feet west of the Project. Existing transmission line infrastructure across the analysis

area is also visible from the identified residences. The height of these existing features, along with the repetitive pattern of structure and conductor, makes them highly visible and dominant features as they bisect the landscape. Views from residences are mostly open and panoramic in nature and include distant views of the Sacaton Mountains to the northwest, the Picacho Mountains to the southeast, the Silver Bell Mountains to the south, agricultural fields, and existing transmission infrastructure. Residential viewers are assumed to have a relatively long duration of view and relatively high sensitivities to visual changes within the analysis area.

Recreation Areas

The Pinal County Fairgrounds and Event Center, Central Arizona Raceway, and Tierra Grande Golf Course are recreation areas within the analysis area. Other recreational uses within the Study Area include activities, such as equestrian use, walking, or bicycling, on public streets or privately owned property. The Project Area is private property and is not open to the public. Recreation viewers are assumed to have relatively moderate durations of view and a moderate sensitivity to visual changes as a result of the mixture of existing visible development and infrastructure in the area in conjunction with more open natural views within the analysis area.

Travel Routes

The primary travel routes crossing the analysis area and within proximity of the analysis area are SR 287 and Eleven Mile Corner Road. Collector routes that support access to local residence areas are within the proximity of the Project and include Legend Court, West Loki Lane, West Casa Bonita Road, North Tweedy Road, North Mira Vista Drive, Wasatch Drive, North Independent Avenue, Sheppard Drive, San Miguel Drive, North Castledale Avenue, West Templegreen Road, David Lane, Andrew Lane, Alexis Lane, West Hackler Lane, East Early Road, West Calle Tuberia, South Pecos Drive, South Clubhouse Drive, West Calle Roassa, South Calle Maria Juana, South Private Drive, South Indiana Drive, South Missouri Drive, South Utah Drive, East Sunscape Way, Arizona Western Boulevard, South Washington Drive, South Colorado Drive, and additional unnamed roads. Views from travel routes within the analysis area are typically of active agricultural land in the foreground interspersed with vacant land in the middle ground moving to the dominant background mountain ranges. Existing transmission lines and infrastructure within the analysis area are also visible to users because of the dominating height and highly visible features within the foreground. Similar to residential views, the views from travel routes are mostly open and panoramic in nature and include the distant views to the mountains and agricultural operations. Viewers moving along travel routes are expected to have relatively short durations of view based on travel speeds and low sensitivities to visual changes as a result of the existing visible development and infrastructure.

Impact Assessment Results

Below is a general description of the potential impacts to scenic quality and sensitive viewers based on the construction and operation of the Project. Overall, impacts associated with the Project would be low because the Project components would appear similar to the existing transmission lines and existing infrastructure that are adjacent to the Project and the visually dominant features in the foreground landscape.

SCENERY

The Project would introduce a new 230kV transmission line corridor (structures and conductors) and associated substation facilities. The Project would add approximately 18 structures (16 monopoles, two 3-pole structures) over 1.7 miles and would include five dead-end structures and supporting substation

facilities. The monopoles would be approximately 70 to 90 feet high, would span anywhere from 50 to 660 feet, and would use a galvanized or weathered steel or wood material finish. The lines, forms, colors, textures, and scale of the Project would be similar in appearance to other transmission lines and infrastructure within the landscape. The existing patchwork of operational agricultural fields and vacant land would not be interrupted by the additional Project equipment. The foreground colors would match the various hues of green and beige in the patchwork pattern. The Project is expected to create minor impacts to the existing, relatively low scenic quality within the analysis area. Project components could be seen but would not attract attention and would be similar to other built facilities within the landscape, which would result in a weak degree of contrast.

SENSITIVE VIEWERS

The following is a summary of anticipated impacts to sensitive viewers resulting from the construction and operation of the Project.

Residences

Views from residences within or adjacent to the analysis area would vary based on location from unobstructed open views to partially obstructed views depending on foreground vegetation and associated out buildings/built facilities on adjacent properties. Based on the generally flat landforms of the surrounding landscape, views from residences would generally be from a neutral position and would include skylined views of the Generation Tie Line interconnection and structures within the Project Substation, where visible.

The nearest group of residences, near the intersection of South Tweedy Road and David Lane, would have partially obstructed views of the Project because of vegetation and existing buildings, as illustrated by KOP 2 (see Exhibit G-6), approximately 0.3 mile southeast of the Generation Tie Line and Project Substation facilities. Foreground color patterns are just visible from this vantage point and do not change with the introduction of the Project. The structures protrude into the light pale sky above the background mountains. The lines, forms, colors, textures, and scale of the Project facilities would be similar in appearance to other transmission lines and infrastructure within the existing landscape. Despite the relative proximity of these residences and the anticipated long duration of view, the Project would be visible but subordinate to other built facilities within the landscape, resulting in a weak to moderate degree of contrast and low to medium impacts.

In the same nearest group of residences along Andrew Lane, as illustrated by KOP 3 (see Exhibit G-7), viewers would have partially obstructed views of the Project, approximately 0.3 miles northwest of the Generation Tie Line. From this vantage point, Project structures appear co-located with existing equipment and blend into the overall view. The structures protrude into the light pale sky. The lines, forms, colors, textures, and scale of the Project facilities would be similar in appearance to other transmission lines and infrastructure within the existing landscape but would be shorter in height in comparison to the existing 500kV transmission line. Despite the relative proximity of these residences and the anticipated long duration of view, the Project would be visible and would begin to attract attention but would be subordinate to other built facilities within the landscape, resulting in a weak degree of contrast and low impacts.

In the same nearest group of residences, from the end of David Lane, as illustrated by KOP 4 (see Exhibit G-8), viewers would have partially obstructed views of the Project to due to vegetation. From this vantage point, Project structures are located approximately 230 feet to the north and 150 feet east of this residence, while the existing structures are approximately 675 feet to the north and would be shorter in height and made of wood material in comparison to the proposed Project. The structures extend into the

light pale blue sky over the prominent vegetation in the foreground. Views of the Project to the east and north of this location would introduce new lines, forms, colors, textures, and associated with using galvanized or weathered steel or wood monopole infrastructure and associated transmission lines within the existing landscape. Due to the close proximity of these residences and the anticipated long duration of view, the Project would be visible to the north and east of the residence, would attract attention, and would be prominent to other built facilities within the landscape. This would result in a moderate to strong degree of contrast and medium to high impacts.

Recreation Areas

Views from the Pinal County Fairgrounds and Event Center, represented by KOP 1 (see Exhibit G-5), adjacent to the Central Arizona Raceway, would be from a neutral viewer position and unobstructed to partially obstructed, depending on foreground vegetation and associated outbuildings/built facilities within the landscape. Viewers from the fairgrounds are expected to have short duration of views and are likely to be concentrating on rides, games, and other activities. The lines, forms, colors, textures, and scale of the Project facilities would be similar in appearance to other transmission lines and infrastructure within the existing landscape. Despite the proximity of the Project to the Pinal County Fairgrounds and Event Center and the anticipated long duration of view, the Project would be visible and would begin to attract attention but would be subordinate to other built facilities within the landscape, resulting in a weak degree of contrast and low impacts.

Travel Routes

Views from travel routes within the Study Area would vary based on location and range from unobstructed to partially or fully obstructed. Most views of the Project would be partially obstructed by existing facilities within the landscape, such as trees, existing buildings, and other built facilities. Based on the generally flat landform on which the Project would be, views of the Project from travel routes would generally be from a neutral position and would include skylined views of the transmission lines and infrastructure, where visible.

The intersection of South Tweedy Road and David Lane are local travel routes to support residences and agriculture, represented by KOP 2 (see Exhibit G-6), approximately 0.3 mile southeast of the Generation Tie Line and 0.2 mile south of SR 287. The form, line, color, texture, and scale of the Project facilities would be similar to those of the existing transmission line and infrastructure in the area and adjacent switchyard and would thus not attract attention, resulting in weak contrast and low impacts.

Views of the Project from Andrew Lane, a local travel route to support residences and agriculture, are represented by KOP 3 (see Exhibit G-7), approximately 0.3 mile southeast of the Generation Tie Line. From this vantage point, Project structures appear co-located with existing equipment and blend into the overall view. The lines, forms, colors, textures, and scale of the Project components are like those found within the existing visual setting landscape but would be shorter in height in comparison to the 500kV transmission line. Despite the relative proximity of this road, the Project could be seen but would not attract attention and would be subordinate to other facilities within the landscape, resulting in a weak degree of contrast and low impacts.

CONCLUSION

Impacts to sensitive viewers would be moderate to high from residences due to close proximity to the project and long duration of views. However, as seen from the public viewpoints in the surrounding area, the overall Project would be similar in form, line, color, and texture, compared with other transmission infrastructure in the analysis area, which would result in low to moderate impacts to scenery.

Additionally, views from public roadways and recreation areas would result in low to moderate impacts as a result of perceived contrast due to intervening visual elements, existing infrastructure, composition of views of the Project, and low number of resources within the analysis area.

Historic Sites and Structures, and Archaeological Sites

As required by the Arizona Corporation Commission *Rules of Practice and Procedure* R14-3-219, the potential effects of the proposed Project on historic sites and structures and archaeological sites were assessed. The assessment also was prepared to support Arizona Corporation Commission compliance with the State Historic Preservation Act (ARS 41–861 through 41–864), which requires state agencies to consider impacts of their programs on historic properties listed in or eligible for the Arizona Register of Historic Places (ARHP) and to provide the Arizona State Historic Preservation Office (SHPO) an opportunity to review and comment on the actions that affect such historic properties.

To be eligible for the ARHP, a property must be at least 50 years old (less if it has special significance) and have national, state, or local significance in American history, architecture, archaeology, engineering, or culture. It should also possess integrity of location, design, setting, materials, workmanship, feeling, and association, and meet at least one of the four following criteria:

- Criterion (a): be associated with significant historical events or trends
- Criterion (b): be associated with historically significant persons
- Criterion (c): have distinctive characteristics of a style or a type, or have artistic value, or represent a significant entity whose components may lack individual distinction
- Criterion (d): have yielded or have the potential to yield important information concerning history or prehistory

Methodology

The Study Area, for the purpose of assessing potential impacts to historic sites, structures, and archaeological sites, is defined as a 1-mile-radius buffer from the Generation Tie Line route. SWCA reviewed archival records to identify such properties within the Study Area. Data sources searched include AZSITE, Arizona’s statewide cultural resources database that includes records from the Arizona State Museum (ASM), Arizona State University, SHPO, and the BLM; SWCA records; the National Register of Historic Places (NRHP) database; General Land Office (GLO) plat maps; and historical topographic maps.

Previous Cultural Resources Projects

A records review of AZSITE identified 20 previous cultural resources surveys that have taken place within the Study Area. These projects occurred from 1982 to 2019 in support of irrigation improvements, telecommunications projects, transportation improvements, and electrical transmission line construction. Of these, eight cultural surveys intersect the Generation Tie Line and cover approximately 13.1 acres (28 percent) of the proposed Project Area (Table E-3).

The SHPO has provided guidance for the reliance on survey data that are 10 years or older (SHPO 2004). Surveys conducted before 1995 did not use the current ASM site definition criteria (ASM 1995); one survey in the Project Area (1982-200.ASM) meets this criterion. Of the remaining seven surveys, all used a survey strategy that would meet current methodological standards for full coverage in Arizona. The principal investigators listed for these surveys meet current state and federal professional qualification

standards. Lastly, it is unlikely that there are additional resources present in the current Project Area that have become at least 50 years old since the previous surveys. SWCA believes these seven surveys, which cover approximately 12.6 acres (27%) of the proposed Project Area, can be relied on for current inventory purposes.

Table E-3. Previous Cultural Resource Projects Intersecting the Project Area

Agency Number	Project Name	Organization	Year
1982-200.ASM	Coolidge-Saguaro 115-kV Transmission Line	CASA	1982
2001-787.ASM	Replacement of Three Structures and Placement of One Inset Structure on the Coolidge-ED #1 115-kV Line	Department of Energy	2001
2007-175.ASM	Pinal South Substation Survey	Desert Archaeology	2007
2007-692.ASM	Pinal West to Dinosaur Transmission Line Surveys	Desert Archaeology	2007–2009
2008-501.ASM	Caywood/Wuertz Peaking Plant Survey	Desert Archaeology	2008
2008-763.ASM	Coolidge-ED2 #1 115-kV Transmission Line	Archaeological Consulting Services	2009
2008-764.ASM	Coolidge-ED2 #2 115-kV Transmission Line	Archaeological Consulting Services	2009
2019-218.ASM	East Line Solar	SWCA	2019

Note: Shading denotes surveys that SWCS believes can be relied on for current inventory purposes.

Historic-era Sites

The records review identified two historic-era sites within the Study Area (Table E-4). The two sites are an early twentieth century homestead and a historic-era and modern-era ranching and refuse disposal site. In 2021, the ASM issued a policy exempting historic-era waste piles (a type of refuse scatter) from the definition of cultural resource sites (ASM 2021). It is likely that the refuse scatter component of AZ AA:2:370(ASM) no longer qualifies as a site. An additional previously recorded site, AZ AA 2:284(ASM), is a multicomponent site that is listed in the archaeological sites section and therefore is excluded from this section to avoid duplication.

Table E-4. Previously Recorded Historic-era Sites within 1 Mile of the Project Area

Site Number	Cultural/Temporal Affiliation	Site Type	ARHP Eligibility Status	Associated Reference(s)	Distance from Project Area (miles)
AZ AA:2:284(ASM)	Euro-American/ 1900–1950s	Artifact scatter	Determined eligible (Criterion D)	Clark 2007	0.00
AZ AA:2:347(ASM)	Euro-American/ ca. 1910s–1920s	Kurz Homestead	Recommended eligible (Criterion D)	Cook and Whitney (2012)	0.86
AZ AA:2:370(ASM)	Euro-American/ ca. 1950s–present	Artifact scatter	Recommended not eligible	Peterson (2019)	0.86

Note: Shading indicates site intersects the Project Area.

Historic-era Structures

The records review identified seven historic-era in-use structures within the Study Area (Table E-5). Three of these structures intersect the Project Area: Eleven Mile Corner Road (AZ AA:2:175[ASM]), the Coolidge-ED2 #1 Transmission Line (AZ AA:2:307[ASM]), and the Coolidge-Saguaro 115-kV

Transmission Line (AZ AA:7:647[ASM]). These three structures are all historic-era in-use structures that have been determined not eligible for the ARHP.

Table E-5. Previously Recorded Historic-Era In-Use Structures within 1 Mile of the Project Area

Site Number	Cultural/Temporal Affiliation	Site Type	ARHP Eligibility Status	Associated Reference(s)	Distance from Project Area (miles)
AZ AA:2:175(ASM)	<i>Euro-American/ ca. 1900–1920s</i>	<i>Eleven Mile Corner Road</i>	<i>Determined not eligible</i>	<i>Stone (1998)</i>	<i>0.00</i>
AZ AA:2:176(ASM)	<i>Euro-American/ ca. 1900–1920s</i>	<i>Sunshine Road</i>	<i>Determined not eligible</i>	<i>Stone (1998)</i>	<i>0.82</i>
AZ AA:2:149(ASM)	<i>Euro-American/ ca. 1920s–present</i>	<i>State Route 87</i>	<i>Determined not eligible</i>	<i>Stone (1998)</i>	<i>0.05</i>
AZ AA:3:209(ASM)	<i>Euro-American/ 1889–1920s</i>	<i>Casa Grande Canal</i>	<i>Recommended eligible (Criterion A)</i>	<i>Moreno et al. (1996)</i>	<i>0.18</i>
AZ AA:2:360(ASM)	<i>Euro-American/ ca. 1920s</i>	<i>Unnamed road</i>	<i>Determined not eligible</i>	<i>Teeter et al. (2014a, 2014b)</i>	<i>0.44</i>
AZ AA:2:307(ASM)	<i>Euro-American/ ca. 1950s–present</i>	<i>Coolidge-ED2 #1 Transmission Line</i>	<i>Determined not eligible</i>	<i>Schilling et al. (2009a, 2009b)</i>	<i>0.00</i>
AZ AA:7:647(ASM)	<i>Euro-American ca. 1950s–1960s</i>	<i>Coolidge-Saguaro Transmission Line</i>	<i>Determined not eligible</i>	<i>Cook and Whitney (2012)</i>	<i>0.00</i>

Note: Shading indicates site intersects the Project Area.

The GLO plat of Township 6 South, Range 7 East, approved in 1889, depicts a road named OLD SACATON intersecting the Project Area and an unnamed road in the Study Area. A 1928 Dependent Resurvey depicts the CASA GRANDE FLORENCE CANAL in the Study Area. The GLO plat of Township 6 South, Range 8 East, approved in 1889, depicts the OLD OPEN CANAL STAGE ROAD intersecting the Project Area in the southwest quarter of Section 30, and depicts OLD ROAD and the FLORENCE CANAL in the Study Area. A 1929 Dependent Resurvey depicts the CASA GRANDE-FLORENCE CANAL and an unnamed road that follows the north side of the canal in the Study Area.

The 1922 USGS Signal Peak, Arizona, 1:62,500-scale topographic map depicts the CASA GRANDE-FLORENCE CANAL, FLORENCE ROAD (modern-day SR 287) and the intersection at Eleven Mile Corner (unnamed), multiple unnamed roads, structures and associated wells; the unnamed road on the border between Sections 29 and 30 is the modern-day Sunshine Road. One of the unnamed roads on the west half of Section 26 (likely modern-day South Tweedy Road) intersects the Project Area. A 1937 Pinal County transportation and highway map depicts modern-day Eleven Mile Corner Road extending south of Florence Road (which was incorporated into SR 287 in 1961). This segment of the road intersects with the Generation Tie Line.

The 1965 USGS Coolidge, Arizona, 7.5-minute quadrangle depicts multiple structures, a school, Pinal County Housing Authority, transmission lines (including Coolidge-ED2 #1 Transmission Line), and an air landing strip north of SR 287 at Eleven Mile Corner, Arizona. An unnamed road and structure intersect the Generation Tie Line component of the Project in the northwest quarter of Section 25. The 1965 USGS Eloy North, Arizona, 7.5-minute quadrangle depicts the county fairgrounds and racetrack; a substation; multiple unnamed roads, structures, and wells; a transmission line (the Coolidge-ED2 #1 Transmission Line); a road paralleling the Casa Grande Canal; the CASA GRANDE CANAL; and three spur canals. The spur canals, the fairgrounds and racetrack, and the transmission line intersect the proposed Generation Tie Line.

A search of the NRHP database and AZSITE did not reveal any historic structures or NRHP-listed sites in the Study Area. However, the National Scenic and National Historic Trail webmap indicates that the Congressionally-designated Juan Bautista de Anza National Historic Trail (1775–1776) passes through Eleven Mile Corner, Arizona, in the Study Area (National Park Service [NPS] 2023).

Archaeological Sites

There are eight previously recorded archaeological sites within the Study Area (Table E-6): six are Hohokam artifact scatters, and one has an unknown affiliation. One site (AZ AA:2:284[ASM]) intersects the proposed Generation Tie Line. Site AZ AA:2:284(ASM) is a Hohokam artifact scatter with burials, which also contains a historic period domestic refuse scatter component. The site was determined to be eligible for the ARHP under Criterion D (Clark 2007; personal communication, email from Caroline Klebacha, Archaeological Compliance Specialist, SHPO, to Andrew Vorsanger, SWCA Environmental Consultants, November 30, 2023). In 2021, the ASM issued a policy exempting historic-era waste piles (a type of refuse scatter) from the definition of cultural resource sites (ASM 2021). It is likely that the refuse scatter component of AZ AA:2:284(ASM) no longer qualifies as a site.

Table E-6. Previously Recorded Archaeological Sites within 1 Mile of the Project

Site Number	Cultural/Temporal Affiliation	Site Type	ARHP Eligibility Status	Associated Reference(s)	Distance from Project Area (miles)
AZ AA:2:284(ASM)	Hohokam/ Pre-Classic Period; Euro-American/ 1900–1950s	Artifact scatter with burials	Determined eligible (Criterion D)	Clark 2007	0.00
AZ AA:2:285(ASM)	Hohokam/ Pre-Classic Period	Artifact scatter	Determined eligible (Criterion D)	Clark 2007	0.13
AZ AA:2:295(ASM)	Hohokam/ Pre-Classic Period	Artifact scatter	Recommended eligible (Criterion D)	Darby 2008	0.05
AZ AA:2:346(ASM)	Hohokam/ Sedentary Period	Artifact scatter	Determined eligible (Criterion D)	Cook and Whitney 2012	0.73
AZ AA:2:364(ASM)	Unknown	Unknown	Unknown	Unknown	0.69
AZ AA:2:366(ASM)	Hohokam/ Ceramic Period	Artifact Scatter	Recommended not eligible	Peterson 2019	0.42
AZ AA:2:367(ASM)	Hohokam/ Ceramic Period	Artifact Scatter	Recommended eligible (Criterion D)	Peterson 2019	0.80
AZ AA:2:368(ASM)	Hohokam/ Ceramic Period	Artifact Scatter	Recommended not eligible	Peterson 2019	0.97

Note: Shading indicates site intersects the Project Area.

Assessment of Effects

A project can have direct and/or indirect effects on historic sites, historic in-use structures, and archaeological sites when it alters the characteristics that qualify it for listing in the ARHP. Only historic properties (i.e., sites that are listed in or eligible for the ARHP) need to be considered for Project impacts. Direct effects result when a project physically impacts a historic resource, whereas indirect effects to historic properties are typically visual. Effects are adverse when they diminish the integrity of the property’s location, design, setting, materials, workmanship, feeling, or association. Adverse effects on historic properties include:

- Physical destruction of or damage to all or part of the property

- Removal of the property from its historic location
- Change of the character of the property’s use of physical features within the property’s setting that contribute to its historic significance
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property’s significant historic characteristics
- Neglect of a property that causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe
- Transfer, lease, or sale of a property out of government ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property’s historic significance

DIRECT EFFECTS

One historic property (AZ AA:2:284[ASM]) intersects the Generation Tie Line and would be directly impacted by the Project. However, the eastward expansion of the Pinal Central Substation between 2011 and 2013 (Historic Aerials 2023) has impacted part of the site. AZSITE does not indicate whether data recovery had been performed before the expansion of the Pinal Central Substation; however, discussion with SHPO identified data recovery work has taken place and encountered burials (Exhibit E-1)

INDIRECT EFFECTS

The records review identified the Juan Bautista de Anza National Historic Trail (1775–1776), which passes through Eleven Mile Corner, Arizona, in the Study Area. Juan Bautista de Anza II was a Mexican military commander who led almost 300 men, women, and children from present-day Nogales, Arizona, to San Francisco, California, to establish the first non-Native American settlement at San Francisco Bay (NPS 2023). Construction of the Project would introduce a visual element to the area, which could potentially diminish the integrity of the characteristics of the trail that make it eligible for the ARHP. The visual impact analysis of the Generation Tie Line (contained in the above sections) concluded that the lines, forms, textures, and scale of the Generation Tie Line would be similar to those of the existing nearby transmission lines already in the viewshed. Even from the relatively close vantage points, the addition of the Generation Tie Line would result in a weak degree of contrast and low visual impacts.

Conclusion

The records review identified that approximately 27 percent of the Project Area has been previously and adequately surveyed for cultural resources. One previously recorded historic property with prehistoric mortuary features (AZ AA:2:284[ASM]) intersects the Project Area. Regarding the Juan Bautista de Anza National Historic Trail, the proposed Generation Tie Line is expected to introduce a weak degree of visual contrast with low visual impacts, given the existing nearby transmission lines in the viewshed.

To mitigate adverse effects on site AZ AA:2:284(ASM), the potential for the project to avoid the site will be explored. If the site cannot be avoided, ground disturbance within 50 feet of the site boundary will be monitored by a qualified archaeologist. If ground disturbance within the site is necessary, additional data recovery will occur within the project footprint prior to construction, excluding any areas that have been previously investigated.

To ensure that other potential historic properties would not be impacted within the Project Area, the Applicant will complete a cultural resources inventory of the portions of the Project Area that have not been previously adequately surveyed to identify and evaluate the cultural resources that may be present. If any historic properties are encountered, the inventory would provide recommendations on how to mitigate any adverse effects on those historic properties.

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Colin Agner

From: Andrew Vorsanger
Sent: Tuesday, December 5, 2023 11:30 AM
To: Caroline Klebacha
Cc: Devin Petry; Colin Agner
Subject: RE: Request for Consultation – SunDog Solar Energy Generation Tie Line, Application for a Certificate of Environmental Compatibility

Hi Caroline,

1. Approximately 27 percent of the project area, specifically in and around the SRP Pinal Central Substation, has been surveyed to current standards and does not require additional survey.
[This is consistent with SWCA's findings and recommendation.](#)
2. Approximately 73 percent of the project area has not been surveyed, for which we recommend a Class III investigation.
[This is consistent with SWCA's findings and recommendation.](#)
3. County-owned land: County land is not private land. For our purposes, county land is not subject to compliance with SHPA; however, it is subject to compliance with the AAA. If your survey crosses county land please consult with ASM pursuant AAA.
[Noted. Underlying land ownership and easements would be confirmed before SWCA begins any cultural fieldwork.](#)
4. Site AZ AA:2:284(ASM) is erroneously referred to as a Euro-American artifact scatter. According to records on AZSITE and our internal database, this site is multicomponent with historic and prehistoric features including three artifact concentrations associated with Hohokam occupation. Some data recovery has occurred at the site, presumably within the Pinal Central Substation or associated transmission lines. I do not have the data recovery report on hand to refer to. Our internal records show that cremations were present at the site. We recommend the project be designed to avoid ground disturbance within the site and monitoring within 50 feet of the site boundary. If ground disturbance is necessary within the site additional data recovery may be necessary, unless it can be demonstrated that the area has been previously investigated.
[Thank you for the information. The site was noted as multicomponent in the text, but unfortunately not in the table. The discrepancy will be fixed. AZSITE did not list any testing or data recovery projects occurring at the site. Would you be able to share the reference you found that has the information? We will also revise our recommendations and conclusions to match your recommendations for this site.](#)
[Thank you.](#)

Andrew Vorsanger
Senior Cultural Resources Team Lead – Arizona

[SWCA Environmental Consultants](#)

From: Caroline Klebacha <cklebacha@azstateparks.gov>
Sent: Thursday, November 30, 2023 2:37 PM
To: Andrew Vorsanger <Andrew.Vorsanger@swca.com>
Cc: Devin Petry <devin.petry@swca.com>; Colin Agner <cagner@swca.com>
Subject: Re: Request for Consultation – SunDog Solar Energy Generation Tie Line, Application for a Certificate of Environmental Compatibility

Good afternoon Andrew,

Exhibit E-1a. SHPO Consultation.

