Application

for a

Certificate of Environmental Compatibility

Catclaw Solar 230kV Generation Intertie Project

Prepared for:

State of Arizona
Power Plant and Transmission Line Siting Committee

Submitted by:

311SV 8me LLC

April 2023

Case No. TBD

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INTRODUCTION

Pursuant to Arizona Revised Statute (ARS) §40-360 *et seq*., 311SV 8me LLC (Applicant), a subsidiary of Avantus, is seeking a Certificate of Environmental Compatibility (CEC) granting authority to construct the Catclaw Solar 230-kilovolt (kV) Generation Intertie Project (Project). The Project is a proposed 230kV alternating current overhead transmission line (i.e., the generation intertie or gen-tie) and associated substation facilities (the Project Substation) planned for construction in Buckeye, Arizona. The northern portion of the Project includes two alternate routes: Option A and Option B. The Project would be constructed to connect the Catclaw Solar Project (Solar Project), an up to 250 megawatt (MW) solar photovoltaic energy generating facility and an up to 250MW battery energy storage system (BESS), to the regional electric grid at the existing Arizona Public Service Company (APS) Sun Valley Substation (Sun Valley Substation). Although the Solar Project is mentioned in this application, the Applicant seeks a CEC only for the Project gen-tie and Project Substation.

311SV 8me LLC is a subsidiary of Avantus, a top clean energy developer with more than a decade of success across the Western United States. Avantus has successfully developed, financed, and constructed over 2 gigawatts of operating solar projects and has one of the largest portfolios of smart power plants with integrated storage under development, including many industry-first projects.

The Project was included in 311SV 8me LLC's Ten-Year Plan filed with the Arizona Corporation Commission (Docket E-99999A-23-0016) on January 20, 2023. Project construction is anticipated to begin as early as Q1, 2024, with an in-service date as early as Q2, 2025.

Project Overview

The Project would be located within the municipal limits of the city of Buckeye. The Project includes two alternate routing options to accommodate ongoing landowner negotiations, which are expected to be resolved shortly. Option A would extend approximately 7 miles from the Solar Project's step-up substation (i.e., the Project Substation) to the existing Sun Valley Substation. Utilizing a slightly different final path into Sun Valley Substation, Option B would be 7.4 miles long. The Applicant is requesting authorization to construct the Project using either Option A or Option B, both of which are displayed on Figure 1, below, and described where relevant in each exhibit of the application.

The Project Substation would be in the northeast corner of the Solar Project boundary, approximately 9.5 miles north of the Sun Valley Parkway/Palo Verde Road exit on Interstate 10 (I-10). The existing Sun Valley Substation is located north of Sun Valley Parkway and south of the Central Arizona Project, approximately 15 miles north of I-10.

The Project would be sited within an approximately 200-foot-wide right-of-way (ROW). Approximately 4.6 miles of the Project ROW would be immediately parallel to an existing transmission corridor with two 500kV lines (Westwing to Palo Verde and Perkins to Palo Verde). The Project would traverse privately owned lands, with two spans crossing Sun Valley Parkway.

The Applicant notes that it may refine minor design characteristics for the Project and Project Substation during its final engineering phase. Representative structure diagrams for the Project are presented in Exhibit G.

Project Route, Option A

The proposed route for the Project is described below and shown on Figure 1:

- Option A would originate at the Project Substation within the northeast corner of the Solar Project. The Project Substation would be approximately 0.25 mile west of Sun Valley Parkway, between Mileposts 114 and 115.

- From the Project Substation, Option A proceeds east for approximately 0.7 mile, spanning over Sun Valley Parkway before turning north.
- Option A then proceeds north and northeast, parallel to and west of two existing 500kV transmission lines, for approximately 4.5 miles.
- Option A then turns northwest for approximately 1.2 miles, spanning over Sun Valley Parkway before turning north.
- Option A then turns directly north for approximately 0.4 mile, then directly west for approximately 0.2 mile, entering and terminating at the Sun Valley Substation.