Thank you for consulting with our office regarding the Invenergy Sundog Solar Energy CEC. We have reviewed the documentation and have a few comments.

1. Approximately 27 percent of the project area, specifically in and around the SRP Pinal Central Substation, has been surveyed to current standards and does not require additional survey.
2. Approximately 73 percent of the project area has not been surveyed, for which we recommend a Class III investigation.
3. County-owned land: County land is not private land. For our purposes, county land is not subject to compliance with SHPA; however, it is subject to compliance with the AAA. If your survey crosses county land please consult with ASM pursuant AAA.
4. Site AZ AA:2:284(ASM) is erroneously referred to as a Euro-American artifact scatter. According to records on AZSITE and our internal database, this site is multicomponent with historic and prehistoric features including three artifact concentrations associated with Hohokam occupation. Some data recovery has occurred at the site, presumably within the Pinal Central Substation or associated transmission lines. I do not have the data recovery report on hand to refer to. Our internal records show that cremations were present at the site. We recommend the project be designed to avoid ground disturbance within the site and monitoring within 50 feet of the site boundary. If ground disturbance is necessary within the site additional data recovery may be necessary, unless it can be demonstrated that the area has been previously investigated.

Let me know if you have any questions.

Respectfully,

Caroline Klebacha, M.A.
Archaeological Compliance Specialist
State Historic Preservation Office
A Division of Arizona State Parks & Trails
Please use azshpo@azstateparks.gov for initial consultation!

1110 West Washington Street, Suite 100
Phoenix, AZ 85007-2957
Phone: 602-542-7140
Email: cklebacha@azstateparks.gov
Web: <http://AZStateParks.com/SHPO>



On Thu, Nov 9, 2023 at 9:16 AM AZSHPO - AZPARKS <azshpo@azstateparks.gov> wrote:

SHPO-2023-0981 (172178)

----- Forwarded message -----

From: **Andrew Vorsanger** <Andrew.Vorsanger@swca.com>

Date: Thu, Nov 2, 2023 at 12:08 PM

Subject: Request for Consultation – SunDog Solar Energy Generation Tie Line, Application for a Certificate of Environmental Compatibility

To: azshpo@azstateparks.gov <azshpo@azstateparks.gov>, Caroline Klebacha <cklebacha@azstateparks.gov>

Cc: Devin Petry <devin.petry@swca.com>, Colin Agner <cagner@swca.com>

Exhibit E-1b. SHPO Consultation.

Hello,

On behalf of SunDog Energy Center LLC, we respectfully request that the State Historic Preservation Office (SHPO) review and provide comment on the SunDog Solar Energy Generation Tie Line Project to support the Arizona Corporation Commission's compliance with the State Historic Preservation Act (Arizona Revised Statutes 41-861 through 41-864). Please find attached the letter that contains information about the Project in accordance with the SHPO's September 2022 "ACC-SHPO Consultation Checklist for Compliance with the State Historic Preservation Act." Also included are the project location and Class I results maps. We look forward to consulting with your office on this project, and please do not hesitate to contact us with any questions.

Thank you.

Andrew Vorsanger | he, him, his

Senior Cultural Resources Team Lead - Arizona

SWCA Environmental Consultants
20 E. Thomas Road, Suite 1700

Phoenix, Arizona, 85012
P 602.887.8104 | C 917.816.3517

Andrew.Vorsanger@swca.com



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Exhibit E-1c. SHPO Consultation.



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www.swca.com

November 2, 2023

Kathryn Leonard, State Historic Preservation Officer
1110 W. Washington St., #100
Phoenix, AZ 85007

Submitted via email to: azshpo@azstateparks.gov and cklebacha@azstateparks.gov

Re: Request for Consultation – Invenergy SunDog Solar Energy Certificate of Environmental Compatibility

Dear Ms. Leonard:

Pursuant to Arizona Revised Statutes (ARS) 40-360 et seq., SunDog Energy Center LLC (SunDog or Applicant), a subsidiary of Invenergy LLC, plans to file an application for a Certificate of Environmental Compatibility (CEC) for the proposed SunDog 230-kilovolt (kV) alternating current generation intertie transmission line (Generation Tie Line) (herein called the Project or Project Area). The proposed Project is designed to deliver power from the adjacent SunDog Solar Energy Center, a proposed 200-megawatt (MW) solar photovoltaic facility (Solar Facility) with a 200-MW battery storage system. The Solar Facility would also include the construction of a proposed onsite substation (Project Substation). The Applicant proposes to construct and operate the Project to connect the Solar Facility to the regional electrical grid via the existing Pinal Central Substation.

This letter contains information about the Project in accordance with the State Historic Preservation Office's September 2022 "ACC-SHPO Consultation Checklist for Compliance with the State Historic Preservation Act" (attached hereto as Attachment 1). On behalf of the Applicant, we respectfully request that the SHPO review and provide comment on the Project to support the Arizona Corporation Commission's compliance with the State Historic Preservation Act (Arizona Revised Statutes 41-861 through 41-864).¹

GENERAL PROJECT INFORMATION

- *Project name:* SunDog 230kV Generation Tie Line Project
- *Project location (legal description and UTM's):* The project is located in Sections 25 and 26, Township 6 South, Range 7 East; Section 30 Township 6 South, Range 8 East, Pinal County, Arizona.
 - The Project Substation and western terminus of the Generation Tie Line would be in in the northeast quarter of Section 26, Township 6 South, Range 7 East, Pinal County, Arizona.
 - Western terminus coordinates: (445120 E, 3638004 N; UTM Zone 12S)

¹ The State Historic Preservation Act requires state agencies to consider impacts of their programs on historic properties listed in or eligible for listing in the Arizona Register of Historic Places (ARHP), and to provide the State Historic Preservation Office an opportunity to review and comment on the actions that affect such historic properties.

Exhibit E-1d. SHPO Consultation.

- The eastern terminus of the Generation Tie Line would be within the existing SRP Pinal Central Substation, which is in the southwest quarter of Section 30, Township: 6 South, Range 8 East, Pinal County, Arizona.
 - Eastern terminus coordinates: (447193 E, 3637117 N; UTM Zone 12S)
- *Funding source:* Private (no state, federal, or other public funding sources)

PROJECT AREA INFORMATION

- *Project Area:* The term “Project Area” refers to the Generation Tie Line. The Generation Tie Line route will have an up to 100-foot-wide by approximately 1.7-mile-long transmission line right-of-way between the Project Substation and the SRP Pinal Central Substation. The proposed project route is shown on Figure 1 (see Attachment 2). Figure 1 also shows land jurisdiction in the vicinity of the Project Area.
- *Total Area:* up to 20.36 acres
- *Landownership (all involved; acres by land jurisdiction):* The Generation Tie Line will entirely be on privately owned land (Table 1), except for those portions crossing public road rights-of-way at S Tweedy Road and Eleven Mile Corner Road. Pinal County Fairgrounds is owned by Pinal County and Pinal County Fair and is considered privately owned land.

Table 1. Project Area by Land Jurisdiction

Jurisdiction	Area (acres)	Percent of Total
Private	20.36	100%

SCOPE OF WORK

SunDog plans to file an application for a CEC for the Project. The proposed Project is designed to deliver power from the adjacent SunDog Solar Energy Center, a 200-megawatt (MW) solar photovoltaic facility with a 200-MW battery storage system. The Applicant proposes to construct and operate the Project to connect the Solar Facility to the regional electrical grid via the existing Pinal Central Substation. The Project would use steel monopole and multi-pole structures, with final design characteristics determined in the detailed design phase. The Applicant is seeking a CEC only for the Generation Tie Line.

SUMMARY OF PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS WITHIN THE PROJECT AREA

A records review of AZSITE identified 20 previous cultural resources surveys that have taken place within the Study Area, which is defined here as a 1-mile buffer around the Project Area (see Attachment 3). These projects occurred from 1982 to 2019 in support of irrigation improvements, telecommunications projects, transportation improvements, and electrical transmission line construction. Of these, eight cultural surveys intersect the Generation Tie Line and cover approximately 13.1 acres (28 percent) of the proposed Project Area (Table 2).

The SHPO has provided guidance for the reliance on survey data that are 10 years or older (SHPO 2004). Surveys conducted before 1995 did not use the current ASM site definition criteria (ASM 1995); one survey in the Project Area (1982-200.ASM) meets this criterion. Of the remaining seven surveys, all used a survey strategy that would meet current methodological standards for full coverage in Arizona. The principal investigators listed for these surveys meet current state and federal professional qualification

Exhibit E-1e. SHPO Consultation.

standards. Lastly, it is unlikely that there are additional resources present in the current Project Area that have become at least 50 years old since the previous surveys. SWCA believes these seven surveys, which cover approximately 12.6 acres (27%) of the proposed Project Area, can be relied on for current inventory purposes.

Table 2. Previous Cultural Resource Projects Intersecting the Project Area

Agency Number	Project Name	Organization	Year
1982-200.ASM	Coolidge-Saguaro 115 kV Transmission Line	CASA	1982
2001-787.ASM	Replacement of Three Structures and Placement of 1 Inset Structure on the Coolidge-ED #1 115-kV Line	Department of Energy	2001
2007-175.ASM	Pinal South Substation Survey	Desert Archaeology	2007
2007-692.ASM	Pinal West to Dinosaur Transmission Line Surveys	Desert Archaeology	2007-2009
2008-501.ASM	Caywood/Wuertz Peaking Plant Survey	Desert Archaeology	2008
2008-763.ASM	Coolidge-ED2 #1 115-kV Transmission Line	Archaeological Consulting Services	2009
2008-764.ASM	Coolidge-ED2 #2 115-kV Transmission Line	Archaeological Consulting Services	2009
2019-218.ASM	East Line Solar	SWCA	2019

Note: Shading denotes surveys that SWCS believes can be relied on for current inventory purposes.

IDENTIFICATION OF CULTURAL RESOURCES WITHIN THE PROJECT AREA

Historic-era Sites

The records review identified three historic-era sites within the Study Area (Table 3); one site (AZ AA:2:284[ASM]) intersects with the proposed Generation Tie Line. Site AZ AA:2:284(ASM) is a Historic period domestic refuse scatter and a Hohokam artifact scatter. The site was determined to be eligible for the ARHP under Criterion D (Clark 2007). The two other sites in the Study Area are an early twentieth century homestead and a historic-era and modern-era ranching and refuse disposal site. In 2021, the ASM issued a policy exempting historic-era waste piles (a type of refuse scatter) from the definition of cultural resource sites (ASM 2021). It is likely that the refuse scatter components (AZ AA:2:284[ASM] and AZ AA:2:370[ASM]) listed in the table below no longer qualify as sites.

Table 3. Previously Recorded Historic-era Sites within 1 Mile of the Project Area

Site Number	Cultural/Temporal Affiliation	Site Type	ARHP Eligibility Status	Associated Reference(s)	Distance from Project Area (miles)
AZ AA:2:284(ASM)	Euro-American / 1900–1950s	Artifact scatter	Determined eligible (Criterion D)	Clark 2007	0.00
AZ AA:2:347(ASM)	Euro-American/ ca. 1910s-1920s	Kurz Homestead	Recommended eligible (Criterion D)	Cook and Whitney (2012)	0.86
AZ AA:2:370(ASM)	Euro-American/ ca. 1950s-present	Artifact scatter	Recommended not eligible	Peterson (2019)	0.86

Note: Shading indicates site intersects the Project Area.

Exhibit E-1f. SHPO Consultation.

Historic-era Structures

The records review identified seven historic-era in-use structures within the Study Area (Table 4). Three of these structures intersect the Project Area: Eleven Mile Corner Road (AZ AA:2:175[ASM]), the Coolidge-ED2 #1 Transmission Line (AZ AA:2:307[ASM]), and the Coolidge-Saguaro 115-kV Transmission Line (AZ AA:7:647[ASM]). These three structures are all historic-era in-use structures that have been determined not eligible for the ARHP.

Table 4. Previously Recorded Historic-era In-use Structures within 1 Mile of the Project Area

Site Number	Cultural/Temporal Affiliation	Site Type	ARHP Eligibility Status	Associated Reference(s)	Distance from Project Area (miles)
AZ AA:2:175(ASM)	Euro-American / ca. 1900–1920s	Eleven Mile Corner Road	Determined not eligible	Stone (1998)	0.00
AZ AA:2:176(ASM)	Euro-American / ca. 1900–1920s	Sunshine Road	Determined not eligible	Stone (1998)	0.82
AZ AA:2:149(ASM)	Euro-American / ca. 1920s-present	State Route 87	Determined not eligible	Stone (1998)	0.05
AZ AA:3:209(ASM)	Euro-American / 1889–1920s	Casa Grande Canal	Recommended eligible (Criterion A)	Moreno (1996)	0.18
AZ AA:2:360(ASM)	Euro-American / ca. 1920s	Unnamed road	Determined not eligible	Teeter et al. (2014a, 2014b)	0.44
AZ AA:2:307(ASM)	Euro-American / ca. 1950s-present	Coolidge-ED2 #1 Transmission Line	Determined not eligible	Shilling (2009a, 2009b)	0.00
AZ AA:7:647(ASM)	Euro-American / ca. 1950s-1960s	Coolidge-Saguaro Transmission Line	Determined not eligible	Cook and Whitney (2012)	0.00

Note: Shading indicates site intersects the proposed Project area.

The GLO plat of Township 6 South, Range 7 East, approved in 1889, depicts a road named OLD SACATON intersecting the Project Area and an unnamed road in the Study Area. A 1928 Dependent Resurvey depicts the CASA GRANDE FLORENCE CANAL in the Study Area. The GLO plat of Township 6 South, Range 8 East, approved in 1889, depicts the OLD OPEN CANAL STAGE ROAD intersecting the Project Area in the southwest quarter of Section 30, and depicts OLD ROAD and the FLORENCE CANAL in the Study Area. A 1929 Dependent Resurvey depicts the CASA GRANDE-FLORENCE CANAL and an unnamed road that follows the north side of the canal in the Study Area.

The 1922 USGS Signal Peak, Arizona, 1:62,500-scale topographic map depicts the CASA GRANDE-FLORENCE CANAL, FLORENCE ROAD (modern-day SR 287) and the intersection at Eleven Mile Corner (unnamed), multiple unnamed roads, structures and associated wells; the unnamed road on the border between Sections 29 and 30 is the modern-day Sunshine Road. One of the unnamed roads on the west half of Section 26 (likely modern-day South Tweedy Road) intersects the Project Area. A 1937 Pinal County transportation and highway map depicts modern-day Eleven Mile Corner Road extending south of Florence Road (which was incorporated into SR 287 in 1961). This segment of the road intersects with proposed Generation Tie Line.

The 1965 USGS Coolidge, Arizona, 7.5-minute quadrangle depicts multiple structures, a school, Pinal County Housing Authority, transmission lines (including Coolidge-ED2 #1 Transmission Line), and an air landing strip north of SR 287 at Eleven Mile Corner, Arizona. An unnamed road and structure intersect the Generation Tie Line component of the Project in the northwest quarter of Section 25. The 1965 USGS Eloy North, Arizona, 7.5-minute quadrangle depicts the county fairgrounds and racetrack; a substation; multiple unnamed roads, structures, and wells; a transmission line (the Coolidge-ED2 #1

Exhibit E-1g. SHPO Consultation.

Transmission Line); a road paralleling the Casa Grande Canal; the CASA GRANDE CANAL; and three spur canals. The spur canals, the fairgrounds and racetrack, and the transmission line intersect the proposed Generation Tie Line component of the Project.

A search of the NRHP database and AZSITE did not reveal any historic structures or NRHP-listed sites in the Study Area. However, the National Scenic and National Historic Trail webmap indicates that the Congressionally-designated Juan Bautista de Anza National Historic Trail (1775–1776) passes through Eleven Mile Corner, Arizona, in the Study Area (National Park Service [NPS] 2023).

Archaeological Sites

There are seven previously recorded archaeological sites within the Study Area (Table 5); six are Hohokam artifact scatters and one has an unknown affiliation. None of these sites intersect the Project Area. (An additional previously recorded site, Site AZ AA 2:284(ASM), is a multicomponent site that is listed in the historic-era sites section and therefore is excluded from this section to avoid duplication.)

Table 5. Previously Recorded Archaeological Sites within 1 Mile of the Project

Site Number	Cultural/Temporal Affiliation	Site Type	ARHP Eligibility Status	Associated Reference(s)	Distance from Project Area (miles)
AZ AA:2:285(ASM)	Hohokam	Artifact scatter	Determined eligible (Criterion D)	Clark 2007	0.13
AZ AA:2:295(ASM)	Hohokam	Artifact scatter	Recommended eligible (Criterion D)	Darby 2008	0.05
AZ AA:2:346(ASM)	Hohokam	Artifact scatter	Determined eligible (Criterion D)	Cook and Whitney 2012)	0.73
AZ AA:2:364(ASM)	Unknown	Unknown	Unknown	Unknown	0.69
AZ AA:2:366(ASM)	Hohokam	Artifact Scatter	Recommended not eligible	Peterson 2019	0.42
AZ AA:2:367(ASM)	Hohokam	Artifact Scatter	Recommended eligible (Criterion D)	Peterson 2019	0.80
AZ AA:2:368(ASM)	Hohokam	Artifact Scatter	Recommended not eligible	Peterson 2019	0.97

SUMMARY AND ASSESSMENT OF EFFECTS

The records review identified that approximately 27 percent of the Project Area has been previously and adequately surveyed for cultural resources. One previously recorded historic property (AZ AA:2:284[ASM]) intersects the Project Area; however, the site has likely been destroyed by the Pinal Central Substation expansion between 2011 and 2013.

The records review identified the Juan Bautista de Anza National Historic Trail (1775-1776), which passes through Eleven Mile Corner, in the Study Area. Juan Bautista de Anza II was a Mexican military commander who led almost 300 men, women, and children from present-day Nogales, Arizona to San Francisco, California to establish the first non-Native American settlement at San Francisco Bay (NPS 2023). In many cases, the designated National Historic Trail is an approximation of the actual historic route (NPS 2019:74). Construction of the Project would introduce a visual element to the area, which could potentially diminish the integrity of the characteristics of the trail for which it is eligible for the

Exhibit E-1h. SHPO Consultation.

ARHP. The visual impact analysis of the Generation Tie Line concluded that the lines, forms, textures, and scale of the Generation Tie Line would be similar to those of the existing nearby transmission lines already in the viewshed. Even from the relatively close vantage points, the addition of the Generation Tie Line would result in a weak degree of contrast and low visual impacts.

To ensure that the current historic property as well as other potential historic properties would not be impacted within the Project Area, the Applicant will complete a cultural resources inventory of the portions of the Project Area that have not been previously adequately surveyed to identify and evaluate the cultural resources that may be present. If any historic properties are encountered, the inventory would provide recommendations on how to mitigate any adverse effects on those historic properties.

SunDog respectfully requests your review and comments on this project by December 4, 2023. Please feel free to contact me, or our Senior Cultural Resources Team Lead – Andrew Vorsanger (Andrew.Vorsanger@swca.com), should you have any questions.

Sincerely,



Devin Petry
Project Manager, SWCA Environmental Consultants

Exhibit E-1i. SHPO Consultation.

REFERENCES CITED/LITERATURE CITED

- Arizona State Museum (ASM).
1995 *Revised Site Definition Policy*. Arizona State Museum, University of Arizona, Tucson.
2021 *Policy and Procedures Regarding Historical-Period Waste Piles*. Arizona State Museum, University of Arizona, Tucson.
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- Schilling, Linda M., et al.
2009a A Cultural Resource Survey and Inventory for the Coolidge-ED2 #1 115-kV Transmission Line, Pinal County, Arizona; Volume 1: Background, Fieldwork Results, and Eligibility and Management Recommendations. Archaeological Consulting Services, Tempe, Arizona.
2009b A Cultural Resource Survey and Inventory for the Coolidge ED2 #2 115-kV Transmission Line, Pinal County, Arizona. Archaeological Consulting Services, Ltd., Tempe, Arizona.
- State Historic Preservation Office (SHPO)
2004 *SHPO Position on Relying on Old Archaeological Survey Data*. SHPO Guidance Point No. 5. Arizona State Parks, Phoenix.
- Stone, Bradford W.

Exhibit E-1j. SHPO Consultation.

1998 Cultural Resources Survey of 17.6 Miles of State Route 287 between Casa Grande and La Palma (MP 116-125.8), and between Coolidge and Florence (MP 135-142.8), Central Pinal County, Arizona. Report No. 98:57. Archaeological Research Services, Inc., Tempe, Arizona.

Teeter, Sean, Grant Fahrni, and Leigh Davidson

2014a A Class III Cultural Resources Inventory of 37.30 miles (452 acres) for the Western Area Power Administration Electrical District 2 Saguaro (ED2-SGR) 115-kV Transmission Line, from Casa Grande to Avera, Pinal County, Arizona. Report 1 of 2. Logan Simpson Design, Tempe, Arizona

2014b Class I Inventory for the Western Area Power Administration Electrical District 2 Saguaro 2-115-kV Transmission Line Cultural Resources Survey. Report 2 of 2. Logan Simpson Design, Tempe, Arizona.

Exhibit E-1k. SHPO Consultation.

ATTACHMENT 1

**ACC-SHPO Consultation Checklist for Compliance with the State
Historic Preservation Act**

Exhibit E-1I. SHPO Consultation.

**ACC-SHPO CONSULTATION CHECKLIST
FOR COMPLIANCE WITH THE STATE HISTORIC PRESERVATION ACT
(September 2022)**

Projects requiring a Certificate of Environmental Compatibility are subject to the Arizona State Historic Preservation Act and consultation with the Arizona State Historic Preservation Officer. All submissions must include a letter on letterhead, addressed to:

Kathryn Leonard, State Historic Preservation Officer
1110 W. Washington St., #100
Phoenix, AZ 85007

The letter should be one or two pages (as needed) and include:

- Project Name
- Project location (please include legal description and UTM's)
- Funding source for the project, and/or the state or federal agency or program, as applicable
- Project Area description (project area dimensions, and include all alternatives, access roads, gen-tie connections, staging areas, etc)
- Total Acres in Project Area
- Landownership (all involved; provide acres by land jurisdiction)
- Scope of work (detailed description of the project)
- Summary of previous archaeological investigations within the Project Area
- Identification of cultural resources within the Project Area (brief description of site and eligibility status)
- Request for SHPO review and comment

Attachments should include:

- Location map showing where the project area is located and land jurisdiction
- Map(s) showing Class I research results for projects and cultural resources

Email to: azshpo@azstateparks.gov (no hard copies accepted)

Additional questions: cklebacha@azstateparks.gov

ATTACHMENT 1 - ACC-SHPO Consultation Checklist for Compliance with the State Historic Preservation Act

Attachment 1 - 1

Exhibit E-1m. SHPO Consultation.

ATTACHMENT 2

Location map showing the Project Area and Land Jurisdiction



Exhibit E-1n. SHPO Consultation.

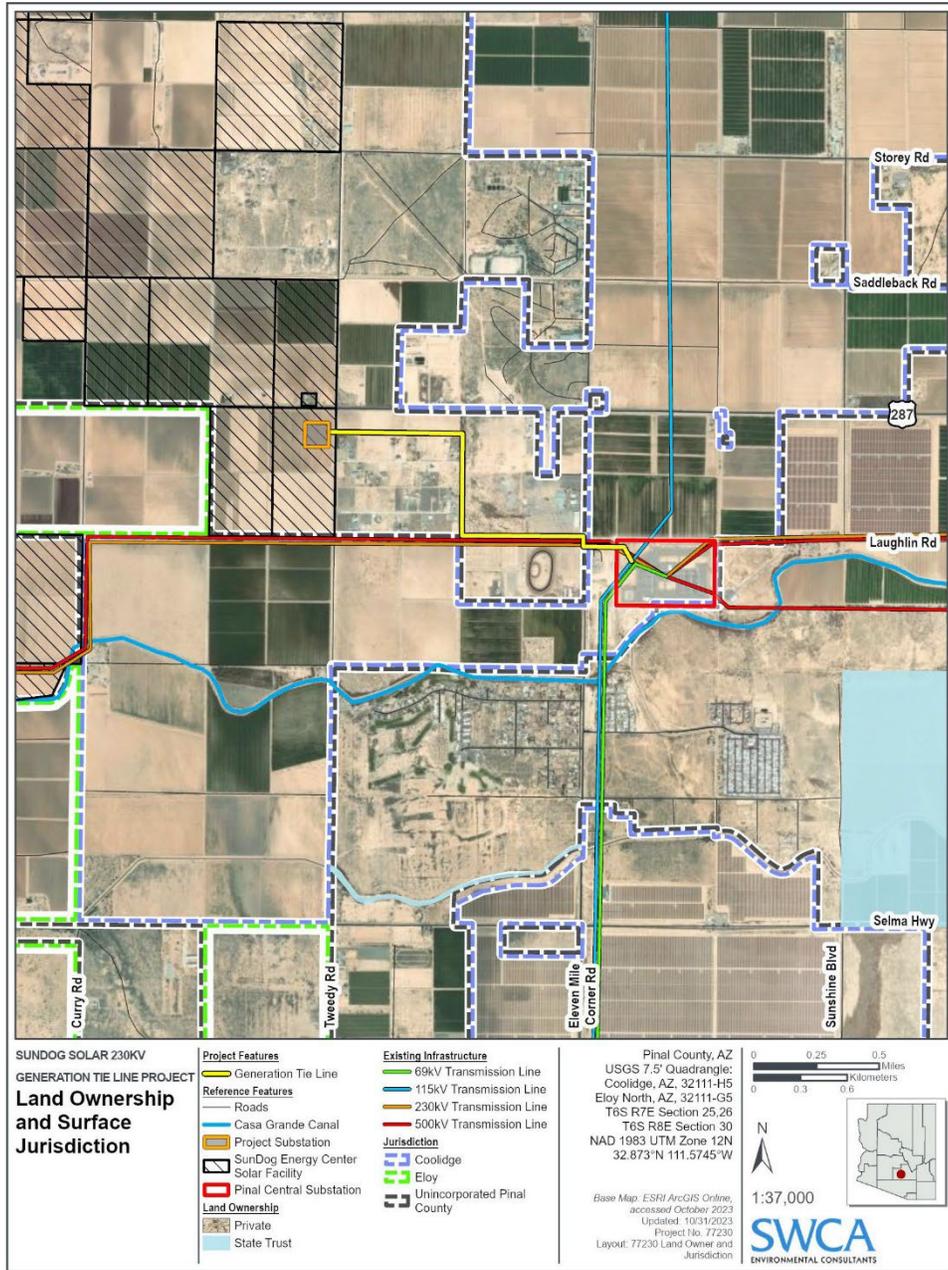


Figure 1. Project Overview and Land Jurisdiction.

Exhibit E-1o. SHPO Consultation.

ATTACHMENT 3
Class 1 Previous Research Maps

Exhibit E-1p. SHPO Consultation. Class I Previous Research Maps not provided to prevent disclosure of cultural resources.

EXHIBIT F. RECREATION

As stated in the Arizona Corporation Commission Rules of Practice and Procedure R14-3-219, Exhibit 1, the intent of this exhibit is to:

State the extent, if any, the proposed site or route will be available to the public for recreational purposes, consistent with safety considerations and regulations and attach any plans the applicant may have concerning the development of the recreational aspects of the proposed site or route.

Recreation information for the Study Area and vicinity was obtained from Pinal County, the City of Coolidge, and the City of Eloy. The Pinal County *We Create Our Future: Pinal County Comprehensive Plan* (Pinal County 2021) does not identify any recreation/conservation, major open space, or restricted open space land use categories within the Study Area. The *Pinal County Open Space and Trail Master Plan* (Pinal County 2007) identifies open space (associated with the Butterfield Overland Historical Trail and Juan Bautista de Anza Trail), which is 0.83 mile west of the Project but within the Study Area. Pinal County does not identify any existing or proposed trails in the Project Area (Pinal County 2007). The nearest trail identified by Pinal County is a proposed multiuse trail corridor that is approximately 0.55 mile north of the Project within the Study Area. Finally, Pinal County identifies the Pinal County Fairgrounds and Event Center (Fairgrounds), a park managed and maintained by Pinal County that the Project crosses. The Fairgrounds “is a 120-acre county park near Casa Grande, Arizona. Amenities include fairgrounds office, meeting and event buildings, 4-H animal stalls, Central Arizona Raceway, Pinal County Animal Control building, and a fishing pond” (Pinal County 2007).

The *City of Coolidge 2025 General Plan: The Future Today* (2025 General Plan) (City of Coolidge 2014) does not identify any recreational land use categories. The Project Area and Study Area do not contain any parks managed or maintained by the City of Coolidge. The Open Space Chapter in the 2025 General Plan identifies the Fairgrounds as an “Existing Activity Center” recreational element, the Mary C. O’Brien Elementary School as an “Existing School” recreational element, and the Casa Grande Canal and Central Arizona Project as canal “trail & open space opportunities.” The Fairgrounds is crossed by the Project, as described above. All within the Study Area, the Mary C. O’Brien Elementary School is approximately 1 mile northeast of the Project, the Casa Grande Canal is approximately 0.3 miles south of the Project, and the Central Arizona Project is approximately 0.6 miles north of the Project. No other recreational elements, parks/open space, or trails/open space opportunities were identified by the 2025 General Plan in the Project Area or Study Area.

The *City of Eloy General Plan Readoption* (City of Eloy 2020) does not identify any parks/open space land uses within the Project or Study Areas. The Parks, Open Space and Trails Element of the *City of Eloy General Plan Readoption* identifies the Fairgrounds as an existing open space, the Tierra Grande Golf Club as a golf course, the Butterfield Overland Historical Trail and the Juan Bautista de Anza Historical Trail as historical trails, and the Florence Casa Grande Canal Extension as a proposed canal trail (City of Eloy 2020). The Tierra Grande Golf Club is 0.55 miles south of the Project but within the Study Area. The Butterfield Overland Historical Trail, the Juan Bautista de Anza Historical Trail, and the Fairgrounds are all described above.

Of all the recreational facilities identified by Pinal County, the City of Coolidge, and the City of Eloy, the Project crosses only the Fairgrounds. As part of the Project coordination, the Applicant has been working with the Pinal County Open Space and Trails Director and the Central Arizona Fair Association (CAFA) Board on the portion of the Project that crosses the Fairgrounds. One CAFA Board member attended the

in-person open house and provided comment on the Project (see Exhibit J). For the portion of the Project crossing the Fairgrounds, the Applicant has sited the Project facilities to minimize impacts to the Fairgrounds and to parallel existing facilities to the extent practicable, which has included reducing the Project ROW as it crosses the Fairgrounds in coordination with the CAFA Board. The Applicant has sited the Generation Tie Line to avoid crossing the Central Arizona Raceway track.

Other land uses in the Project Area, which currently provide limited recreational opportunities, include agricultural, vacant, and utility. Recreational users may occasionally use public roadways for walking, biking, and general transportation, as well as incidental uses, such as bird watching. Within the Study Area and surrounding region, recreational opportunities, such as off-road vehicle use, hiking, camping, bird watching, and horseback riding, are available, primarily informally on vacant lands. Generally, all State lands, which would provide similar recreation opportunities, can be accessed by the public with a Special Use Permit.

The Generation Tie Line would not be fenced. Implementation of the Project would have minimal impact to existing recreational use in the Project Area because the Applicant has consulted with and will continue to consult with appropriate officials regarding the Fairgrounds to minimize impacts to the recreational uses in this area. The Applicant has sited the Project on the edge of the Fairgrounds and parallel to an existing transmission line and has reduced the Project ROW to minimize recreational facility impacts. For the portion of the Project crossing the Fairgrounds' parcel that includes the Central Arizona Raceway, the Applicant has sited the Generation Tie Line to avoid the Central Arizona Raceway track. Similarly, Project implementation would have minimal to no impact to recreation in the Study Area or surrounding region because implementation would not block access to recreation areas.

Literature Cited

- City of Coolidge. 2014. *2025 General Plan: The Future Today*. Available at:
https://www.coolidgeaz.com/vertical/sites/%7BAE188E70-DD7F-47BE-99EF-B58B70641DF9%7D/uploads/Chapter_1-Introduction.pdf. Accessed September 2023.
- City of Eloy. 2020. *City of Eloy General Plan Readoption*. Available at:
<https://eloyaz.gov/DocumentCenter/View/4960/Title-Page-and-Table-of-Content>.
Accessed September 2023.
- Pinal County. 2007. *Pinal County Open Space and Trails Master Plan*. Available at:
<https://www.pinal.gov/DocumentCenter/View/7115/Open-Space-and-Trails-Master-Plan-2007-PDF>. Accessed September 2023.
- . 2021. *We Create Our Future: Pinal County Comprehensive Plan*. Available at:
<https://www.pinal.gov/DocumentCenter/View/627/Comprehensive-Plan-2020-PDF?bidId=>.
Accessed September 2023.

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EXHIBIT G. CONCEPTUAL DRAWINGS OF TRANSMISSION FACILITIES

As stated in the Arizona Corporation Commission Rules of Practice and Procedure R14-3-219, Exhibit 1:

Attach any artist's or architect's conception of the proposed plan or transmission line structures and switchyards, which applicant believes may be informative to the committee.

Exhibit G-1 – Typical 230kV Tangent Self-Supporting Monopole Structure

Exhibit G-2 – Typical 230kV Angle Self-Supporting Monopole Structure

Exhibit G-3 – Typical 230kV Three-Pole Dead-End Self-Supporting Monopoles Structure

Exhibit G-4 – Typical 230kV A-Frame Dead-end Structure

Exhibit G-5 – Photosimulation of Project from Key Observation Point (KOP) 1 showing proposed Generation Tie Line

Exhibit G-6 – Photosimulation of Project from KOP 2 showing proposed Generation Tie Line and Project Substation facilities

Exhibit G-7 – Photosimulation of Project from KOP 3 showing proposed Generation Tie Line

Exhibit G-8 – Photosimulation of Project from KOP 4 showing proposed Generation Tie Line

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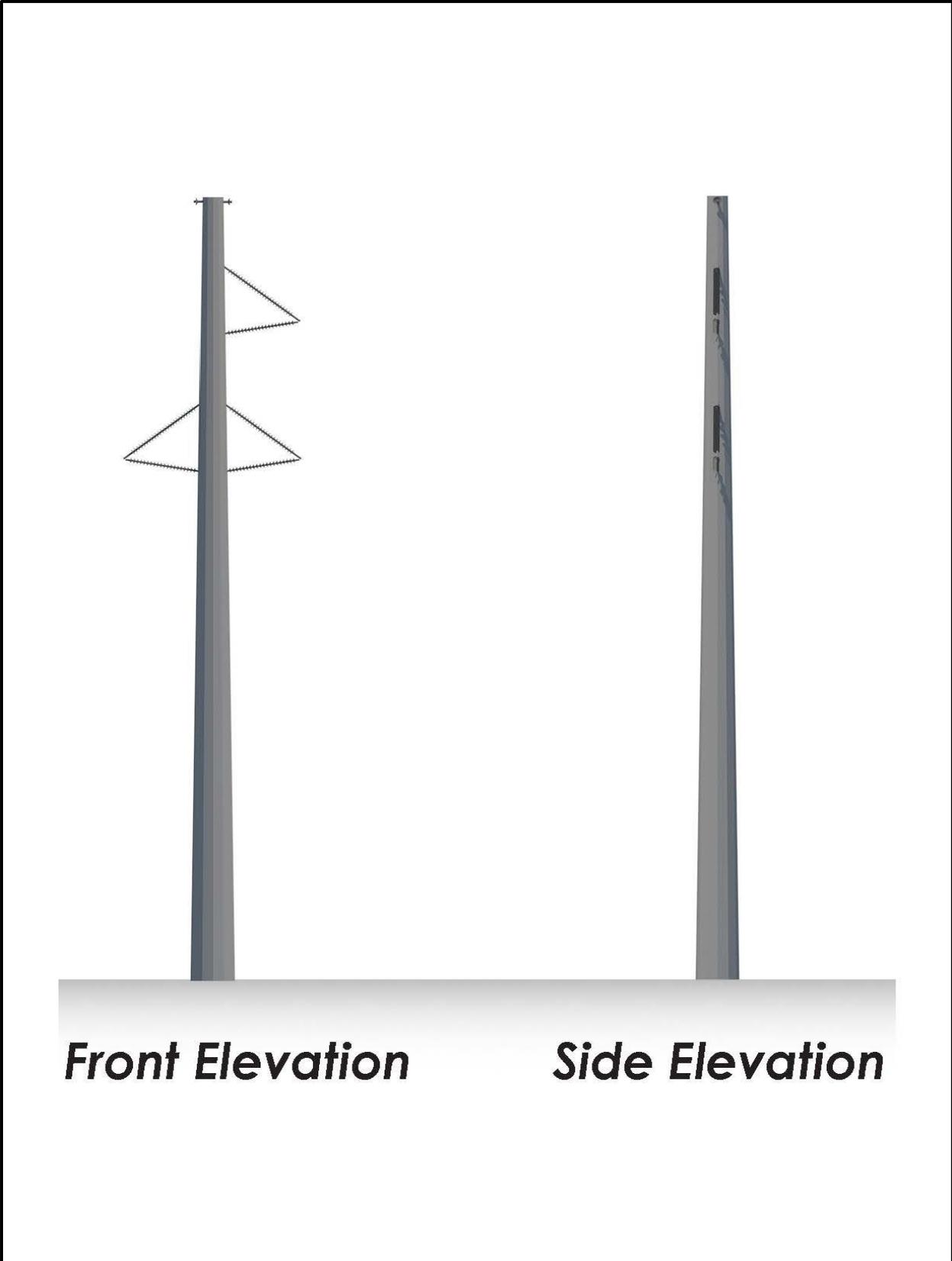
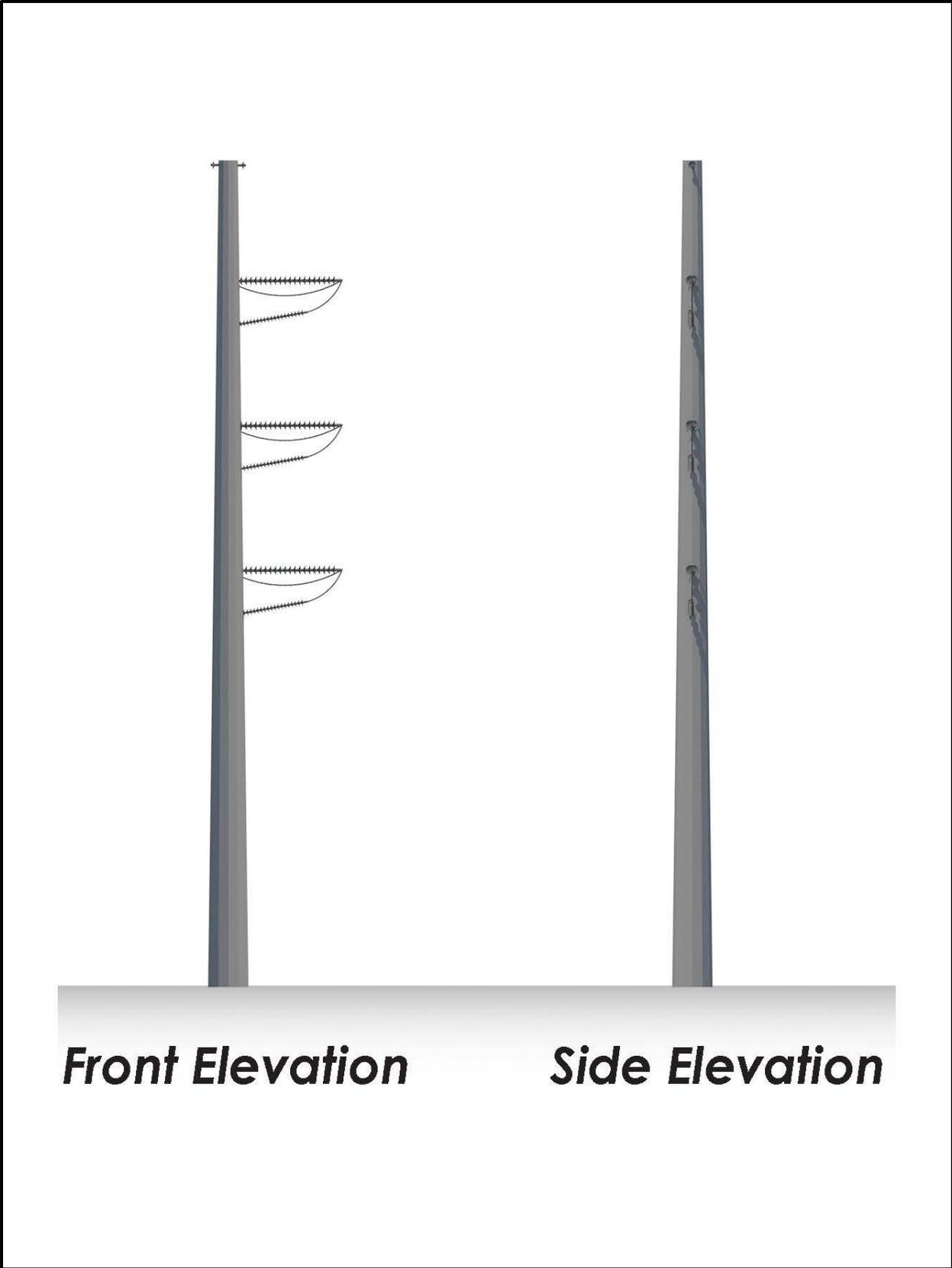


Exhibit G-1. Typical 230kV tangent self-supporting monopole structure.



Front Elevation

Side Elevation

Exhibit G-2. Typical 230kV angle self-supporting monopole structure.

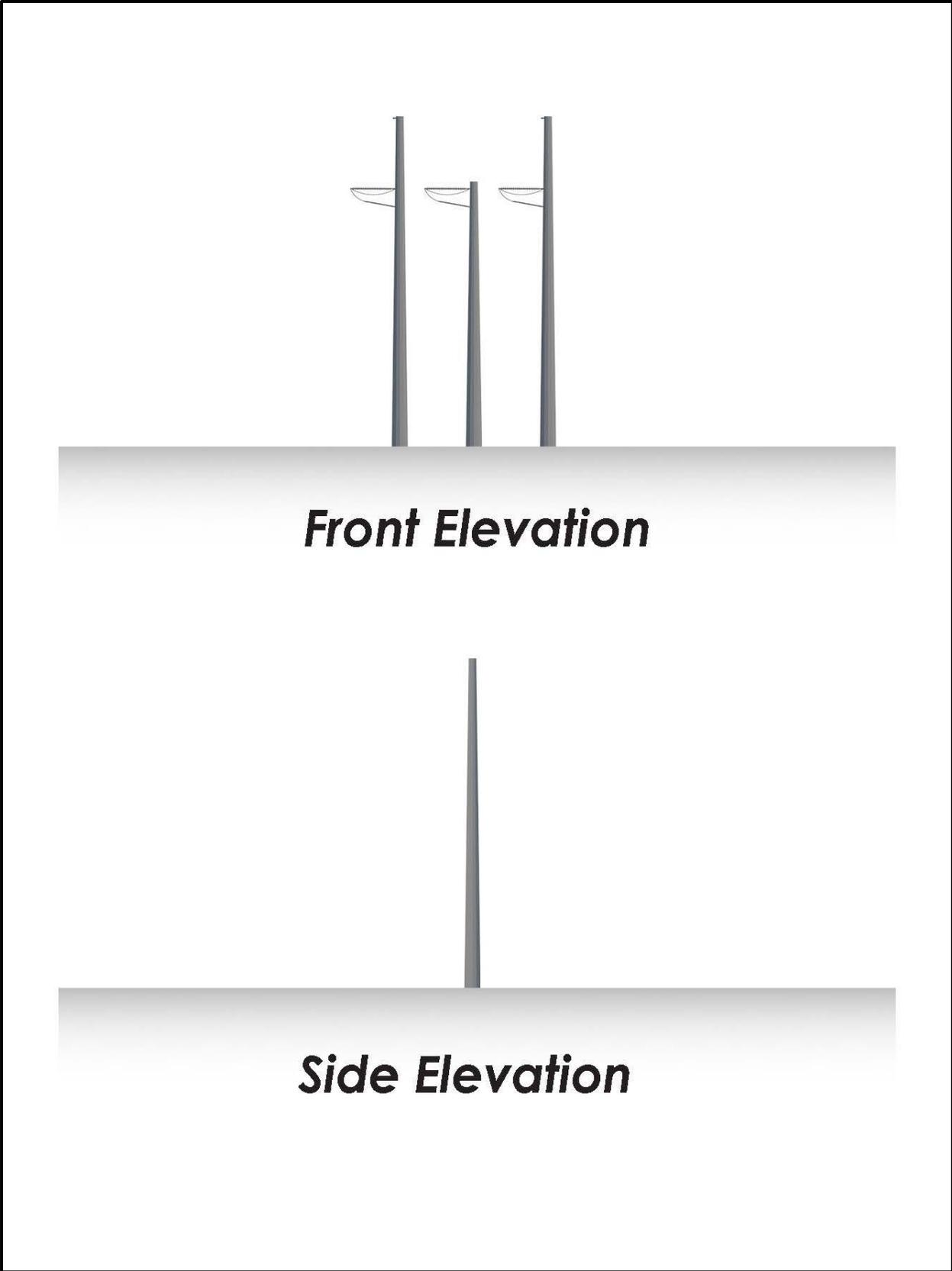


Exhibit G-3. Typical 230kV three-pole dead-end self-supporting monopoles structure.

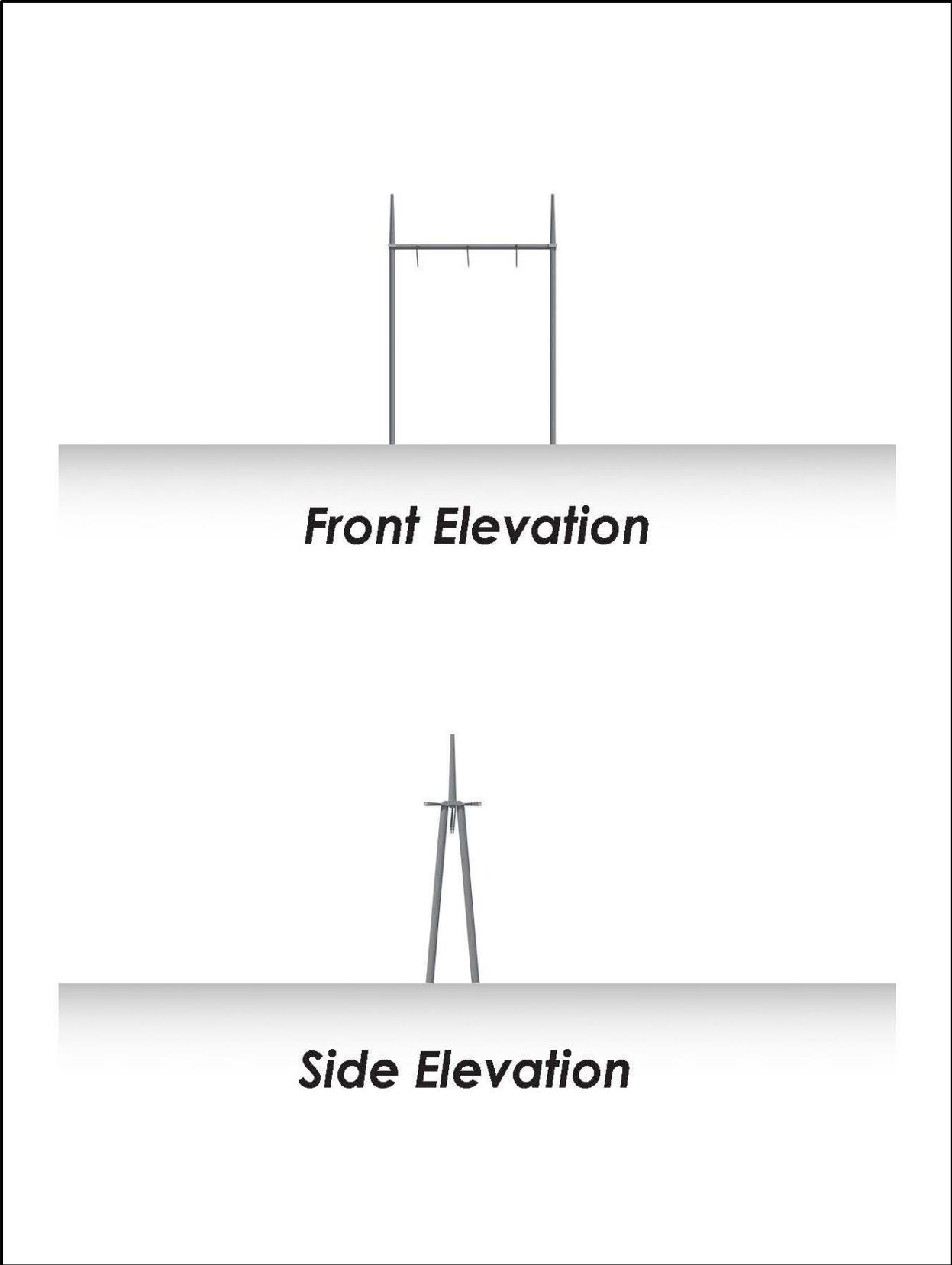
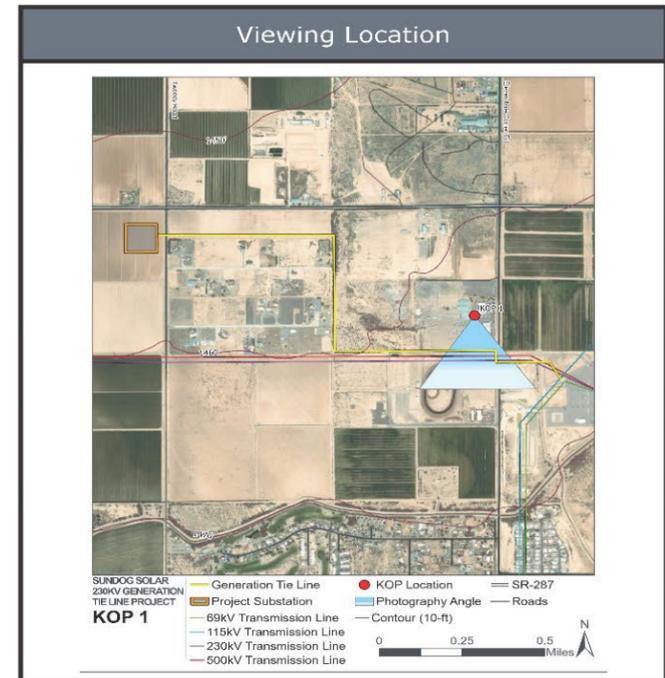


Exhibit G-4. Typical 230kV A-frame dead-end structure.



Existing Condition

KOP 1: View from within the Pinal County Fairgrounds and Event Center looking south



Simulated Condition

KOP 1: View from within the Pinal County Fairgrounds and Event Center looking south of the proposed Generation Tie Line

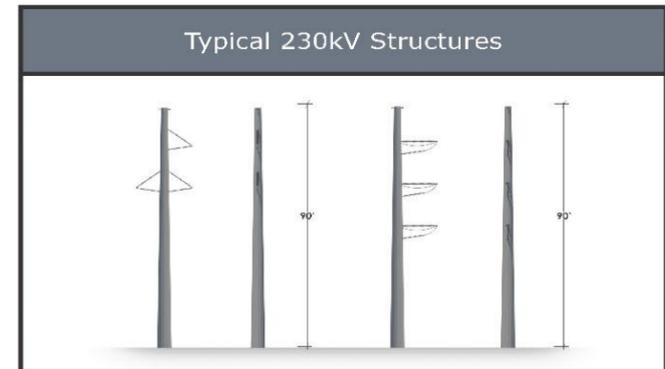


Photo Date and Time: April 25, 2023, 10:10 am

View Location: Approximate distance to nearest new structure from photo location is 0.1 miles.

Simulations were prepared using information provided by Invenergy. Structure locations, colors, and heights may be different based on final engineering and design.

SunDog Solar 230kV Generation Tie Line Project | July 2023
Simulation from KOP 1: View from within the Pinal County Fairgrounds and Event Center

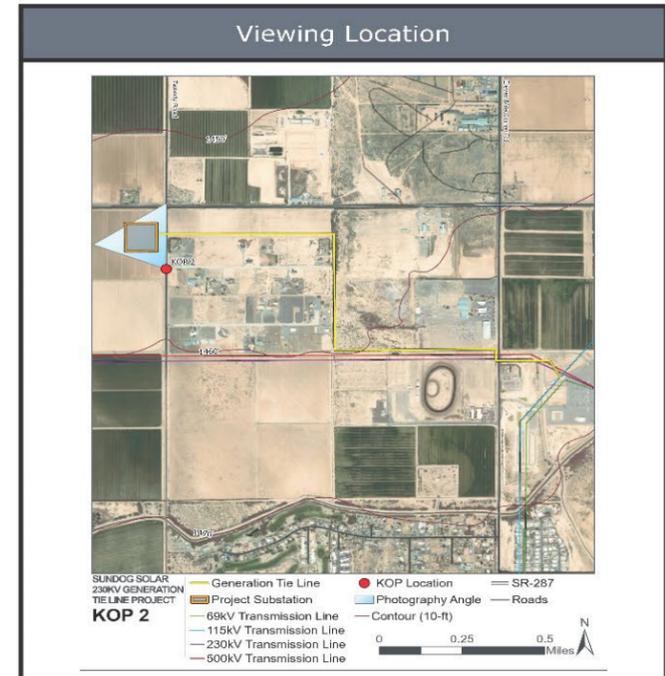


Exhibit G-5. Photosimulation of Project from KOP 1 showing the proposed Generation Tie Line.



Existing Condition

KOP 2: View from residence at intersection of South Tweedy Road and David Lane looking northwest



Simulated Condition

KOP 2: View from residence at intersection of South Tweedy Road and David Lane looking northwest of the proposed Project Substation and Generation Tie Line

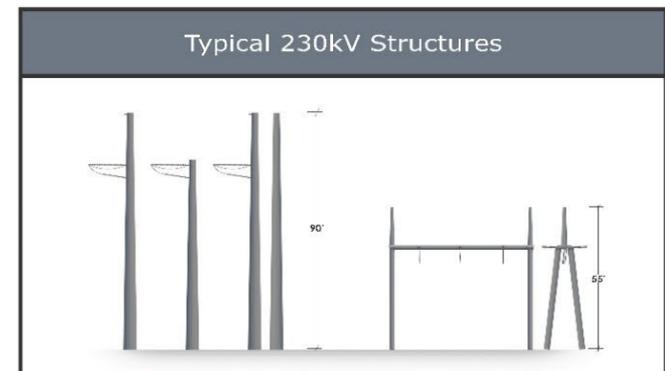


Photo Date and Time: April 25, 2023, 12:20 pm

View Location: Approximate distance to nearest new structure from photo location is 0.3 miles.

Simulations were prepared using information provided by Invenergy. Structure locations, colors, and heights may be different based on final engineering and design.

This simulation is intended to be representative of proposed Project transmission and substation facilities. Proposed Project solar and battery energy storage facilities have not been included, and will be subject to vegetative visual perimeter screening, required by Pinal County.

SunDog Solar 230kV Generation Tie Line Project | July 2023
Simulation from KOP 2: View from residence at South Tweedy Road and David Lane

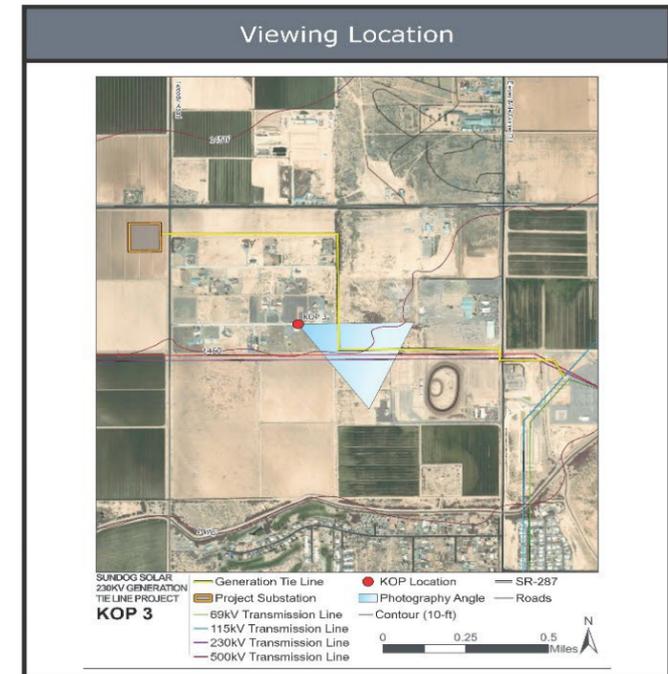


Exhibit G-6. Photosimulation of Project from KOP 2 showing the proposed Generation Tie Line and Project Substation facilities



Existing Condition

KOP 3: View from residence at Andrew Lane looking southeast



Simulated Condition

KOP 3: View from residence at Andrew Lane looking southeast of the proposed Generation Tie Line

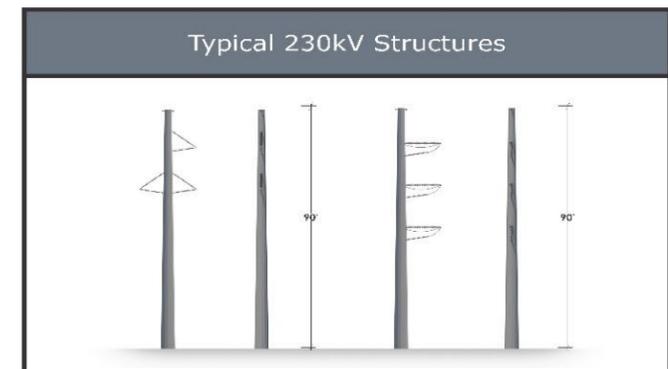


Photo Date and Time: April 25, 2023, 12:15 pm

View Location: Approximate distance to nearest new structure from photo location is 0.3 miles.

Simulations were prepared using information provided by Invenery. Structure locations, colors, and heights may be different based on final engineering and design.

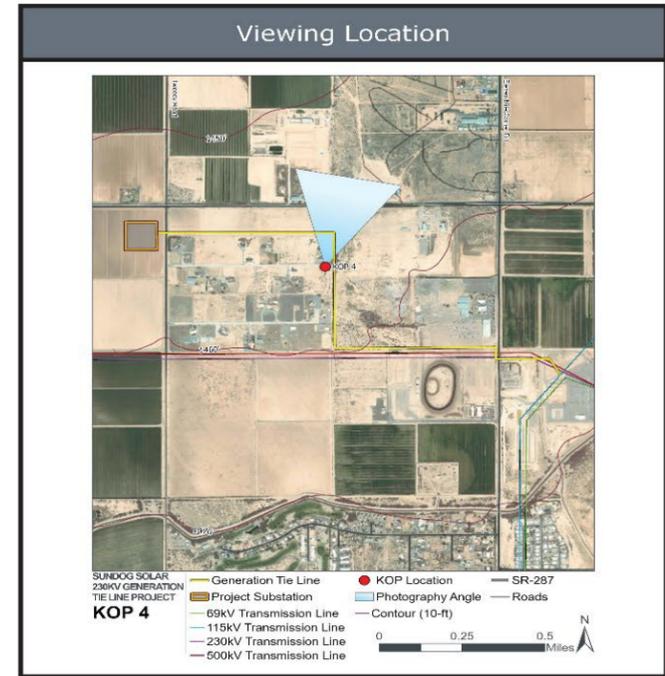
SunDog Solar 230kV Generation Tie Line Project | July 2023
Simulation from KOP 3: View from residence at Andrew Lane



Exhibit G-7. Photosimulation of Project from KOP 3 showing the proposed Generation Tie Line.



Existing Condition KOP 4: View from residence at David Lane looking northeast



Simulated Condition KOP 4: View from residence at David Lane looking northeast of the proposed Generation Tie Line

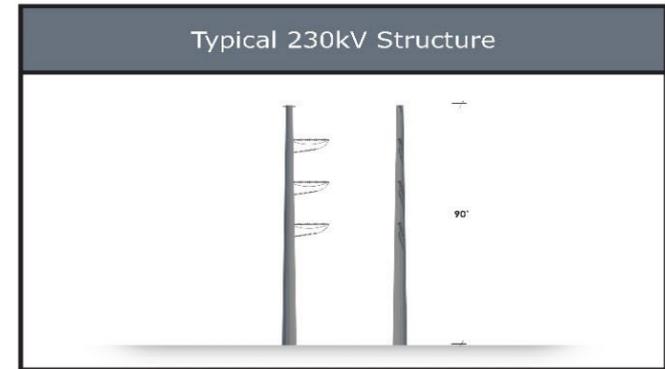


Photo Date and Time: April 25, 2023, 12:00 pm

View Location: Approximate distance to nearest new structure from photo location is 0.1 miles.

Simulations were prepared using information provided by Invenergy. Structure locations, colors, and heights may be different based on final engineering and design.

SunDog Solar 230kV Generation Tie Line Project | November 2023
Simulation from KOP 4: View from residence at David Lane



Exhibit G-8. Photosimulation of Project from KOP 4 showing the proposed Generation Tie Line.

EXHIBIT H. EXISTING PLANS

As stated in the Arizona Corporation Commission Rules of Practice and Procedure R14-3-219, Exhibit 1:

To the extent applicant is able to determine, state the existing plans of the state, local government, and private entities for other developments at or in the vicinity of the proposed site or route.

Existing and future land uses are mapped in Exhibits A-2 and A-3 and discussed in Exhibit B. The Pinal County Comprehensive Plan and online web mapper were evaluated as part of the land use study.

On July 17, 2023, letters were sent to the jurisdictions (listed in Table H-1) to provide Project information and request new or additional information on planned developments within the Study Area. Exhibits H-1a and H1-b provide a copy of the letter, and Exhibits H-2 through H-3 include the written responses.

Table H-1. Entities that Received Letters with Project Information

Contact Name	Title	Agency/Organization
Kyle Varvel	Branch Manager	San Carlos Irrigation Project
Shane Lindstrom	General Manager	San Carlos Irrigation Project
Jacklynn Gould	Regional Director: Lower Colorado Basin	Bureau of Reclamation
Tiffany Sprague	Project Evaluation Supervisor	Arizona Game and Fish Department
Jason Spitzkoff	Section Manager, Rights-of-Way Section	Arizona Public Service
Eduardo Uribe	Electrical Engineer	Western Area Power Administration, Desert Southwest Region
Sean Berry	Environmental Manager	Western Area Power Administration, Desert Southwest Region
David Felix	Manager of Regulatory Affairs	Salt River Project
Jeannie (Marie) Mendoza	Senior Land Analyst	Salt River Project
Brian Pugh	Supervisor of Environmental & Land Use Planning	Tucson Electric Power
Waylon Wuertz	President	Hohokam Irrigation and Drainage District
Roderick Lane	Southcentral District Engineer	Arizona Department of Transportation
Ken Robbins	General Manager	Electrical District No. 2
Misti Todd	Executive Director	Pinal County Fairgrounds
Mike Norris	President	Pinal County Fairgrounds
Ruben Ojeda	Manager, Right-of-Way Section	Arizona State Land Department



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Invenergy

July 17, 2023

Kyle Varvel
San Carlos Irrigation Project
13805 N Arizona Blvd.
Coolidge, AZ 85128

Re: SunDog Solar 230kV Generation Tie Line Project

Dear Kyle Varvel,

SunDog Energy Center LLC (SunDog), a subsidiary of Invenergy, plans to file an application for a Certificate of Environmental Compatibility (CEC) for the SunDog Solar Generation Tie Line Project (project) with the Arizona Power Plant and Transmission Line Siting Committee in December 2023. The project involves the development of a new 230kV electrical generation intertie transmission line (gen-tie) that will connect the future SunDog Solar Energy Center, a proposed 200-megawatt (MW) solar and 200-MW battery energy storage facility, to the existing Pinal Central Substation via a step-up substation. The project is largely within unincorporated Pinal County, Arizona, except for the final portion connecting into the Pinal Central Substation, located in Coolidge, Arizona. More information about the project is available online at www.SunDogSolarEnergyCenter.com.

SunDog and its environmental consultant, SWCA Environmental Consultants (SWCA), are completing environmental studies and preparing a CEC Application for the Project which will include comprehensive environmental studies to evaluate the proposed Project SunDog plans to submit the CEC Application in December 2023.

In accordance with Arizona Administrative Code Rule R14-3-219, SWCA, on behalf of SunDog and Invenergy, offers this letter as an opportunity for state, local government and private entities to provide any information or comments regarding development plans at or in the vicinity of the proposed site or route, for inclusion in the CEC application. We respectfully request your response in writing; specifically, please advise us of any relevant existing or future development plans that you can identify at this time.

To allow your information to be included in the CEC application, please forward it to me by August 18, 2023, via email at devin.petry@swca.com, or by physical mail: Attn: Devin Petry, SWCA, 20 East Thomas Road, Suite 1700, Phoenix, AZ 85012.

Thank you for your cooperation.

Respectfully,

Devin Petry, Environmental Project Manager
SWCA Environmental Consultants

Exhibit H-1a. Example July 2023 Exhibit H letter (1 of 2).

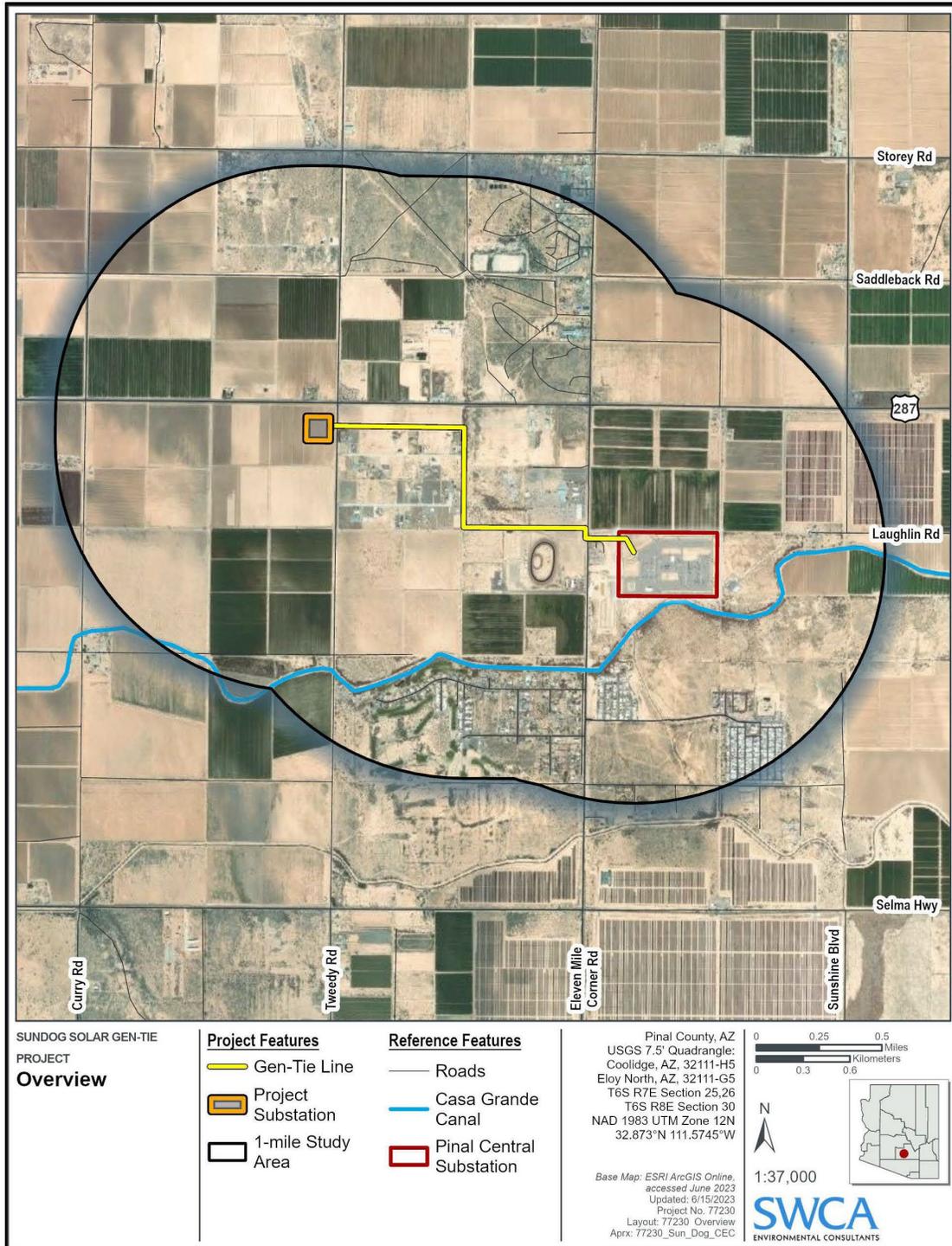


Figure 1: Project overview.

Exhibit H-1b. Example July 2023 Exhibit H letter (2 of 2).



August 18, 2023

SunDog Solar Energy Center
% SWCA Environmental Consultants
20 East Thomas Road
Suite 1700
Phoenix, Arizona 85012

Electronically submitted to: SunDogSolarHotline@invenenergy.com and
devin.petry@swca.com

RE: SunDog Solar Energy Center and Generation Tie Line Project

Dear Ms. DeSpain and Mr. Petry:

The Arizona Game and Fish Department (Department) appreciates the opportunity to review the proposal by SunDog Solar, LLC for the SunDog Solar Energy Center and Generation Tie Line Project. The Department understands that this is a proposed 200 MW solar photovoltaic (PV) facility with battery storage on 1,642 acres of private land east of Casa Grande in Pinal County, Arizona. An approximately 1.5-mile-long 230 kV generation intertie (gen-tie) transmission line would connect to the existing Pinal Central Substation through a step-up substation. The project would be constructed north and south of Highway 287 within unincorporated lands that are currently used for agriculture. The Department previously reviewed the SunDog Solar Energy Center and provided comments to the Pinal County Planning Division on November 3, 2022. The recommendations provided in the aforementioned letter as well as recommendations for the gen-tie line are provided below.

Under Title 17 of the Arizona Revised Statutes, the Department, by and through the Arizona Game and Fish Commission, has jurisdictional authority and public trust responsibilities to conserve and protect the state fish and wildlife resources. In addition, the Department manages threatened and endangered species through authorities of Section 6 of the Endangered Species Act and the Department's Section 10(a)(1)(A) permit. It is the mission of the Department to conserve and protect Arizona's diverse fish and wildlife resources and manage for safe, compatible outdoor recreation opportunities for current and future generations.

The Department recognizes the importance of planning efforts to develop renewable energy locations that contribute to regional and state economic growth needs and would like to work closely with Invenenergy, Pinal County, and SWCA Consultants during the planning and development of this economically-important facility. The Department recognizes that appropriate coordination, proper planning, and voluntary implementation of best management practices allow projects to be developed that avoid, minimize, or offset potential impacts to wildlife and

azgfd.gov | 480.981.9400

MESA OFFICE: 7200 E. UNIVERSITY DRIVE, MESA AZ 85207

**GOVERNOR: KATIE HOBBS COMMISSIONERS: CHAIRMAN TODD G. GEILER, PRESCOTT | CLAY HERNANDEZ, TUCSON | MARSHA PETRIE SUE, SCOTTSDALE
JEFF BUCHANAN, PATAGONIA | JAMES E. GOUGHNOUR, PAYSON DIRECTOR: TY E. GRAY DEPUTY DIRECTOR: TOM P. FINLEY**

Exhibit H-2a. August 18, 2023, AGFD response letter (1 of 5).

recreational access during development and operation of the facilities. For your consideration, the Department provides the following comments based on the agency's statutory authorities, public trust responsibilities, and special expertise related to wildlife resources and recreation.

Arizona has recently seen an increase in the number of proposed and in-development renewable energy generation projects and associated infrastructure, including in the area of this project. A number of solar facilities have been proposed or built within the vicinity of this project. Although each of these projects individually may have a minimal impact on the broader landscape, these projects cumulatively could result in loss of habitat, impact wildlife movements, and affect wildlife related recreation. Additionally, long-term effects to wildlife can extend several kilometers beyond the footprint of a solar project area ([Sawyer et al. 2022](#)¹). The Department would like to work with Invenergy to identify potential cumulative impacts to wildlife and associated voluntary conservation measures that can be implemented for the project. Inclusion of a decommissioning plan as the project states land will be returned to its current use.

Maintaining habitat connectivity is a priority for the Department, and wildlife movement corridors are important for wildlife to respond to changing environmental conditions. The broader landscape in which this project occurs provides important movement pathways for a variety of species. The Department would like to work with Invenergy on opportunities to incorporate wildlife connectivity into the project design, including the following:

- Incorporation of open unfenced corridors across the project area into the project design to facilitate wildlife movement. The Department is available to assist in development of the site design to determine suitable locations for these corridors in order to facilitate wildlife movement while meeting the needs of the facility.
- During the Department's review of the proposed project, Department personnel noted that a portion of the project would occur within Pinal County's planned open space. Department staff remain available to assist SWCA and the Developer in identifying wildlife connectivity needs in these areas such as vegetative cover and appropriate setbacks for wildlife movement across the project area.
- To the extent possible, the Department recommends retaining habitat features underneath the panels, including vegetation and soils, instead of clearing or grading the site. The topography in the majority of the site is flat and would require minimal trimming of existing vegetation to install the panels. Keeping the existing soil and root structures intact would serve to minimize erosional run-off and help reduce biodiversity loss within the site ([Grotsky and Hernandez 2020](#)²).
- The Department's [Wildlife Compatible Fencing Guidelines](#)³ provide information on how fencing impacts wildlife, ways to design fencing to prevent wildlife entanglement and impalement, and to ensure wildlife movement is not restricted. Department personnel are available as resources to help determine appropriate fencing design and layout that will achieve its objective while reducing impact to wildlife, such as leaving a 6–8-inch gap

¹ <https://esajournals.onlinelibrary.wiley.com/doi/10.1002/fee.2498>

² <https://www.nature.com/articles/s41893-020-0574-x>

³ https://s3.amazonaws.com/azgfd-portal-wordpress/PortalImages/files/wildlife/planningFor/wildlifeFriendlyGuidelines/110125_AGFD_fencing_guidelines.pdf

between the ground surface and bottom of the fence to allow for smaller wildlife species to move freely through the area and make use of any habitat within the project boundary.

The Department recommends conducting surveys in the project area to determine species presence and potential conflicts. These surveys should be of sufficient duration and intensity to adequately assess all habitat types and potential species occurrence in and adjacent to the project area. If this project moves forward, Department staff are available to assist Invenergy in determining appropriate design features and best management practices that can help minimize potential impacts. Based on the information provided, the Department offers the following recommendations to reduce impacts to wildlife and habitat; additional information can be found in [Guidelines for Solar Development in Arizona](#)⁴:

- The western burrowing owl, a special status species that is regulated under the Migratory Bird Treaty Act (MBTA), has been recorded in the project area. The Department recommends conducting an occupancy survey for this species in advance of the design phase to understand distribution of burrowing owls in the project site; avoidance of a large burrowing owl population may be advisable over removal or other conservation measures. Guidelines for conducting this survey are found in [Burrowing Owl Project Clearance Guidance for Landowners](#)⁵. Please note that the survey should be conducted by a surveyor who is certified by the Department or has similar training and qualifications. If an active burrowing owl burrow is detected, please contact the Department and the [U.S. Fish and Wildlife Service](#)⁶ (USFWS) for direction, in accordance with the guidelines.
- Large-scale solar PV facilities can result in a bird mortality due to habitat loss, collision with panels, attraction due to an optical illusion of water, and unknown causes ([Kosciuch et al. 2020](#)⁷). The Department recommends conducting avian surveys during the planning stage in order to better understand species presence and to inform potential conservation measures. Point counts are the preferred method for breeding bird surveys. These surveys are conducted twice a year during the peak breeding season, which is mid-January through June in this area; [McLaren et al. \(2019\)](#)⁸ outline protocols. Additional surveys for Bendire's thrashers, a bird species of conservation concern, are recommended; a [draft protocol](#)⁹ from the Desert Thrashers Working Group is available online.
- The Department also recommends conducting surveys for nesting birds prior to vegetation removal and/or construction activities that occur during the breeding season. The vegetation within the project area may provide nesting opportunities for avian species that are regulated under the Migratory Bird Treaty Act (MBTA). If it is anticipated the project will not be in compliance with MBTA, the Department recommends contacting the [USFWS](#) for technical assistance.

⁴ <https://s3.amazonaws.com/azefd-portal-wordpress/PortalImages/files/wildlife/planningFor/wildlifeFriendlyGuidelines/FinalSolarGuidelines03122010.pdf>

⁵ <https://s3.amazonaws.com/azefd-portal-wordpress/PortalImages/files/wildlife/nongame/eagles/BurrowingOwlClearanceProtocol2009.pdf>

⁶ <https://www.fws.gov/office/arizona-ecological-services/contact-us>

⁷ <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0232034>

⁸ <https://www.birdconservancy.org/wp-content/uploads/2021/03/2020-Field-Protocol-for-Spatially-Balanced-Sampling.pdf>

⁹ <https://drive.google.com/drive/folders/1d9L8Su0HPbBzo2oGSH4H2xqrwOqHpT1o?usp=sharing>

- Burrowing mammals could occur within the project area and could be influenced by construction activities and by loss of habitat. Surveys for these species are recommended to determine their presence and to inform pre-construction activities. Department staff are available to assist in identifying suitable conservation measures, such as one-way enclosures on burrows that allow wildlife to exit the burrows and disperse to adjacent lands in advance of construction.
- A variety of other Arizona Species of Greatest Conservation Need have the potential to occur within the project area. If wildlife are encountered during construction activities, the Department recommends moving them out of harm's way, no more than 0.25 mile outside the project boundary within similar habitat.

Finally, the Department offers the following general recommendations to reduce potential impacts to wildlife and habitat during construction and operation of the facility:

- Because proposed ground disturbance will exceed 0.25 acres in areas with native vegetation, please ensure the project complies with [Arizona Native Plant Law](#)¹⁰ regulations. A Native Plant Inventory may need to be conducted to identify, record, and coordinate plant salvage efforts for species that are Protected under the Arizona Native Plant Law.
- To minimize the potential introduction or spread of exotic invasive species, including aquatic and terrestrial plants, animals, insects, and pathogens, the Department encourages taking precautions to wash and/or decontaminate equipment before entering and leaving the site. See the [Arizona Department of Agriculture website](#)¹¹ for a list of prohibited and restricted noxious weeds and the [Arizona Native Plant Society](#)¹² for recommendations on how to control them. To view a list of documented invasive species or to report invasive species in or near the project area, visit [iMapInvasives](#)¹³, which is a national cloud-based application for tracking and managing invasive species.
- If trenching or digging of large holes is necessary, the Department recommends trenching/digging and backfilling crews be close together to minimize the amount of open holes at any given time. Where trenches or holes cannot be back-filled immediately, the Department recommends escape ramps be constructed in each hole and at least every 90 meters in trenches. Escape ramps can be short lateral trenches or wooden planks sloping to the surface. The Department recommends that slopes be less than 45 degrees (1:1) and trenches and holes that have been left open be inspected to remove animals prior to backfilling.
- The Department recommends following standards established by the Avian Power Line Interaction Committee (APLIC) for the gen-tie line and any other new powerlines, which can be found in [Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006](#)¹⁴ and [Reduced Avian Collisions with Power Lines: The State of the Art in 2012](#)¹⁵. Birds of prey, such as raptors, owls, vultures, and eagles, are vulnerable to

¹⁰ <https://agriculture.az.gov/plantsproduce/native-plants>

¹¹ <https://agriculture.az.gov/pestspest-control/agriculture-pests/noxious-weeds>

¹² <https://aznps.com/invas>

¹³ <https://imap.natureserve.org/imap/services/page/map.html>

¹⁴ [https://www.aplic.org/uploads/files/2643/SuggestedPractices2006\(LR-2\).pdf](https://www.aplic.org/uploads/files/2643/SuggestedPractices2006(LR-2).pdf)

¹⁵ https://www.aplic.org/uploads/files/15518/Reducing_Avian_Collisions_2012watermarkLR.pdf

powerline strikes and electrocution during construction and operation of transmission lines; power poles can also serve as perches for birds of prey. The Department also encourages burying all connecting power lines associated with the solar development, and utilizing previously disturbed areas as feasible. Tuk Jacobson, the Department's Raptor Coordinator, can provide further information on specific design features and best management practices; he can be contacted at raptors@azgfd.gov or 623-236-7575.

- The Department recommends revegetating disturbed areas with native drought-tolerant species that represent the natural surrounding landscape. A plant palette containing low-growing forbs, shrubs, and bunch grasses could be planted in areas where grading occurs, along the edges of the property, and underneath the panels, to the extent feasible. Landscaping with native plants can help support wildlife and pollinator species in the area while reducing dust and erosion.
- Artificial lighting could impair the ability of nocturnal animals to navigate (e.g., owls, migratory birds, bats, and other nocturnal mammals) and may affect wildlife behavior and populations ([Davies et. al. 2013](#)¹⁶). The Department recommends using only the minimum amount of light needed for safety. If feasible, narrow spectrum lighting is wildlife-friendly and should be used as often as possible to minimize the number of species affected by lighting. It is also beneficial that all lighting is shielded, canted, or cut to minimize the amount of upward shining light.

Thank you for the opportunity to provide input on the SunDog Solar Energy Center and Gen-tie Line. For further coordination, please contact Kelly Wolff at kwolff@azgfd.gov or 480-324-3550.

Sincerely,

Joshua W. Hurst

Joshua Hurst
Regional Supervisor, Mesa

cc: Todd Williams - Pinal County Deputy Director of Community Development
Ginger Ritter - Project Evaluation Program Supervisor
Tiffany Sprague - Project Evaluation Program Specialist

AZGFD #M23-07200620

¹⁶ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3657119>

From: [Hopkins, Rebecca \(CONTR\)](#)
To: [Sun_Dog Solar Hotline](#)
Subject: [EXTERNAL] SunDog Solar Generation Tie Line Project
Date: Friday, August 25, 2023 2:57:01 PM
Attachments: [image001.png](#)

Hello,

Thank you for the notification letter dated 7/17/2023 regarding the SunDog Solar Generation Tie Line Project.

Western Area Power Administration (WAPA) appreciates being kept updated on projects in the vicinity of WAPA's transmission lines. Please continue to keep WAPA updated on the project.

Thank you,

Becky Hopkins | Environmental Project Manager

Civil Design & Engineering (CD&E) on contract to
Western Area Power Administration | Desert Southwest Region | Phoenix, AZ
(M) 470.922.1736 | rhopkins@wapa.gov



Exhibit H-3. August 2023 Western Area Power Administration letter.

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EXHIBIT I. NOISE

As stated in the Arizona Corporation Commission Rules of Practice and Procedure R14-3-219:

Describe the anticipated noise emission levels and any interference with communication signals which will emanate from the proposed facilities.

Exhibit I outlines common electrical and noise emissions associated with high-voltage transmission, encompassing phenomena such as corona discharges, audible sounds, and electromagnetic fields (EMF). Additionally, this exhibit touches on the permissible levels of noise emissions and anticipated effects stemming from the Project.

Corona

Corona discharge refers to an electrical phenomenon that arises from the ionization of surrounding fluids, often the air, around conductors transmitting high voltage, such as those in a 230kV transmission line. It is worth noting that traces of corona can be found in all active transmission lines to some degree.

When a corona forms around an electrified conductor, it can become concentrated enough to initiate small electrical discharges. Such discharges have a range of effects; they might manifest as audible noise akin to faint humming or crackling sounds, interference in radio transmissions, heat production, or even trigger chemical changes within the components of the air.

The occurrence and intensity of corona discharge can be influenced by multiple factors:

- **Voltage Magnitude:** The overall voltage carried by the conductor is a central factor.
- **Physical Attributes of the Conductor:** Its form, diameter, and even minuscule surface blemishes, such as dust accumulation, scratches, or nicks, can modulate the electrical gradient on its surface and, in turn, the corona activity.
- **Environmental Context:** The prevailing weather conditions are also determinative. Notably, wet conditions or periods of foul weather (such as rain or fog) can amplify the corona discharges. Additionally, site elevation and air pressure can have a significant impact on the corona discharge. However, during heavy rain, the noise generated by the falling rain drops hitting the ground will typically be greater than the noise generated by corona and thus will mask the audible noise from the transmission line.

Given the corona's intrinsic localized nature and its typically minor impacts, it is projected that its effects will remain negligible beyond the Project ROW.

Audible Noise

Sound is a type of energy conveyed through pressure changes, detectable by the ears of animals and humans. On the other hand, noise is described as any undesirable or intrusive sound inadvertently introduced into a preferred auditory setting or ambiance. For humans, noise can lead to issues like disruption in communication, hindrance in learning, disturbance in rest or sleep, and even physiological health impacts.

Two primary attributes characterize sound: amplitude and frequency. Amplitude describes the energy level reaching the ear, influencing how loud we perceive a particular sound to be. Frequency represents the rate at which the source of the sound oscillates or cycles within a specific time frame. Frequency is typically measured in hertz.

Other important concepts are sound power and sound pressure. Sound power refers to the total energy that a sound source emits over a given period. It can be thought of as the inherent "strength" or "loudness potential" of any sound source. An essential characteristic of sound power is its absolute nature; its value remains constant regardless of the surrounding environment or the distance from the sound source.

On the other hand, sound pressure is associated with the variations or fluctuations in air pressure resulting from a propagating sound wave. As this wave moves through a medium, often air, it causes these local disturbances. Unlike sound power, sound pressure is subject to change based on the distance from the sound source and the specifics of the environment. Factors such as reflections, absorptions, and obstructions can influence sound pressure.

Audible sounds that humans perceive typically fall within a range from 0 A-weighted decibels (dBA) to 120 dBA. A-weighted decibels are a measurement that adjusts for the human ear's sensitivity to different frequencies, ensuring that sound measurements are more representative of what people actually hear. Sounds exceeding 120 dBA can be not only extremely loud but also harmful, posing potential risks to the human eardrum.

Understanding how sound levels combine is crucial when assessing the cumulative impact of different noise sources. Decibels, as units, are logarithmic in nature. This means that they do not add up in a straightforward arithmetic manner like most numerical values. Instead, their combination happens on a logarithmic scale.

To illustrate, if two sources producing a sound level of 30 dBA each are combined, due to the logarithmic nature of decibels, the combined sound level would only rise by 3 dB, resulting in a combined level of 33 dBA, rather than 60 dBA.

For a clearer understanding, consider Table I-1, which presents various familiar noise sources and their corresponding sound levels in dBA. This table offers a practical reference to gauge and compare everyday sounds and their relative loudness.

Table I-1. Sound Levels of Representative Sounds and Noises

Source and Distance	Sound Level (dBA)	Human Response
Jet takeoff (nearby)	150	
Jet takeoff (15 m [50 feet])	140	
50-hp siren (30 m [100 feet])	130	
Loud rock concert (near stage)	120	Pain threshold
Construction noise (3 m [10 feet])	110	Intolerable
Jet takeoff (610 m [2,000 feet])	100	
Heavy truck (8 m [25 feet])	90	
Garbage disposal (0.6 m [2 feet])	80	Constant exposure endangers hearing
Busy traffic	70	
Normal conversation	60	

Source and Distance	Sound Level (dBA)	Human Response
Light traffic (30 m [100 feet])	50	Quiet
Library	40	
Soft whisper (4.5 m [15 feet])	30	Very quiet
Rustling leaves	20	
Normal breathing	10	Barely audible
Threshold of hearing	0	

Source: Beranek (1988).

Existing Sound Levels

The Project is a prospective 230kV alternating current overhead transmission line in Pinal County, Arizona. The property accommodating the Project is in unincorporated regions of Pinal County and in the city of Coolidge. The urbanized core of Casa Grande, Arizona, is approximately 8 miles west of the Project Site, and the most densely populated areas of Casa Grande (containing the majority of the city's residential and commercial developments) are almost 4 miles away from the Project boundaries.

The intended route for the Project can be detailed as follows:

- The Generation Tie Line would commence at the Project Substation on Tweedy Road between David Lane and SR 287.
- Moving eastward from this substation, the Generation Tie Line would span 0.6 miles, then turn south for approximately 0.4 miles, paralleling Alexis Lane.
- From there, the Generation Tie Line would be routed east for approximately 0.5 miles, continuing to parallel Alexis Lane, and along this segment would parallel an existing combined 230/500kV line to the south.
- Lastly, the Generation Tie Line would be routed 0.05 miles south, then 0.15 miles east, and then 0.07 miles southeast until it reaches the POI, the Pinal Central Substation.

The region surrounding the Project predominantly comprises agricultural and rural land uses, the Pinal County Fairgrounds, Central Arizona Speedway, and undeveloped desert. Among the key structures in the vicinity are high-voltage transmission lines and the Pinal Central Substation.

The American National Standards Institute (ANSI) has published a standard that approximated typical background noise levels for a variety of land uses (ANSI 2013). For locations that can be classified as "very quiet suburban and rural residential," ANSI's estimations for daytime and nighttime background noise levels are 40 dBA and 34 dBA, respectively. Considering the land uses near the Project, these estimations serve as an apt representation of the prevailing conditions.

The immediate vicinity of the Project boasts various sources of noise. The predominant source of this noise can be traced back to the sporadic traffic on SR 287 and Alexis Lane. Other sources contributing to the ambient noise include the current electrical infrastructure (especially the Pinal Central Substation and existing high-voltage transmission lines), the Fairgrounds, and the Central Arizona Raceway.

Noise-Sensitive Receptors

Assessing the potential noise impact is crucial, especially in areas containing noise-sensitive receptors. Such receptors are defined as locations inhabited by individuals or sites where intrusive sounds might disrupt the typical usage of the land, deteriorating its quality or value. Examples of noise-sensitive receptors encompass residences, educational institutions like schools, informational hubs like libraries, religious institutions like churches, healthcare centers including hospitals and nursing homes, cultural venues such as auditoriums, and leisure spaces, including parks and outdoor recreational zones.

In the context of the Project, it is noteworthy that the line will be contained within a maximum approximately 100-foot ROW and is planned to run parallel to an existing combined 230/500kV line directly south of the Project for an approximate 0.5-mile portion of the Project. When observing the immediate vicinity of the Project Area and extending our view to the encompassing 1-mile-radius Study Area, we find that the closest noise-sensitive receptor to the proposed line is a grouping of approximately two dozen residences to the south of the first segment and west of the second segment. The closest residence is approximately 145 feet west of the Project.

Anticipated Noise During Project Construction

The undertaking of constructing a transmission line involves the use of various ground-based equipment. This equipment set encompasses heavy-duty earth-moving machinery, cranes, air compressors, generators, and a multitude of transport trucks. Because of the nature and operational scale of these machines, they inherently generate considerable noise. Noise levels for typical construction equipment that would likely be used at the project are in the approximately 70 to 90 dBA range at 50 feet. Estimated noise levels for typical construction equipment at 145 feet would range from approximately 61 to 81 dBA.

It is imperative to note that all construction-related noise will rigorously conform to the local regulations and guidelines set forth for Pinal County, Arizona. Furthermore, to mitigate potential disturbances to residents and adhere to best practices, most construction activities are slated to take place during the daylight hours.

A significant aspect of noise, especially that generated during heavy construction, is its rapid reduction in intensity as we move farther from its source. The sound level decreases significantly with distance from the origin of the noise. Given this characteristic, it is worth noting the proximity of the closest sensitive receptor—a single residence approximately 145 feet to the west of the Project.

No mitigation is anticipated to be required based on the noise impacts calculated and the local regulations and guidelines set forth for Pinal County, Arizona.

Anticipated Noise During Project Operation

The Project will involve a 230kV transmission line similar to existing infrastructure, which includes high-voltage transmission lines and the Pinal Central Substation. The proposed 230kV line will be established within a maximum 100-foot ROW, with approximately 0.5 miles parallel to the existing combined 230/500kV line directly south of the Project.

When combining two unrelated sounds of similar intensity, the total sound pressure level increases by 3 dB. By merging the sound levels of the new line with those of the existing infrastructure, we can assume a maximum increase of 3 dBA. An average person perceives an increase in sound of 3 dBA or less as barely noticeable (Bolt Beranek and Newman, Inc. 1973).

Moreover, using the corona noise modeling results from the Burlington-Wray 230Kilovolt Generation Intertie Project (U.S. Department of Agriculture 2013), conducted using the EMF Workstation: ENVIRO (Version 3.52), as a proxy for the audible noise from the Project, we can conclude that the noise levels from the operation of the transmission line would be lower than the assumed daytime background noise levels (40 dBA) for the Project.

The primary consideration in using modeling results from the Burlington-Wray 230Kilovolt Generation Intertie Project as a representative dataset for Project hinges on similarities in infrastructure. Both projects concern 230kV transmission lines, suggesting comparable technical designs and functional parameters.

Another significant factor that bolsters this justification is the elevation of the two projects. The Burlington-Wray transmission line was modeled at an elevation of 4,000 feet amsl, significantly higher than the 1,450 feet amsl average elevation of the Project. Elevation plays a crucial role in corona noise generation, with higher elevations typically experiencing an increased corona effect due to the reduced density of the atmosphere compared with the atmosphere at sea level.

Using the relationship, $A/300$, where A represents the elevation in meters above sea level, we can deduce that corona noise at 600 m (1,969 feet) elevation would be double that at 300 m (984 feet) (Electric Power Research Institute 2005). Given this principle, the corona noise produced at the Burlington-Wray's elevation would inherently be higher than that at the elevation of the Project.

The results from the Burlington-Wray 230Kilovolt Generation Intertie Project showed various noise levels under different weather conditions, as illustrated in Exhibit I-1. Under fair weather conditions, the noise at the ROW edges was about 15.2 dBA, whereas in wet conditions, it went up to 40.2 dBA. The maximum noise observed within the ROW was 22 dBA in fair weather and surged to 47 dBA during wet conditions.

For the closest residential receptor, 145 feet west of the Project, without accounting for the differences in elevation, the noise levels were estimated at 13.3 dBA in fair weather and 38.3 dBA in foul conditions.

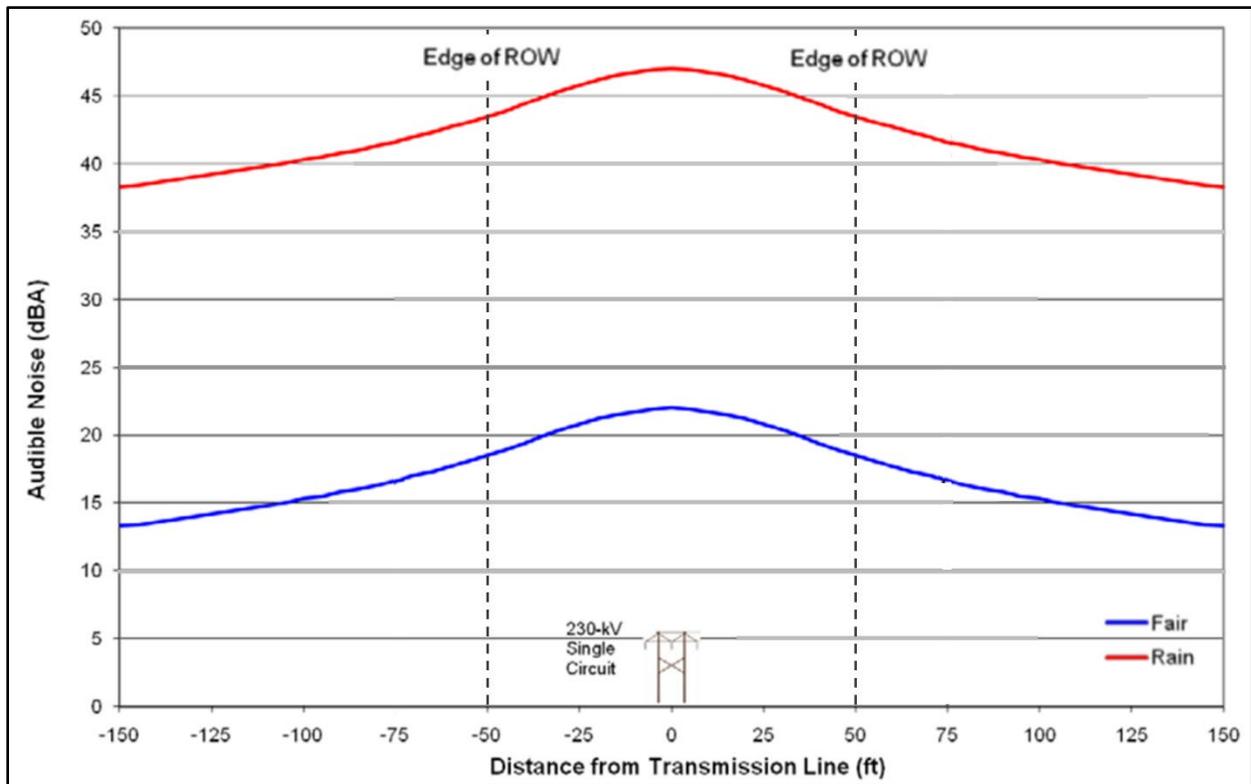


Exhibit I-1. Corona audible noise for 230kV transmission line.

Communication Signal Interference

Overhead transmission lines have been extensively studied for their potential impact on the quality of communication signals, particularly with respect to radio and television receptions. Generally, these lines do not interfere with standard communication signals. However, when interference does occur, it can usually be attributed to two primary sources: corona discharges and gap discharges.

Corona discharges from transmission lines can sometimes produce unintended electrical noise. The intensity of this noise dissipates with distance from the transmission line. For the AM radio spectrum, which operates at lower frequencies, corona discharges might lead to disruptions. This is evident when, for example, one hears a humming sound on an AM radio close to a power line, which then fades as the distance from the line increases.

Conversely, FM radio receptions, with their higher frequencies (88 to 108 megahertz), are rarely affected. The inherent interference rejection capabilities of FM systems render them virtually resistant to such disturbances. Moreover, as the project's voltage does not exceed 230kV, television receptions are generally safe from corona-induced disruptions.

Unlike corona discharges, gap discharges can occur at any voltage level on power lines. They emerge from minute electrical separations or gaps that might form between mechanically connected metal parts. When these gaps are bridged by small electric sparks, unwanted electrical noise can be produced. The impact of this noise depends on various factors, including the quality of the received radio or television signal and the proximity of the receiver to the power line. However, many interference complaints are often traced back to non-power-line sources, such as household appliances or poor-quality antennas.

Furthermore, high-voltage transmission lines usually experience fewer gap discharge problems because of their structural features and maintenance standards. The design and construction of these lines play a pivotal role in minimizing such disturbances. Properly designed hardware, electrical bonding where necessary, and diligent tightening of connections during construction can help avoid most interference issues. For those rare instances of interference, they can typically be traced to specific sources, such as corroded or damaged hardware, and rectified.

Additionally, transmission lines are generally non-intrusive to other critical communication infrastructures. Specifically, they do not disrupt the functions of cellular phone towers or the communication pathways of microwaves. This noninterference is evident from the widespread practice of mounting cellular antennas and microwave receivers directly onto transmission structures. The height of these structures, which is often an asset for enhancing signal range and quality, encourages such co-use without any reported complications.

Given the proximity of a residential receptor to the Project and other existing power lines, no additional radio interference is anticipated. The inherent design specifications, combined with the Project's adherence to construction best practices, will ensure minimal disruptions to nearby communication systems.

Electric Fields

EMFs are ubiquitous. Essentially, wherever there is an electrical current, an associated electric or electromagnetic field is generated. This includes not only the high-voltage power lines but also the day-to-day electrical appliances and gadgets that form an intrinsic part of our lives.

The National Institute of Environmental Health Sciences (NIEHS) offers a comprehensive understanding of these phenomena. According to their studies, electric and electromagnetic fields are naturally present in our environment. Such fields are measured in terms of voltage per meter (kV/meter). Natural sources of EMF, such as the earth's geomagnetic field or even the human body, exhibit electric field strengths ranging from 12 to 150 kV/meter (NIEHS 2002).

Moreover, our home appliances contribute to the ambient EMF environment. Televisions, for instance, create electric fields typically in the order of 20 kV/meter. The very fact that even a device like a television or computer monitor can produce such fields underlines the presence of these fields in our daily lives (NIEHS 2002).

Exhibit I-2 provides an illustrative understanding of the rate at which EMF generated by high-voltage transmission lines dissipate with increasing distance from the source. Taking the example of a standard 230kV transmission line, the electric field right beneath it is around 2.0 kV/meter. This intensity sees a rapid decrease with distance from the line: 1.5 kV/meter at 50 feet, dropping to 0.3 kV/meter at 100 feet, and becoming nearly negligible at 0.01 kV/meter at 300 feet.

Such rapid attenuation of the electric field is crucial when considering the possible impacts on human habitation or sensitive ecosystems. Given the data in Exhibit I-2, the residential receptor about 145 feet away from the Project would experience EMF levels that are too minor to warrant concern.

Typical EMF Levels for Power Transmission Lines*

115 kV



Approx. Edge
of Right-of-Way
15 m
(50 ft)

30 m
(100 ft)

61 m
(200 ft)

91 m
(300 ft)

Electric Field (kV/m)	1.0	0.5	0.07	0.01	0.003
Mean Magnetic Field (mG)	29.7	6.5	1.7	0.4	0.2

230 kV



Approx. Edge
of Right-of-Way
15 m
(50 ft)

30 m
(100 ft)

61 m
(200 ft)

91 m
(300 ft)

Electric Field (kV/m)	2.0	1.5	0.3	0.05	0.01
Mean Magnetic Field (mG)	57.5	19.5	7.1	1.8	0.8

500 kV



Approx. Edge
of Right-of-Way
20 m
(65 ft)

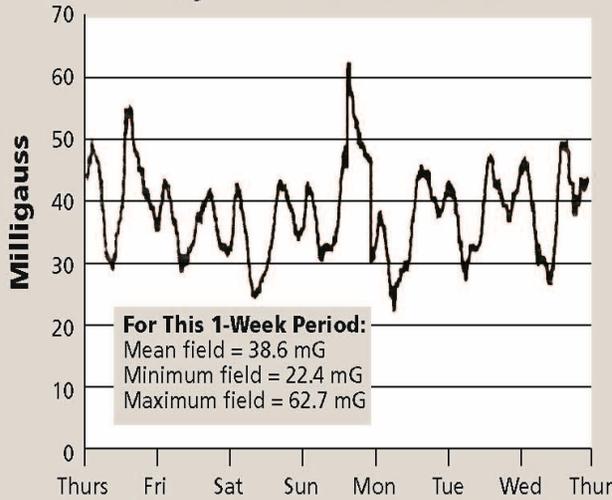
30 m
(100 ft)

61 m
(200 ft)

91 m
(300 ft)

Electric Field (kV/m)	7.0	3.0	1.0	0.3	0.1
Mean Magnetic Field (mG)	86.7	29.4	12.6	3.2	1.4

Magnetic Field from a 500-kV Transmission Line Measured on the Right-of-Way Every 5 Minutes for 1 Week



Electric fields from power lines are relatively stable because line voltage doesn't change very much. Magnetic fields on most lines fluctuate greatly as current changes in response to changing loads. Magnetic fields must be described statistically in terms of averages, maximums, etc. The magnetic fields above are means calculated for 321 power lines for 1990 annual mean loads. During peak loads (about 1% of the time), magnetic fields are about twice as strong as the mean levels above. The graph on the left is an example of how the magnetic field varied during one week for one 500-kV transmission line.

*These are typical EMFs at 1 m (3.3 ft) above ground for various distances from power lines in the Pacific Northwest. They are for general information. For information about a specific line, contact the utility that operates the line.

Source: Bonneville Power Administration, 1994.

Exhibit I-2. Typical EMF levels for power transmission lines.

Literature Cited

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EXHIBIT J. SPECIAL FACTORS

As stated in the Arizona Corporation Commission Rules of Practice and Procedure R14-3-219, Exhibit 1:

Describe any special factors not previously covered herein, which applicant believes to be relevant to an informed decision on its application.

Public Involvement

Informational Letters

The Applicant sent public notification letters to approximately 435 landowners, residents, and relevant stakeholders within 1 mile of the Project as part of the CEC public involvement process. The first notification letter was mailed on July 17, 2023 (Exhibits J-1a and J-1b). This letter introduced the Project and announced opportunities for comment, including a virtual open house that was launched June 9, 2023, and an in-person open house at Mary C. O'Brien Elementary School on July 26, 2023. A second letter will announce the filing of the CEC application as well as the dates of the Project's Arizona Power Plant and Transmission Line Siting Committee public hearings.

Website and Social Media

A Project website hosted at www.SunDogSolarEnergyCenter.com served as a central location to provide stakeholders and interested parties with Project information and opportunities for public comment. The website included general information regarding the solar facilities and the Project in its entirety. The website was advertised through informational letters, newspaper advertisements, the telephone information line, the virtual open house, and the public in-person open house. Screenshots of the Project website are in Exhibits J-2a through J-2d.

Social media advertisements were purchased through Facebook to advertise the Project and the in-person open house. The ad ran from July 18, 2023, to July 25, 2023. A screenshot of the social media advertisement is included in Exhibit J-3. During this period, there were 38 link clicks, 1,223 accounts reached, 7,940 impressions, one like, and zero comments or shares on the social media advertisement.

Virtual Open House

An online virtual open house was hosted at www.SunDogSolarOpenHouse.com to provide general information on the Project, including information on the Generation Tie Line and Project Substation. The virtual open house was announced in the informational letter and paid newspaper advertisements, the Project website, and through the telephone information line.

The virtual open-house format included an interactive website with Project information provided in clickable modules, which allowed interested parties to visit and review the materials at their convenience, and to ask questions, request information, or provide comment through embedded comment forms. The clickable modules included large maps and text displays with highlighted details of the Project and associated Generation Tie Line and images simulating the appearance of the facilities after construction. Following the online publishing of the virtual open house, the Applicant initiated a 1-month comment period, requesting that stakeholder comments or questions be provided by August 18, 2023. During this period, 86 viewers attended the virtual open-house meeting. No comments were submitted through the

website during the formal comment period, but comments will continue to be accepted throughout the duration of the Project. Screenshots of the virtual open house website and informational display boards are included in Exhibit J-4a through J-4d.

In-Person Open House Meeting

An in-person public open-house meeting was held for the Project on Wednesday, July 26, 2023, from 4:30 p.m. to 6:30 p.m. at Mary C. O'Brien Elementary School (1400 North Eleven Mile Corner Road, Casa Grande, Arizona, 85194). The format of the meeting was an informal open house, allowing community members to attend at their convenience, review informational displays, and communicate with members of the Project team. Exhibit J-5a shows the meeting sign-in sheet. At the open house, there were 10 people who signed in, three of whom provided a formal comment (Exhibits J-5b through J-5d). Information relayed at the meeting can be found in Exhibits J-6a through J-6m.

Newspaper Advertisements

The Applicant placed advertisements in the *Casa Grande Valley Newspapers* on July 13 and July 20, 2023 (Exhibits J-7a and J-7b). These advertisements provided information regarding the Project and associated solar facilities and announced the virtual open house and additional opportunities for comment through the telephone information line, postal mail, the Project website, and the virtual open house.

Email and Telephone Line

The Applicant created a telephone information line and email address to provide additional opportunities for members of the public to learn about the Project and express questions or comments.

The telephone number and email address were provided in informational letters, social media advertisements, and newspaper advertisements as well as at the virtual and in-person open house meetings. Initially, the telephone line gave a summary of the Project and announced the Project virtual open house and associated 30-day comment period. Following the completion of the comment period, the telephone line was updated to inform callers to leave a message with their name and number and the Applicant would return their call. The telephone line also invited the caller to visit the Project website for additional information. The telephone line will continue to provide callers with the opportunity to comment or request information throughout the entirety of the CEC permitting process. One comment was provided through the project email (Table J-1).

Public Comment

Of the eight comments received about the Project, six comments are from the same neighboring homeowners. These homeowners submitted their comments through multiple forums (by email, in person, and through the Arizona Corporation Commission). All comments and responses are provided in Table J-1. These homeowners have expressed general opposition in each comment but have not provided specific mitigation or design considerations that the Applicant could consider as part of the Project. The Applicant offered to meet them in person to discuss the Project so the Applicant could better understand their specific concerns and consider options for the Project to address their concerns; however, they declined offers to meet with the Applicant. No specific mitigation measures or design considerations have been identified by the Applicant, as no specific concerns have been provided and the homeowners have declined offers to meet to discuss their concerns further. Public comments received are shown in Table J-1.

Table J-1. Comments Received

Comment number	Method of Comment	Comment	Response
1	Project Email	The proposed path for lines and towers encircles the only subdivision of homes in this area on all four sides. It would be an environmental danger for the people living there, and a financial disaster for the owners of these \$800-\$1 million homes, some of which are still being built. This is not an appropriate or responsible path proposal as your website advertises. Your representative actually stated that the indirect path of the towers came about because Invenergy was not allowed to place their equipment on other open land or on the pathway of other energy companies! So they chose a path that surrounds homes on all four sides! Your representative also stated that there would be a noticeable humming noise from the transmission lines. Our properties would plummet in value. Our community has joined together to reach out to Arizona lawmakers and committees to make them aware of this plan and the damage it would cause. We object to your stated pathway and ask you to revisit your plan and find a different pathway in an area of open land that would not affect the health and finances of this community in Pinal County. Jerry and Janet Devan	Please see comment 5 for response.
2	In-person public meeting	The proposed Substation off David/Tweedy would negatively impact our residential property valuation. I understand the simplest route would run right through a current agricultural/residential area. We would obviously prefer using current SRP easements that already allow for this.	Team members discussed the concerns with the commenter at the in-person open house meeting. The Applicant considered using the existing SRP easement, however, after discussing with SRP, SRP determined that it would not be possible to accommodate the Generation Tie Line in the existing SRP easement due to safety concerns.
3	In-person public meeting	Very concerned on the impact to the fairgrounds. That area is currently used for carnival rides and the use of parking RV's of people working the events. Please look at the possibility of minimizing the impact on the southern side of the fairgrounds.	Team members discussed the concerns with the commenter at the in-person open house meeting. The Applicant has adjusted the Generation Tie Line route and right-of-way width to minimize impacts to the Pinal County Fairgrounds (see Exhibit F for additional information).
4	In-person public meeting	Our property is at the corner of your proposed project. We oppose this project path. There is open property for miles in all directions of the project and no reason to put these lines next to the only subdivision. It will take down the value of our property by hundreds of thousands. Perhaps Invenergy would like to buy our property at its current value? And have the owners of Invenergy live there and listen to the humming lines and look at the stars through towers on two sides of the house. Please contact us. We will be in touch with Pinal County and our neighbors to try to change or stop the path of this project. Please see where our home is located on your map. We hope to hear from you soon and from someone in authority.	Team members discussed the concerns with the commenter at the in-person open house meeting, and the project developer provided contact information to further discuss concerns with the commenter.
5	ACC Utilities Complaint Form	URGENT ARE YOU AWARE THAT THERE ARE PLANS TO INSTALL HIGH VOLTAGE POWER LINES AND TOWERS AROUND 3 SIDES OF OUR DAVID LANE/ANDREW LANE COMMUNITY, AN AREA OF LARGE, NEW HOMES BETWEEN CASA GRANDE AND ELOY?	Mr. and Mrs. Devan, We are writing in regard to the SunDog Solar Energy Center Generation Tie Line (SunDog Gen-Tie) Project, and we would like to coordinate with you further regarding the Project. The SunDog

Comment number	Method of Comment	Comment	Response
		<p>The PROPOSED PROJECT is called: SUNDOG SOLAR 230kV GENERATION TIE LINE PROJECT</p> <p>A company called INVENERGY is applying for approval from Arizona Power Plant Site Committee and the Pinal County Board of Supervisors and Zoning Commission. The towers and lines are to be installed the whole length of the road at the east end of ANDREW AND DAVID LANE; and the entire length of the canal running behind LYMAN COURT, BLUE SKY, ALEXIS LANE, BETHANY. A power storage station and equipment and towers are planned for the entire corner of RT.287 (FLORENCE BLVD.) AND TWEEDY ROAD.</p> <p>This plan would wall-in our entire subdivision of new builds and upper -market -value homes WITH HIGH VOLTAGE POWER LINES AND TOWERS ON ALL FOUR SIDES. They would be very close to many of our homes. We have been told by INVENERGY that there would be a CONSTANT BUZZING SOUND. Some people living in close proximity to power lines have complained of headaches, tumors, radiation, etc. All of us in this community, including children and even livestock should not be subjected to this.</p> <p>THE VALUE OF OUR PROPERTIES WOULD PLUMMET. No one wants to buy a home surrounded by high voltage and towers. Can you imagine what it would look like to be boxed in on all four sides by wires and towers? Can you imagine what a realtor's aerial view of our community would look like?</p> <p>On July 26 (just a few days ago) we received a letter in the mail. It looked like junk mail. The envelope said it was regarding our property. The return address said INVENERGY. For some reason, I opened it. It announced a meeting for July 26 (the same day I received it). We attended this meeting, where they showed virtual images of what they planned to do next to our properties on any land that they could get their hands on from Pinal County. They were trying to see how much PUSH-BACK they might get from residents about the plan and the proposed path of the lines and towers.</p> <p>INVENERGY is going to try to railroad their plan through with us and with Pinal County quickly and quietly. We were told that they only alerted Pinal County to their plan on July 26 too.</p> <p>We have made contact with BRANDON GAYLORD, District Administrator, District 3, who was also at that meeting. He did some research about Invenergy and their plan. So far they are just in the early stages, attempting to get property from the county or farmers who will sell to them and then applying for approval from the county. They are trying to save themselves money, of course, by imposing the path of their project onto whatever they can get cheap instead of even taking direct pathways on open property or other energy line property. SunDog Solar representatives actually told us that the reason they have chosen the path surrounding our community is that the other utilities such as SRP will not share pathways with them and they have been unable to purchase property that is a distance away from this residential community!</p> <p>We have been told that that things will really start moving in September-November of this year.</p> <p>PLEASE do not allow ANOTHER international company to destroy more of beautiful Arizona. Please protect our health and our property values by voting NO to any proposals from INVENERGY and SUNDOG SOLAR which surround residential areas.</p>	<p>Gen-Tie Project is a proposed approximately 1.7-mile, 230-kilovolt transmission line, intended to connect the planned SunDog Solar Energy Center to the existing Pinal Central Substation.</p> <p>Invenergy appreciates your attendance, and the spoken and written comments you provided during the Project Open House meeting held on July 26, 2023, as well as the emailed comment you provided through the Project email address. Please know that the comments are being considered, and will be included in the permitting application documents for this effort. We understand that you have concerns about the location of the Project in relation to your home. We would like to take the opportunity to speak with you and perhaps meet to review and discuss your concerns. Is there a date/time that may work for you both to discuss further?</p> <p>Thank you for your time and consideration.</p> <p>Best, Katie DeSpain, Associate, Renewable Development, Invenergy</p>

Comment number	Method of Comment	Comment	Response
		<p>Thank you for reading and considering. Any replies would be appreciated.</p> <p>From concerned citizens, Jerry and Janet DeVan</p>	
6	ACC Utilities Compliant Form	<p>Good day,</p> <p>I am writing to ask all committee members to help us. We are the "little guy" trying to prevent the big, international energy companies from ruining our property values and physical and mental health. Invenergy is trying to quickly and quietly change the original proposed pathway of their lines and towers from a pathway where equipment already exists to a pathway that surrounds a subdivision of large new homes at close range. We have been told by Invenergy's representative that there would be a constant buzzing noise. We were also told that, since SRP and other energy companies will not share pathways with them, they are pursuing railroading through this pathway which would put electrical lines and equipment on all four sides of the Alexis Lane, David Lane, Andrew Lane, and Tweedy Road subdivision in Pinal County near the fairgrounds and Eleven Mile Corner. If they can get this pathway pushed through, it will save THEM money. They are unconcerned about the property values of these homes or the health of the residents. Are you?</p> <p>They have reported that the owls will not be negatively impacted! But what about the PEOPLE?</p> <p>The original docket number is on this letter above. But it is not showing the pathway next to our homes that they are trying to get approved. They are calling their project the SUND OG SOLAR 230kv GENERATION TIE LINE PROJECT. The residents being affected were only told about it the SAME DAY that Invenergy had a public meeting about it. This company is trying to bait and switch their plan with the Arizona Commissions who vote on it.</p> <p>We have contacted our senators and state representative about this and are asking for your protection as you review Invenergy's request. Please protect the PEOPLE of Arizona and don't give our county and state over to the international companies who just want to make money from OUR loss.</p> <p>Thank you for your consideration, Jerry and Janet DeVan</p>	Same response as comment 4.
7	Email	<p>Hello again, Katie DeSpain,</p> <p>Please let us know specifically what you would like to discuss with us. Since the proposed tie line route is unacceptable to us and would have huge financial and environmental impact (physically and mentally) and (financial) damages to our corner property we must object, and ask that you and Invenergy come up with some solution. Please let us know if you are considering alternative ideas for us to discuss. Please be specific.</p> <p>Thank you, Jerry and Janet DeVan</p>	<p>Mr. and Mrs. Devan,</p> <p>Thank you very much for your email. We would like to meet to better understand your specific concerns so that we can evaluate potential options to address. In our experience, in person meetings are very helpful in the process to identify solutions.</p> <p>Best, Katie DeSpain, Associate, Renewable Development, Invenergy</p>

Comment number	Method of Comment	Comment	Response
8	Email	<p data-bbox="531 282 674 306">Katie DeSpain,</p> <p data-bbox="531 347 1402 566">We did state our objections at the meeting on July 26, and also invited you to our home to see first hand how the amended tie-line path would affect our property. However, you turned down our offer, and also stated that property values were not a subject that you dealt with. At that time, you also told us that the proposed tie-line route had been changed from the original direct route (from 2020) to a path close to our home and subdivision because other power companies would not share passage where other power lines already exist, and the new indirect pathway in close proximity to our homes was more cost effective for SunDog/Invenergy! You further stated that there would be a NOISE PRODUCED BY THE POWER LINES.</p> <p data-bbox="531 574 1402 748">Even as of today, we would not be able to sell our home just because the POSSIBILITY of power lines running right next to us on 2 sides would have to be disclosed. So SunDog/Invenergy has ALREADY had an impact on us, financially and healthwise/ stress. Earlier this year our home and its 2.5 corner acreage were valued at just under \$1 million dollars. We expressed to you , in writing , that Invenergy's planned pathway would affect the inheritance of our children (but, of course, international companies don't care about that) and asked if Invenergy would like to purchase our home and let one of its executives live there!</p> <p data-bbox="531 756 1402 829">Your reply below was not specific enough to give us any hope of any changes in the tie-line pathway, or any interest in benefitting us. Our time is valuable. Is there anything you wish to discuss in person that could change the situation?</p> <p data-bbox="531 837 751 862">Jerry and Janet Devan</p>	<p data-bbox="1419 282 1875 380">Thank you for sharing your concerns. Please do not hesitate to contact me should you have any further questions or should you desire to meet in the future.</p> <p data-bbox="1419 420 1780 505">Best, Katie DeSpain, Associate, Renewable Development, Invenergy</p>

Invenergy

1401 17th Street | Suite 1100 | Denver, Colorado 80202
T 303-800-9341

July 17, 2023

Invitation to learn about the proposed SunDog Solar 230kV Generation Tie Line Project

Dear Interested Party,

Invenergy is seeking your input on the proposed SunDog Solar Generation Tie Line Project in Pinal County and Coolidge, Arizona. Invenergy is proposing to build a 230-kilovolt, alternating current generation intertie transmission line (gen-tie) approximately 1.5 miles long (project). The proposed gen-tie would connect the future SunDog Solar Energy Center, a proposed 200-megawatt (MW) solar and 200 MW battery energy storage facility, to the existing Pinal Central Substation via a step-up substation. More information about the project is available at www.SunDogSolarEnergyCenter.com.

Invenergy is hosting an open house on Wednesday, July 26, 2023, from 4:30pm – 6:30pm, for the community to learn about the project, meet the project team, and provide comments. Information will be on display and light snacks will be provided. No formal presentation is planned. The open house will be at Mary C. O'Brien Elementary School, 1400 North Eleven Mile Corner Road, Casa Grande, AZ 85194.

There will also be a virtual open house hosted at www.SunDogSolarOpenHouse.com.

Invenergy will be applying for a Certificate of Environmental Compatibility with the Arizona Power Plant and Transmission Line Siting Committee to allow for the construction and operation of the project. SunDog Energy Center LLC (SunDog) and SWCA Environmental Consultants (SWCA) are in the process of analyzing the project gen-tie (Figure 1).

As part of this analysis, we are soliciting public and stakeholder input. Please submit a comment or question through one of the following methods:

Mail: SunDog Solar Energy Center
c/o SWCA Environmental Consultants
20 East Thomas Road, Suite 1700
Phoenix, Arizona 85012
Email: SunDogSolarHotline@Invenergy.com
Voicemail: (866) 786-8656
Project Website: www.SunDogSolarEnergyCenter.com

The comment period for the project will extend from July 16, 2023, to August 18, 2023. We look forward to receiving your input.

Sincerely,



Katie DeSpain
Associate, Renewable Development
Invenergy

Exhibit J-1a. Project information letter (1 of 2).

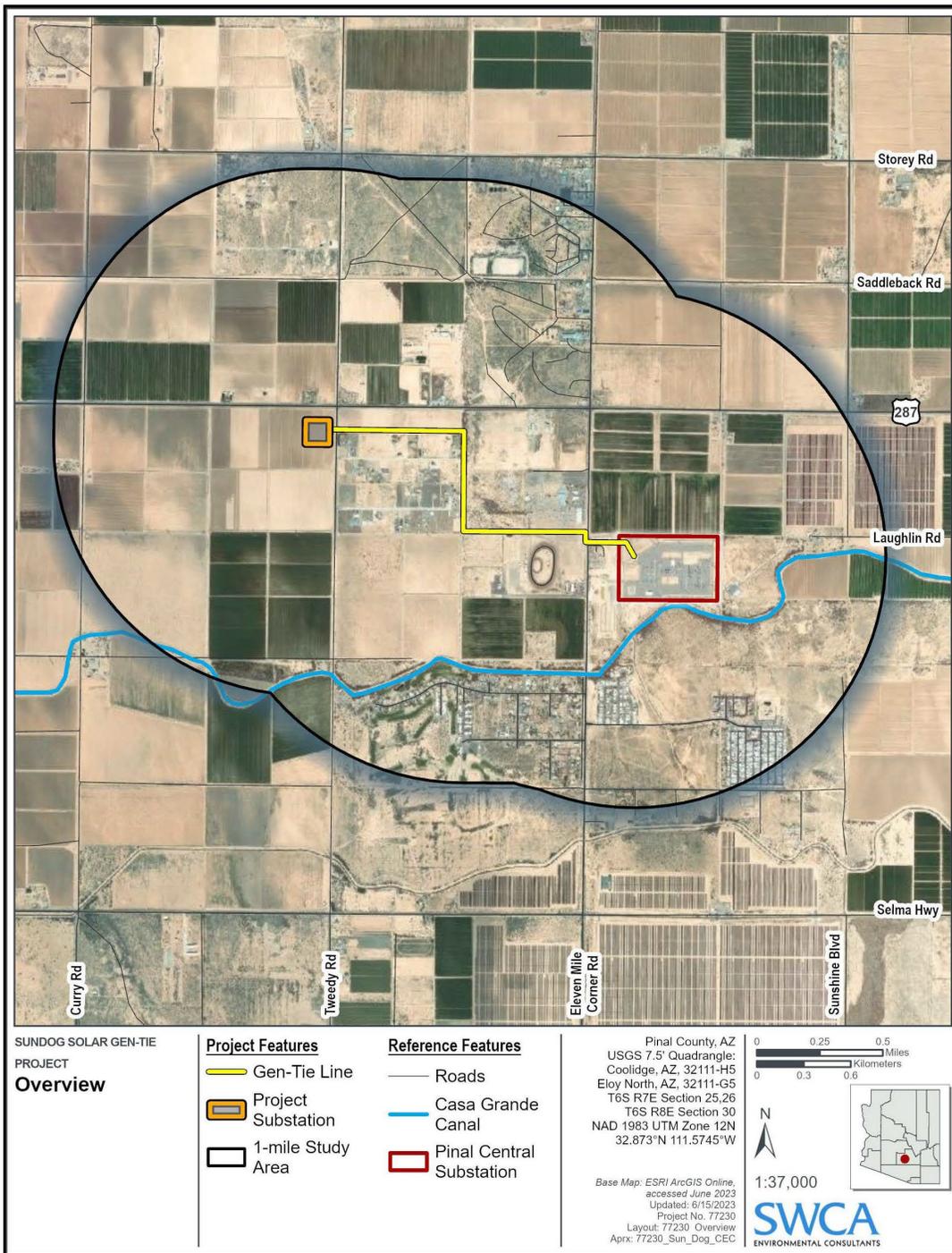


Figure 1: Project overview.

Exhibit J-1b. Project information letter (2 of 2).

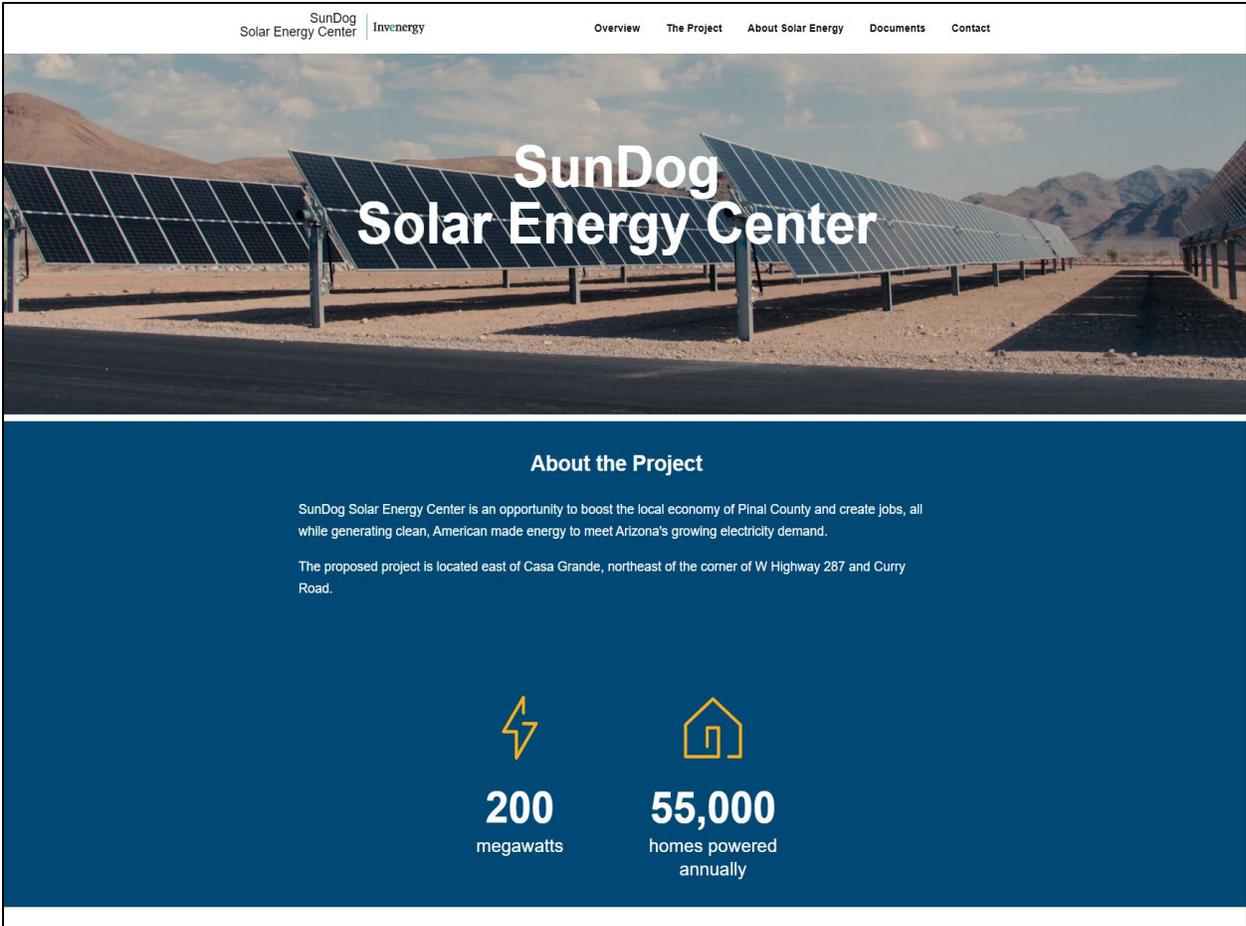


Exhibit J-2a. Project website (1 of 4).

SunDog Solar Energy Center | Invenergy

Overview | **The Project** | About Solar Energy | Documents | Contact



About The Project

Current Efforts

Invenergy began development of SunDog Solar Energy Center with the goal to begin construction in 2024.

Currently, our efforts are largely focused on securing permits for the project, conducting all of our necessary studies to ensure we site our project facilities in the most appropriate and responsible locations, and bringing the project to market through securing a long-term contract.

SunDog Solar Generation Tie Line Project Open House

Invenergy plans to file an application for a Certificate of Environmental Compatibility (CEC) for the SunDog Solar Generation Tie Line Project (project) with the Arizona Power Plant and Transmission Line Siting Committee in December 2023. The project involves the development of a new 230kV electrical generation intertie transmission line (gen-tie) that will connect the future SunDog Solar Energy Center to the existing Pinal Central Substation via a step-up substation. The project is largely within unincorporated Pinal County, Arizona, except for the final portion connecting into the Pinal Central Substation, located in Coolidge, Arizona.

Invenergy is hosting an open house for the community to learn about the project, meet the project team, and provide comments. Information will be on display and light snacks will be provided. No formal presentation is planned.

Date: Wednesday, July 26, 2023

Time: 4:30pm – 6:30pm

Location: Mary C. O'Brien Elementary School, 1400 N Eleven Mile Corner Road, Casa Grande, AZ 85194

There is also a virtual open house at www.SunDogSolarOpenHouse.com.

Exhibit J-2b. Project website (2 of 4).

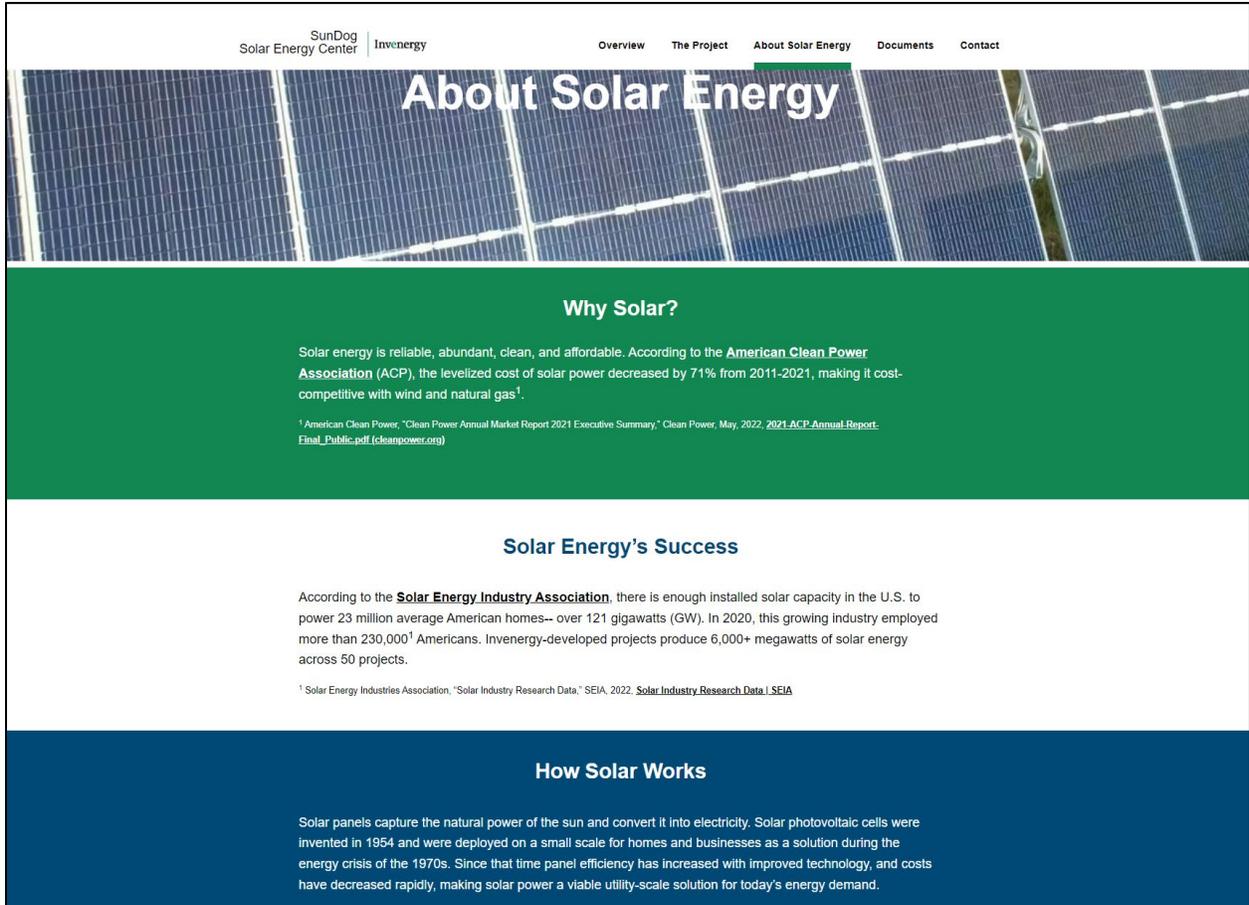


Exhibit J-2c. Project website (3 of 4).

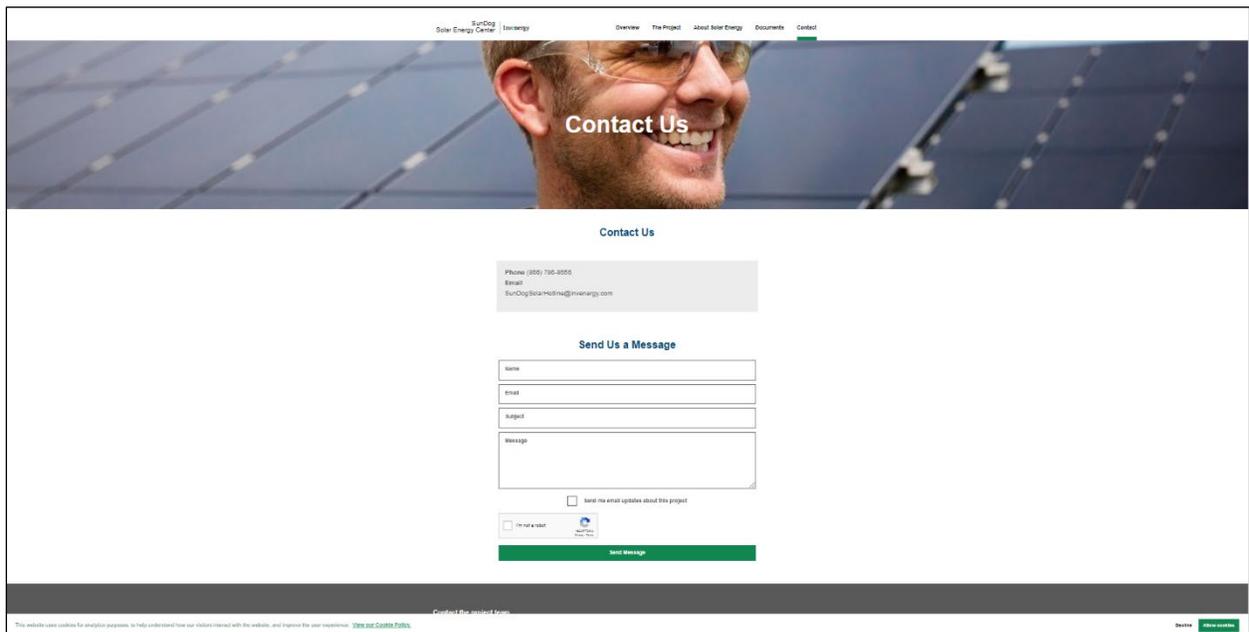


Exhibit J-2d. Project website (4 of 4).

SWCA Environmental Consultants
Sponsored · 🌐

Invenergy is hosting in-person and virtual open houses for the SunDog Solar Gen-Tie Project in Pinal County, AZ. Visit us online at SunDogSolarOpenHouse.com or see below for details on how to attend in person.

SunDog Solar Energy Center

Gen-Tie Project
Open House

Wednesday July 26 | 4:30-6:30pm

 **Mary C O'Brien Elementary School**
1400 N Eleven Mile Corner Rd
Casa Grande, AZ 85194

Invenergy

virtual360experience.com
Invenergy's SunDog Solar Gen-Tie Project [Learn more](#)

 Like  Comment  Share

Full Size Preview

Exhibit J-3. Facebook advertisement.

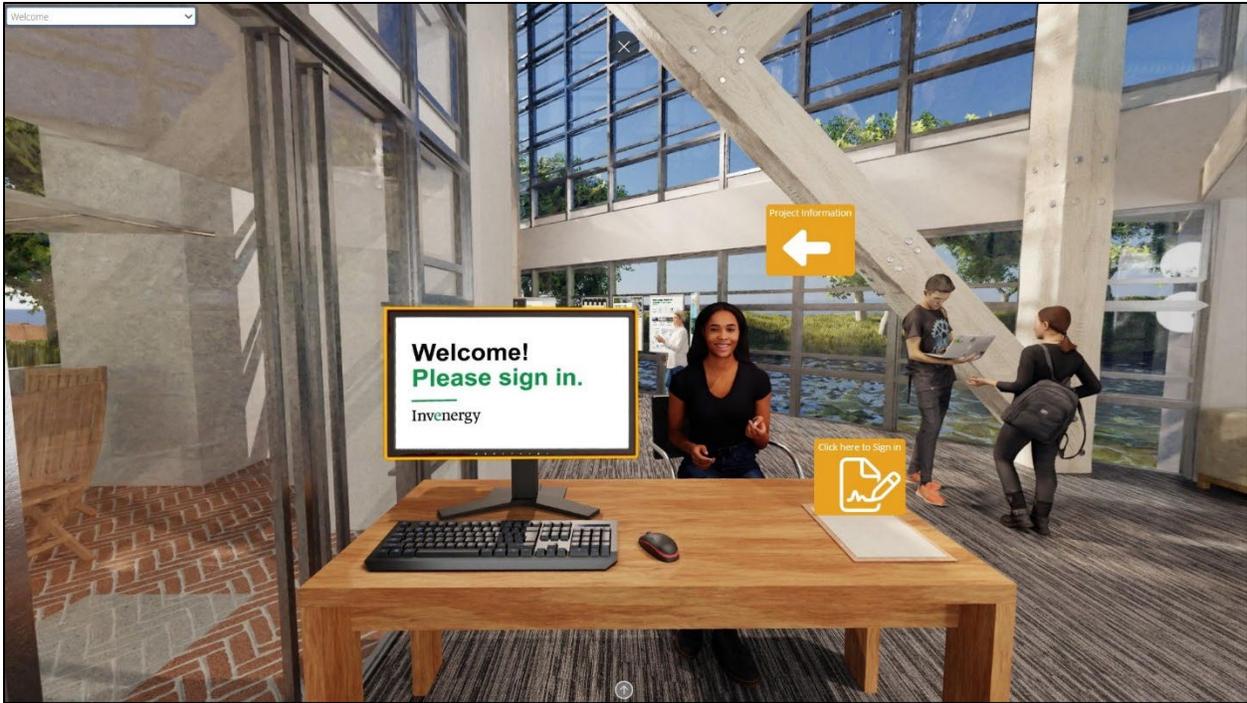


Exhibit J-4a. Project virtual open house.

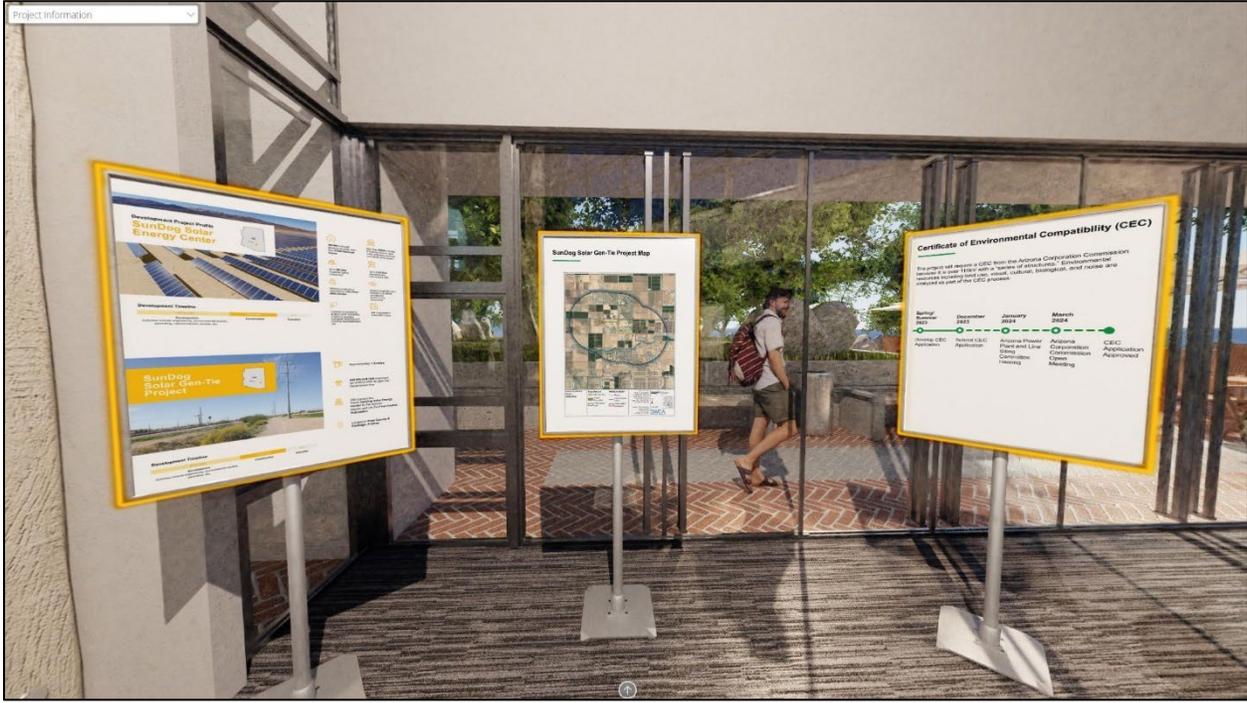


Exhibit J-4b. Project virtual open house.



Exhibit J-4c. Project virtual open house.

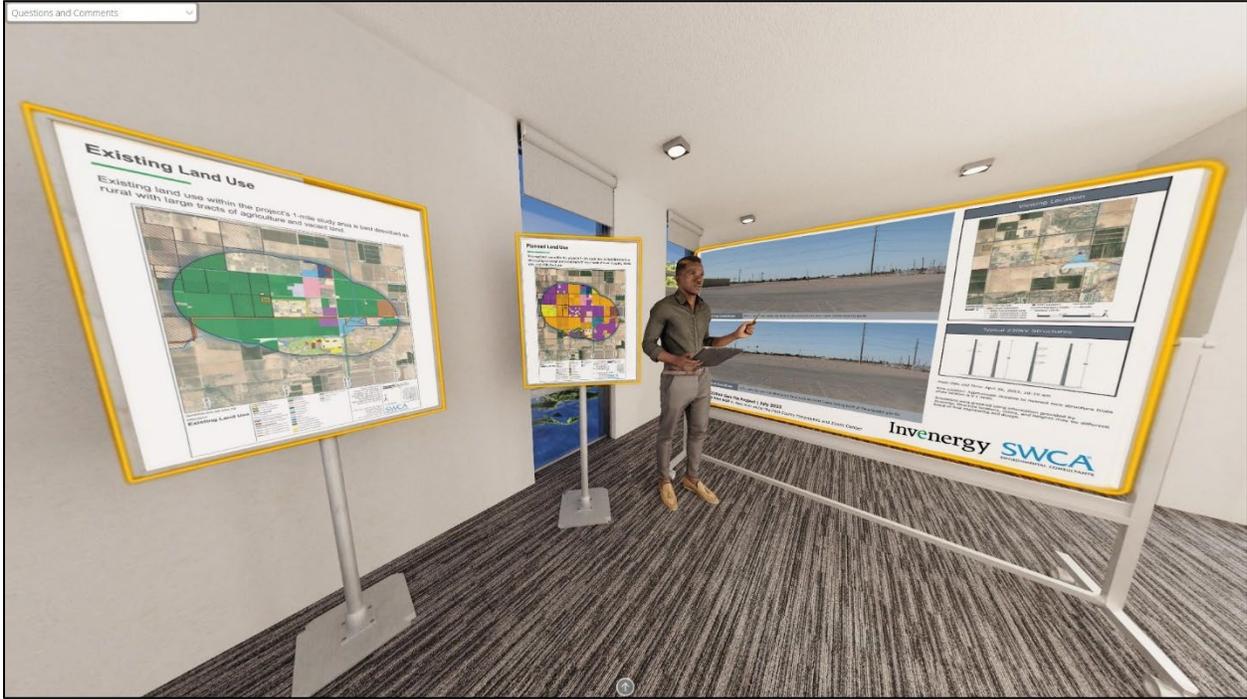


Exhibit J-4d. Project virtual open house.

Invenergy

**SunDog Solar 230kV Generation Tie Line Project
Public Hearing Sign-In Sheet**

Mary C. O'Brien Elementary School
1400 11-Mile Corner
Casa Grande, AZ 85194

July 26, 2023

Full Name	Email Address	Telephone	Would you like to receive project updates?
Chip Wilson	[REDACTED]	[REDACTED]	
Philip Coffman	[REDACTED]	[REDACTED]	
Jerry Devan	[REDACTED]	[REDACTED]	
KARL MANN	[REDACTED]	[REDACTED]	YES
KEN TANNER	[REDACTED]	[REDACTED]	YES
DAVID DAVIS	[REDACTED]	[REDACTED]	yes
Allison Setelin	[REDACTED]	[REDACTED]	yes
Emery Molina	[REDACTED]	[REDACTED]	Yes
Max Cohen	[REDACTED]	[REDACTED]	yes
Roy Weaver	[REDACTED]	[REDACTED]	

Exhibit J-5a. In-person public open house sign-in sheet.

Invenergy

Comment Form

SunDog Solar 230kV Generation Tie Line Project
Public Meeting
Mary C. O'Brien Elementary
1400 11-Mile Corner, Casa Grande, AZ 85194
Wednesday, July 26, 2023

Name: Jerry Devan / Janet Devan
Organization (if applicable): _____
Email: _____
Phone: _____
Address: _____
City _____ State _____ Zip _____

Comment(s):

OUR PROPERTY IS AT THE CORNER OF YOUR PROPOSED PROJECT. WE OPPOSE THIS PROJECT PATH. THERE IS OPEN PROPERTY FOR MILES IN ALL DIRECTIONS OF THE PROJECT AND NO REASON TO PUT THESE LINES NEXT TO THE ONLY SUBDIVISION. IT WILL TAKE DOWN THE VALUE OF OUR PROPERTY BY HUNDREDS OF THOUSANDS. PERHAPS INVENERGY WOULD LIKE TO BUY OUR PROPERTY AT ITS CURRENT VALUE?? AND HAVE THE OWNERS OF INVENERGY LIVE THERE AND LISTEN TO THE HUMMING LINES AND LOOK AT THE STARS THROUGH TOWERS ON TWO SIDES OF THE HOUSE. PLEASE CONTACT US. WE WILL BE IN TOUCH WITH PINAL COUNTY AND OUR NEIGHBORS TO TRY TO CHANGE OR STOP THE PATH OF THIS PROJECT. PLEASE SEE WHERE OUR HOME IS LOCATED ON YOUR MAP.

Please write on the back of this form if more space is needed

WE HOPE TO HEAR FROM YOU SOON AND FROM SOMEONE IN AUTHORITY.

Exhibit J-5b. Comment form.

Invenergy

Comment Form

SunDog Solar 230kV Generation Tie Line Project
Public Meeting
Mary C. O'Brien Elementary
1400 11-Mile Corner, Casa Grande, AZ 85194
Wednesday, July 26, 2023

Name: Allison Satalino
Organization (if applicable): Family First Properties
Email: [REDACTED]
Phone: [REDACTED]
Address: [REDACTED]
City: [REDACTED] State: [REDACTED] Zip: [REDACTED]

Comment(s):

The proposed substation off David / Tweedy would negatively impact our residential property valuation. I understand the simplest route would run right through a current agricultural/residential area. We would obviously prefer using current SRP easements that already allow for this.

Please write on the back of this form if more space is needed

Exhibit J-5c. Comment form.

Invenergy

Comment Form

SunDog Solar 230kV Generation Tie Line Project
Public Meeting
Mary C. O'Brien Elementary
1400 11-Mile Corner, Casa Grande, AZ 85194
Wednesday, July 26, 2023

Name: Chip Wilson
Organization (if applicable): Pinal County Fair Board Member
Email: [REDACTED]
Phone: [REDACTED]
Address: [REDACTED]
City [REDACTED] State [REDACTED] Zip [REDACTED]

Comment(s):

Very concerned on the impact to the Fair
Grounds. That area is currently used for
the ~~grounds~~ Carnival Rides and the use of
parking RV's of the people working the event.

Please look at possibility of minimize the impact
on the southern side of the Fair Grounds

Please write on the back of this form if more space is needed

Exhibit J-5d. Comment form.

Invenergy | SunDog Solar Gen-Tie Project



Welcome!

Exhibit J-6a. Open house display.

Invenergy

Innovators building a sustainable world

Invenergy is the world's leading privately held sustainable solutions provider. Our core business takes sustainable infrastructure projects from drawing board to reality, serving utilities, leading global brands and public sector partners.



202
projects developed

9.4 Million
homes powered

31 GW
capacity developed

\$50 Billion
in transactions completed

\$400 Million
economic investment in home communities annually

\$2.7 Million
cause-based investments annually



Diverse Experience Across Technologies



Wind
117 projects
18,600+ megawatts



Solar
53 projects
6,600+ megawatts



Storage
19 projects
1,800+ megawatt hours
500+ megawatts



Natural Gas
13 projects
6,000+ megawatts

Full Lifecycle Expertise & Capabilities

Engineering & Construction
Layout & design
Construction management
Engineering, Procurement & Construction (EPC) services

Project Development
Development- & build-transfers agreements
Siting & land acquisition
Permitting
Interconnection



Marketing & Finance
Project financing
Mergers & acquisitions
Innovative commercial structures
PPAs, VPPAs, Hedges & Tolls

Operations
Strong safety culture
Operations & maintenance
Asset management
Community relations

invenergy.com

Exhibit J-6b. Open house display.

Invenergy | SunDog Solar Gen-Tie Project

Community Benefits

Invenergy solar projects help drive economic stability in the communities where we live, work and operate. They bring good-paying construction jobs for workers, tax revenue for public services like schools, police and fire, and lease payments for farmers and ranchers.

Invenergy is deeply committed to the communities we serve, not just for today but for the long haul. That's why we invest in local charitable causes and support education, military veterans and families, first responders and environmental conservation.

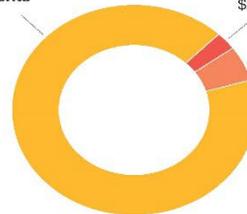
Economic Investment in Solar Home Communities



\$91.3 Million

Total Solar Community Investments in 2022

Land Costs & Lease Payments
\$83.8 Million



Wages & Benefits
\$2.6 Million

State & Local Taxes
\$4.9 Million

Support of Local Nonprofit Organizations & Causes



\$106,000

Home Community Cause-Based Giving in 2022

Through causes related to:



Community



Health & EMS



Environment



Veterans



Education



"We just appreciate the financial support that Invenergy has given to our community and with the renewable energies and just Invenergy in itself... It's great for the land owners... they're generating revenue that will last the many years that the solar is on, so its a win-win for everyone."

Jacqueline Fitzgerald

Director of Community Development,
Hardin County Chamber & Business Alliance

Exhibit J-6c. Open house display.

Invenergy | SunDog Solar Energy Center



Enough electricity to power more than **57,000 American homes**



More than **\$209 million** invested in local tax revenue, land costs, and



Up to **400 jobs** supported during construction



200 megawatts of renewable energy



Emissions reductions equivalent to **156 million** trees planted



Up to **5 full time** operations & maintenance staff

Project Timeline



Project Location

Located in Pinal County, Arizona.



Exhibit J-6d. Open house display.

Invenergy | SunDog Solar Gen-Tie Project



Approximately
1.5-miles



230 kilovolt (kV) overhead generation inter-tie (gen-tie) transmission line



Will connect the future **SunDog Solar Energy Center** to the regional electric grid via the **Pinal Central Substation**



Located in **Pinal County & Coolidge, Arizona**

Project Timeline

2018-2024	2024-2026	2026
Development Activities include engineering, environmental studies, permitting, etc.	Construction	Operation



Exhibit J-6e. Open house display.

Certificate of Environmental Compatibility (CEC)

The project will require a CEC from the Arizona Corporation Commission because it is over 115kV with a “series of structures.” Environmental resources including land use, visual, cultural, biological, and noise are analyzed as part of the CEC process.



Exhibit J-6f. Open house display.

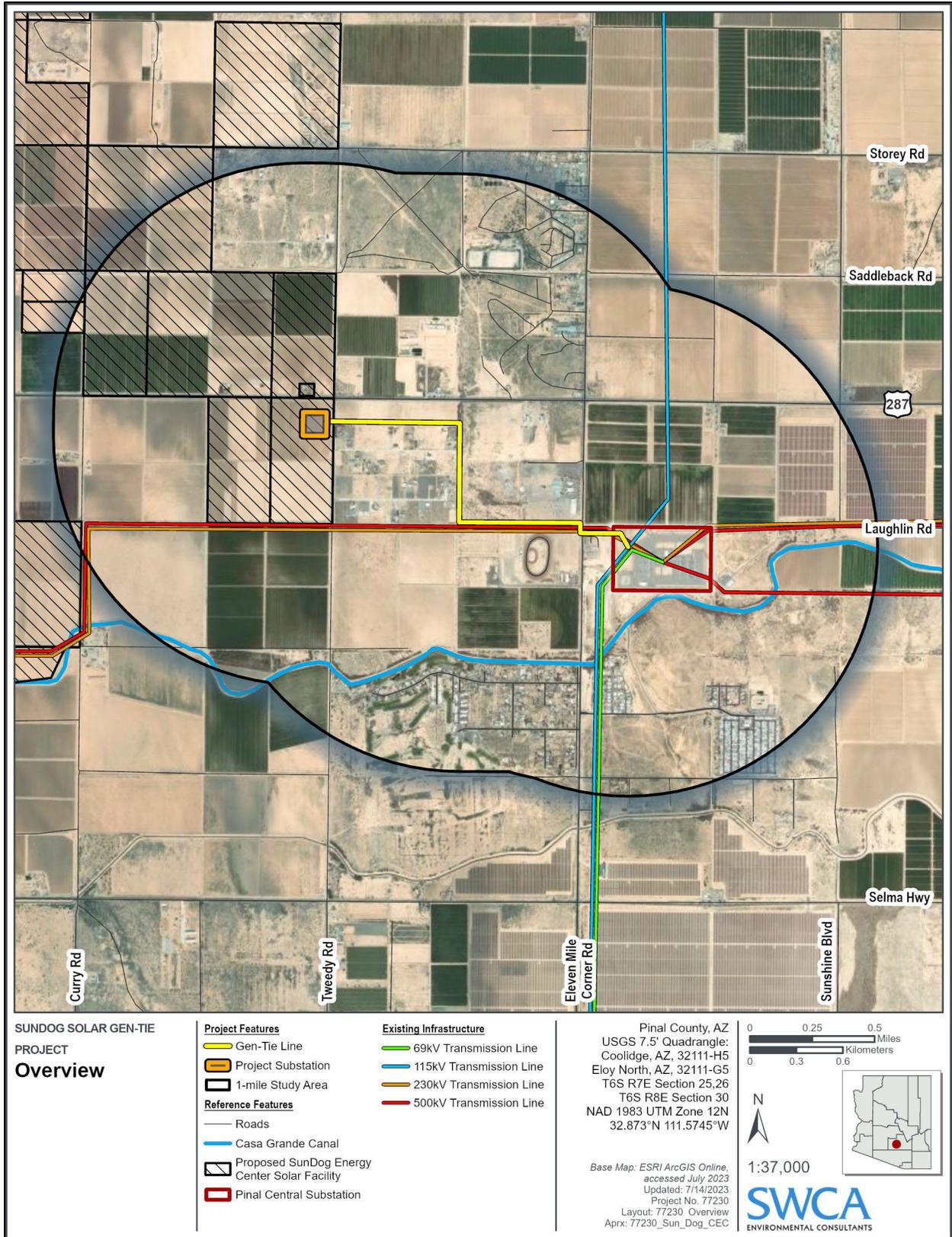


Exhibit J-6g. Open house display.

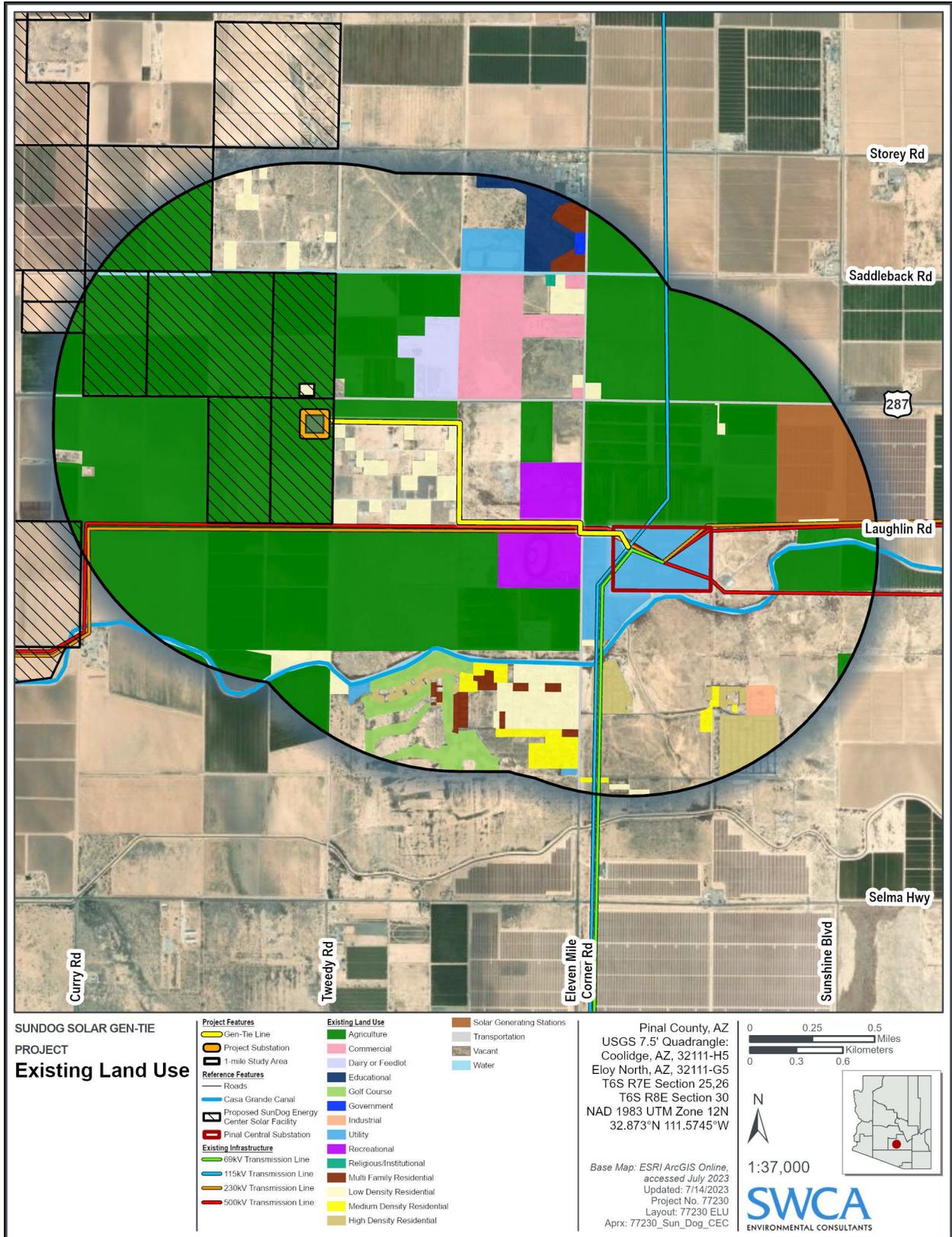


Exhibit J-6h. Open house display.

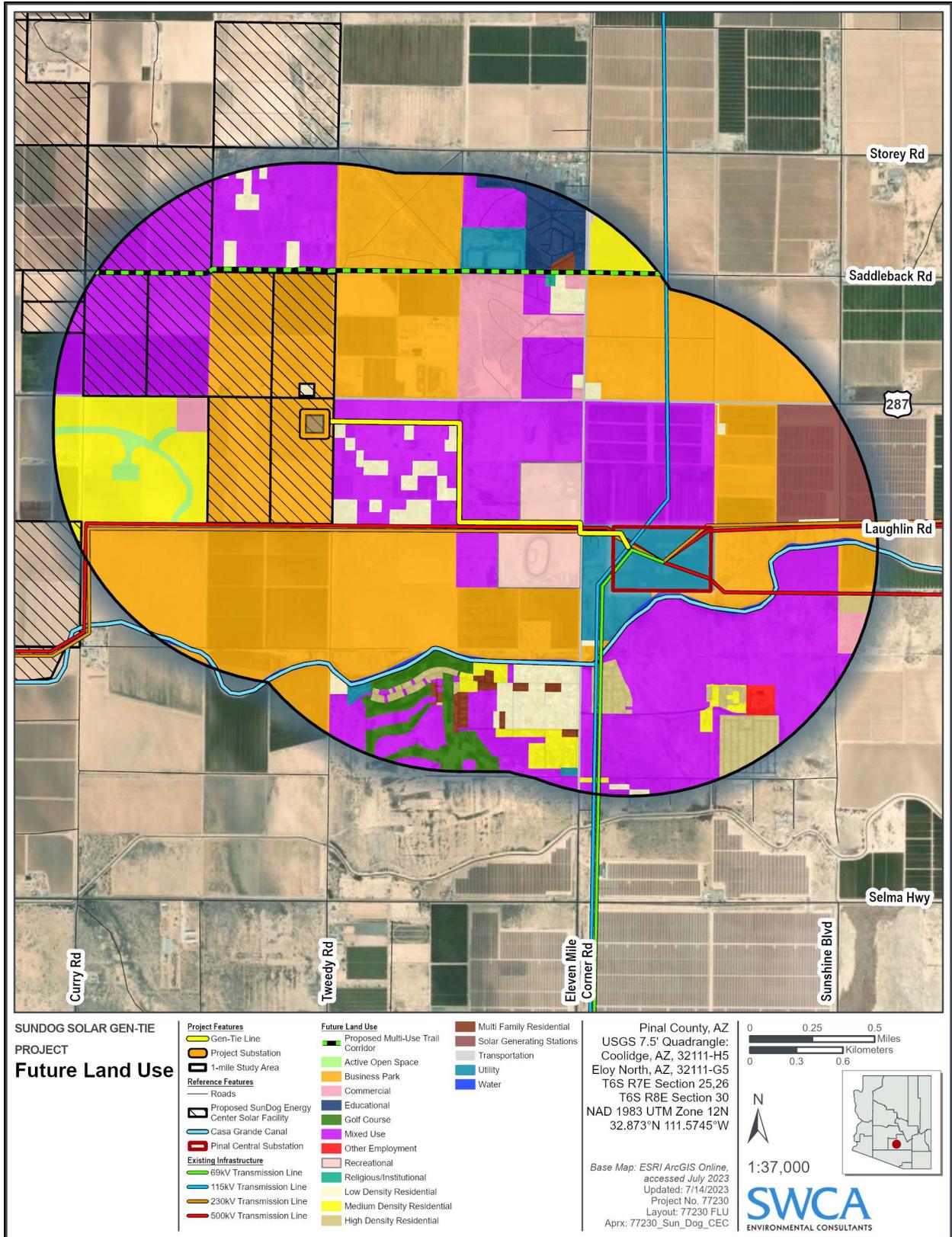
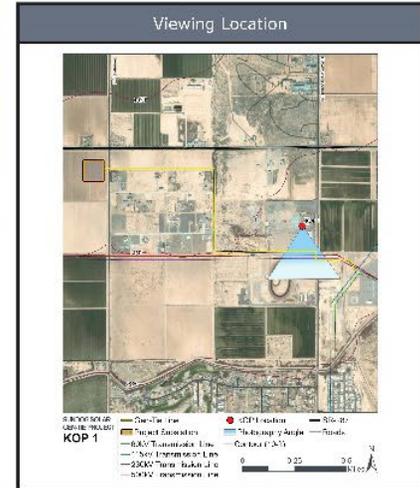


Exhibit J-6i. Open house display.



Existing Condition

KOP 1: View from within the Pinal County Fairgrounds and Event Center looking south



Simulated Condition

KOP 1: View from within the Pinal County Fairgrounds and Event Center looking south of the proposed gen-tie

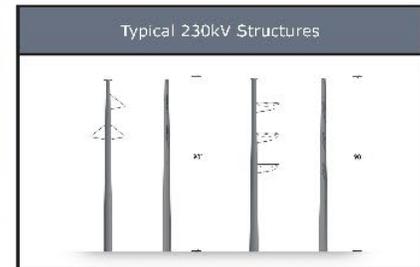


Photo Date and Time: April 25, 2023, 10:10 am

View Location: Approximate distance to nearest new structure from photo location is 0.1 miles.

Simulations were prepared using information provided by Invenenergy. Structure locations, colors, and heights may be different based on final engineering and design.

SunDog 230kV Gen-Tie Project | July 2023

Simulation from KOP 1: View from within the Pinal County Fairgrounds and Event Center

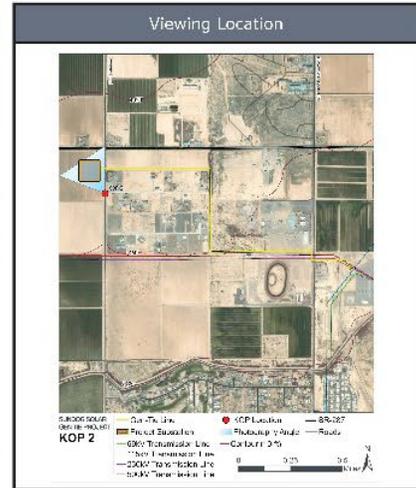


Exhibit J-6j. Open house display.



Existing Condition

KOP 2: View from residence at intersection of South Tweedy Road and David Lane looking northwest



Simulated Condition

KOP 2: View from residence at intersection of South Tweedy Road and David Lane looking northwest of the proposed Project substation and gen-tie

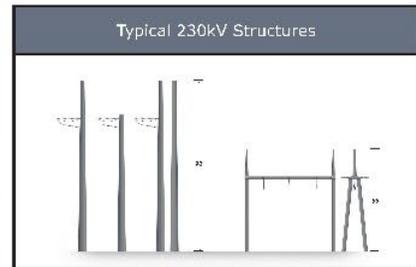


Photo Date and Time: April 25, 2023, 12:20 pm

View Location: Approximate distance to nearest new structure from photo location is 0.3 miles.

Simulations were prepared using information provided by Invenery. Structure locations, colors, and heights may be different based on final engineering and design.

This simulation is intended to be representative of proposed Project transmission and substation facilities. Proposed Project solar and battery energy storage facilities have not been included, and will be subject to vegetative visual perimeter screening, required by Pinal County.

SunDog 230kV Gen-Tie Project | July 2023

Simulation from KOP 2: View from residence at South Tweedy Road and David Lane



Exhibit J-6k. Open house display.

Invenergy | SunDog Solar Energy Center

Contact Information

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VIRTUAL OPEN HOUSE

SunDogSolarOpenHouse.com

Thank You

Exhibit J-6m. Open house display.

Birthplaces are as varied as our US presidents

By TOM BABBAGE
Contributing Writer

As with many other stories about our presidents, their birthplaces are just as varied and unusual. Some have only roadside markers, even of great Founding Fathers like Thomas Jefferson, and others have lasting tributes such as Theodore Roosevelt's. Others have replicas, and the former's, Franklin Pierce's, in the middle of a lake!

One might think well, most of our presidents were surely born in hospitals, but that actually isn't the case. The first president born in a hospital was Jimmy Carter, who was president from 1977-81, so it was less than 50 years ago. On top of that the next two presidents to take the oath weren't born in hospitals either. Bill Clinton would be the next, and one of only six of 46 different presidents who wasn't born at home.

George Washington's birthplace falls into the category of only a replica still standing. The reason is that while Washington was in the field commanding in the Revolutionary War, his birthplace was burned to the ground on Christmas Day 1779. What does stand is a memorial that looks like a much smaller Washington Monument. The National Park Service runs the site. Thomas Jefferson was a Founding Father and author of the Declaration of Independence, but the only thing to mark the site of his birth is a roadside marker in rural Charlottesville, Virginia. Jefferson's birthplace, like Washington's, was a victim of a house fire in 1779. It was then that when Jefferson began building his beloved Monticello.

One of the most obscure presidents, William Henry Harrison, has one of the most famous birthplaces. Harrison, son of Declaration of Independence signer Benjamin Harrison, was born at Berkeley Plantation on the James River in eastern Virginia. The plantation became embroiled in the Civil War when Union Gen. George B. McClellan used the sprawling plantation as a headquarters for his 100,000-strong army. The plantation is open for tours and remains a big tourist attraction in the area. Close to Berkeley Plantation is Sherwood Forest Plantation, the home of President John Tyler, the successor to Harrison.

Franklin Pierce, a dark horse and largely forgotten president, was born in a log cabin in 1804, and today his birthplace is in — the middle of a lake! There are multiple versions as to why and how, but at least the lake is named after him. His successor, James Buchanan, also born in a log cabin in 1791, is also an interesting story. There's a Pennsylvania state park at his actual birth site in Grove Gap, but the cabin was moved Mercersburg, Pennsylvania, which is about 5 miles from the actual site.

Replica of Lincoln home

Abraham Lincoln is widely regarded as our best president but the log cabin of his birth doesn't exist. A very symbolic replica is on display in Hodgenville, Kentucky, and considered a must see for anyone who loves history. It's run by the National Register of Historic Places, a fantastic job of preserving history and makes it easy and fun to understand. Civil War Gen. and 18th President Ulysses S. Grant's birthplace doesn't exist either. Pleasant, Ohio, for long as they moved just a year after but the site has been placed on the National Register of Historic Places and he's been there and it's truly a wonderful event.

Our next two presidents were born in Ohio, but a much lower stature than Grant, and that's putting it mildly! Rutherford B. Hayes' birthplace in Delaware, Ohio, stood until 1926 but was demolished after the community failed to raise enough money to purchase the home from Standard Oil. Now a marker exists at a BP gas station. Thankfully, Ohio History Connection is doing work to honor our 19th president. They've placed a new sign away from the station and in Delaware, which is about an hour outside Columbus, Ohio.

James Garfield's log cabin has a replica still standing but again, it has a twist. It's on the site of the Moxelton Hills Police and Public Works Department! Yes, it was hard to find. Believe me, after driving past it several times, I finally had to pull over (nature calls), and to my disbelief there it was at the site of the police department! Moxelton Hills is about 30 minutes from Cleveland and it's an interesting site considering Garfield was the last president born in a log cabin.

Warren G. Harding was president just after World War 1 and also a president from Ohio, born not far from the birthplace of Rutherford B. Hayes. Again, as with Hayes, all that stands is a fading marker on the property of a private home not related to the president. His successor, Calvin "Silent" Coolidge, was born in Plymouth, Vermont, in 1892, in a small home in Vermont. What makes his birthplace special was it also was the site where Coolidge took the oath of office in August 1923 from his father, of all people, who was a notary and justice of the peace. Imagine just finding out that your boss, President Harding, had died 3,000 miles away in San Francisco and you're now the president of the United States. Then add in that no one in town is qualified to give the oath of office except one person, your father! How did President Coolidge handle all this? He went to bed! Today in Plym-



President Richard Nixon's birthplace in Yorba Linda, California, has been preserved.

Tom Babbage/For PinalCentral



A replica of the log cabin where President Abraham Lincoln was born is in his birthplace of Hodgenville, Kentucky.

Courtesy of Andy Peter

outh, Vermont, the state runs his birthplace and the village surrounds it. His father's general store is still an operating store and the Plymouth Artisan Cheese factory appears on several cooking shows. You can order cheese directly from there. Beware, the business is often swamped and orders can take a while, but the cheese is worth it!

Jumping way forward in time to Richard Nixon, he was born in a modest farm home in Yorba Linda, California. The house still looks a lot like it did when Nixon was a youngster 100 years ago. It follows an example of Dwight D. Eisenhower's presidential library in Kansas, where his childhood home was encompassed into the library complex. Since Nixon's burial site is also on the library grounds, it means you can see where he was born, his museum and his burial site all at once, an honor that no other president can claim.

A hospital for Carter

Jimmy Carter was the first president to be born in a hospital, but it was no ordinary hospital, as it had only 60 beds, an X-ray machine and an operating room. But it was billed as a "Mayo Clinic" of the South, impressive for a small town like Plains, Georgia, in 1924. It was also the place where his mother obtained her nursing license. Today the site is a rehabilitation and nursing home.

Ronald Reagan's birthplace has been well preserved in Tampico, Illinois. When the future president was born on Feb. 6, 1911, the apartment was above a bakery, which had its ups and downs! The bakery later became a bank and today the sign on the building still reads "First National Bank." Thanks to the hard work of the curators and staff, the bank looks like an actual bank from that time period, and the apartment looks as it did on that cold February day. Presidential birthplaces are fascinating because they encompass where the person started from. Most are very ordinary places, unlike homes they lived in later in their lives. It's also very random, as some of our great presidents don't have a preserved birthplace, just a highway

marker due to forces out of anyone's control. Some lesser-known presidents have their birthplace completely intact. One you can't even visit as it's underwater, one you can see while filling up your car, and one you can visit if you need to visit a police station. Just one of the many stories from our presidents' beginnings.

Tom Babbage, of Casa Grande, is a longtime collector of presidential history.



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**City of Coolidge
Come Grow With Us**

**Waste Water Treatment /
Collections Operator I**

Recruitment No: PW23-004. **Open until filled.** Under general supervision, operates, repairs and maintains City of Coolidge Wastewater Treatment Plant equipment, systems and facilities. High School Diploma or G.E.D., and at least one (1) year experience in the maintenance and repair of wastewater facilities and systems or equivalent combination of education, training and experience. Arizona Department of Environmental Quality (ADEQ) Grade 1 Certified Wastewater Treatment and/or Grade 1 Wastewater Collections System Certification are required within one year of employment. Must possess a valid commercial Arizona Driver's License (CDL) class B with tanker endorsement. Must successfully complete a criminal background check and pre-employment drug screening. Salary \$41,721 - \$62,582 annualized. To be considered, submit a City Application to HR, City of Coolidge, 130 W Central Ave, Coolidge, AZ 85128-4904. For more information, contact the Human Resources Department at (520) 723-6060 or visit www.coolidgeaz.com.

Invenergy

Notice of SunDog Solar Generation Tie Line Project Public Open House

Location: Mary G. O'Brien Elementary School
1400 North Eleven Mile Corner Road
Casa Grande, AZ 85194

Date & Time:
Wednesday, July 26, 2023
4:30pm - 6:30pm

Invenergy will be hosting an open house for the SunDog Solar Generation Tie Line Project, an approximate 1.5-mile, 230-kilovolt, alternating current generation intertie transmission line (gen-tie) in Pinal County and Coolidge, Arizona. This will be an informal opportunity for the community to learn about the project, meet the team, and provide comments. Information will be on display and light snacks will be provided; there is no formal presentation planned.

A virtual open house will also be hosted at www.SunDogSolarOpenHouse.com.

The formal comment period for the project will extend from July 18, 2023, to August 16, 2023. To learn more about the project or provide feedback, please join us at the open house or reach out through one of the forums listed below:

Mail: SunDog Solar Energy Center
c/o SWCA Environmental Consultants
20 East Thomas Road, Suite 1700
Phoenix, Arizona 85012

Email: SunDogSolarHotline@invenergy.com
Voicemail: (866) 786-8656
Project Website: www.SunDogSolarEnergyCenter.com

Exhibit J-7a. Newspaper advertisement.

Ford Bronco Wildtrak, Maverick Tremor can handle the tough trails

By CHAD A. HAIRE
Contributing Writer

This week we get two vehicles from Ford, both designed for serious off-road use. First up is the Bronco with Wildtrak package. It has all the items needed for serious trails, plus larger 35-inch tires, up from the standard 33-inch wheels.

But it also has a lot of luxury fluff we don't need, like keyless entry, leather trim, and carpet floor mats. These are added to jack the price up, and at a hefty \$64K, certainly succeeds. This does include a removable solid roof, with separate soft cover. Due to the hot weather, we kept the hard roof on.

The base engine is a 2.3-liter turbo, but here we have the larger 2.7 turbo with 330 horsepower. It has plenty of power, and economy is listed at 17 mpg city, 17 highway, and 17 overall.

We racked about 400 miles in three days. On the highway, the removable roof didn't leak air, and wind noise was reasonably quiet considering. The sharp steering and excellent feedback keeps this rig in a straight line when cruising at 75 mph, something not possible in a Jeep Wrangler with its excessive play. Fuel economy is right on at 17 mpg.

When playing in the dirt, this is hard to beat. The modern suspension is very comfortable, even on the roughest trails. This means after a day in the desert, the driver isn't worn out, as is the case with many other brands of off-road SUV's.

The only gripe we have is the high price. These are near impossible to find on a dealer lot, so Ford loads them up with as many options as possible, knowing they will be sold the same day. The only other choice is to special order, and that can take a while, but is really your best bet.

Next up is a capable off-road rig, but at a smaller price of \$54K. That gets you a Maverick truck with Tremor package. This includes tow hooks, skid plate, large tires, raised suspension, transmission cooler, 4x4 control, and locking differential. There is also a drive mode, offering slippery, mud, sand, tow, and normal.

The Tremor has a 2.0-liter turbo engine. It's rated at 22/29 mpg in the normal 4x4 truck, but with raised suspension and more weight, this drops to 20/24 in the Tremor. But if you do a lot of in-pipe passenger, this rig certainly delivers. It has enough power, and the narrow width allows it to fit into small mule trails. The higher ground clearance keeps rocks away.

Our only complaint is at this price, you would think satellite radio would be standard. Only XM/Trim is offered. And like the Bronco, you will not find a Maverick on a dealer lot either, so fill out the special order sheet and wait.

Chad Haire, of Phoenix, test-drives vehicles for this feature.



Ford Bronco Wildtrak, above and left, and engine, below



Chad A. Haire/For PinalCentral photos



Ford Maverick Tremor, left and below



Progressives back Biden, but reservations do exist

CHICAGO (AP) — President Joe Biden would seem an unnatural fit for the activists at Netroots Nation, an annual gathering of protesters that was created to harness online rage over George W. Bush's administration. More recently, it has championed the message of economic populism from Sens. Bernie Sanders and Elizabeth Warren, two of Biden's rivals for the Democratic nomination in 2020.

But the antipathy toward Democrats seen as too mainstream or moderate did not largely extend to Biden at the group's recent conference in Chicago. Rep. Pramila Jayapal, leader of the Congressional Progressive Caucus, even concluded the event by recounting how she had become a Biden convert.

"When Biden was in, I was like, 'Oh, man,'" said Jayapal, D-Wash., lamenting that Sanders and Warren had fallen short in the presidential primary. "But I gotta tell you, I am a Biden fan now."

That brought cheers, which was no easy feat given that pro-Palestinian activists moments earlier had shouted down Rep. Jan Schakowsky, D-Ill., on the same stage.

At past Netroots conferences, then-House Speaker Nancy Pelosi, D-Calif., was booed and Black Lives Matter protesters disrupted a presidential candidate forum in 2016. Biden, as vice president, was heckled over Obama administration immigration policies.

Jayapal's comments point to Biden's progress in winning over his party's left wing, part of the coalition he is relying on to win a second term. Many progressives have cheered steep federal spending increases on major social programs, including as well as Biden's renewed plan to offer student debt relief after the Supreme Court struck down his original efforts.

"This isn't someone who's spent the first term doing all kinds of objectionable things," said Karthik Ganapathy, a veteran of Sanders' 2016 presidential campaign who also helped progressive Brandon Johnson win election as Chicago's mayor this spring. "I think the sense is, he's had a much more successful, impactful, consequential presidency than progressives expected."

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Exhibit J-7b. Newspaper advertisement.