To provide flexibility in the placement of specific transmission infrastructure, the Applicant is requesting authorization to construct the Project within a 200-foot-wide CEC corridor.

Project Route, Route B

Option B is described below and shown on Figure 1:

- Starting at the Project Substation, Option B follows the same alignment as Option A described above for approximately 4.4 miles.
- From that point, Option B proceeds northwest for approximately 1.1 miles, spanning over Sun Valley Parkway before turning north.
- Option B then turns directly north for approximately 0.75 mile.
- Option B then turns directly east for approximately 0.5 mile, then turns north for approximately 130 feet to rejoin Option A.

The total length of the Project using Option B would be approximately 7.4 miles. To provide flexibility in the placement of specific transmission infrastructure, the Applicant is requesting authorization to install the Project within a 200-foot-wide CEC corridor.

Project Substation

The Project Substation is expected to occupy approximately 3 acres, with dimensions of approximately 375 feet by 320 feet, in the northeast corner of the Solar Project. Specifically, the Project Substation would be located approximately 0.25 mile west of Sun Valley Parkway, between Mileposts 114 and 115. The Project Substation is likely to include a control building, 34.5kV switchgear, two step-up power transformers to increase the voltage to 230 kV, 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.

Proposed Interconnection

The Project would interconnect the Solar Project to the regional electric grid at the existing APS Sun Valley Substation. APS would install new equipment within the existing fence line of the Sun Valley Substation to facilitate the Project's interconnection. APS will perform the requisite substation upgrades in accordance with applicable electric utility standards.

Purpose and Need

The Project is needed to connect the Solar Project to the regional electrical transmission grid and would therefore help meet APS's growing system load. The Project would facilitate a new, reliable source of clean, renewable electricity for APS's customers and the State of Arizona. As such, the Project would support APS in meeting its increased need for adequate, economical, and reliable sources of electricity.

Collectively, the Project and Solar Project will provide economic benefits that include construction jobs, permanent jobs, and tax revenues.

Environmental and Public Siting Process

Siting Process

The siting process focused on identifying a reasonably direct route between the Project Substation, which must necessarily be located at the Solar Project, and the Sun Valley Substation. The Applicant sought to minimize environmental and community impacts and Project expenses by (1) selecting a direct route and (2) siting the route parallel to existing transmission facilities wherever possible. As noted above, the Applicant is requesting approval to construct the Project along Option A or Option B. Approximately 4.5 miles of Option A, or about two-thirds of the total route, would be immediately adjacent to a pair of 500kV transmission lines. With Option B, approximately 3.7 miles of the Project, about half of the total route, would be immediately adjacent to the existing 500-kV transmission lines. In either case, the Project would be consolidated with existing electrical infrastructure, helping to minimize the overall impact of the Project.

Public Outreach Process

The Applicant has coordinated with stakeholders including agencies, municipalities, and the public to provide information about the Project 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 assessment 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.

Additionally, as discussed in further sections, the Project would:

- be sited adjacent to existing transmission lines, helping to consolidate electrical infrastructure and minimize potential Project impacts,
- be compatible with existing land use and land use plans in the vicinity of the proposed route,
- not disturb any areas of unique biological wealth and would not impact special-status species,
- have minimal visual effects and would not disturb any known archaeological or historical sites of significance,
- not affect any recreation opportunities in the area, and
- not be 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 Rules R14-3-219 and R14-3-200, Exhibit 1. The Applicant is committed to minimizing and, where possible, avoiding environmental impacts and believes that the Project, using either Option A or Option B, is environmentally compatible with its surroundings. The Applicant therefore respectfully requests that the Power Plant and Transmission Line Siting Committee grant, and the Arizona Corporation Commission approve, a CEC for the construction of the Project, which is necessary to interconnect the Catclaw Solar Project to the regional electric grid.

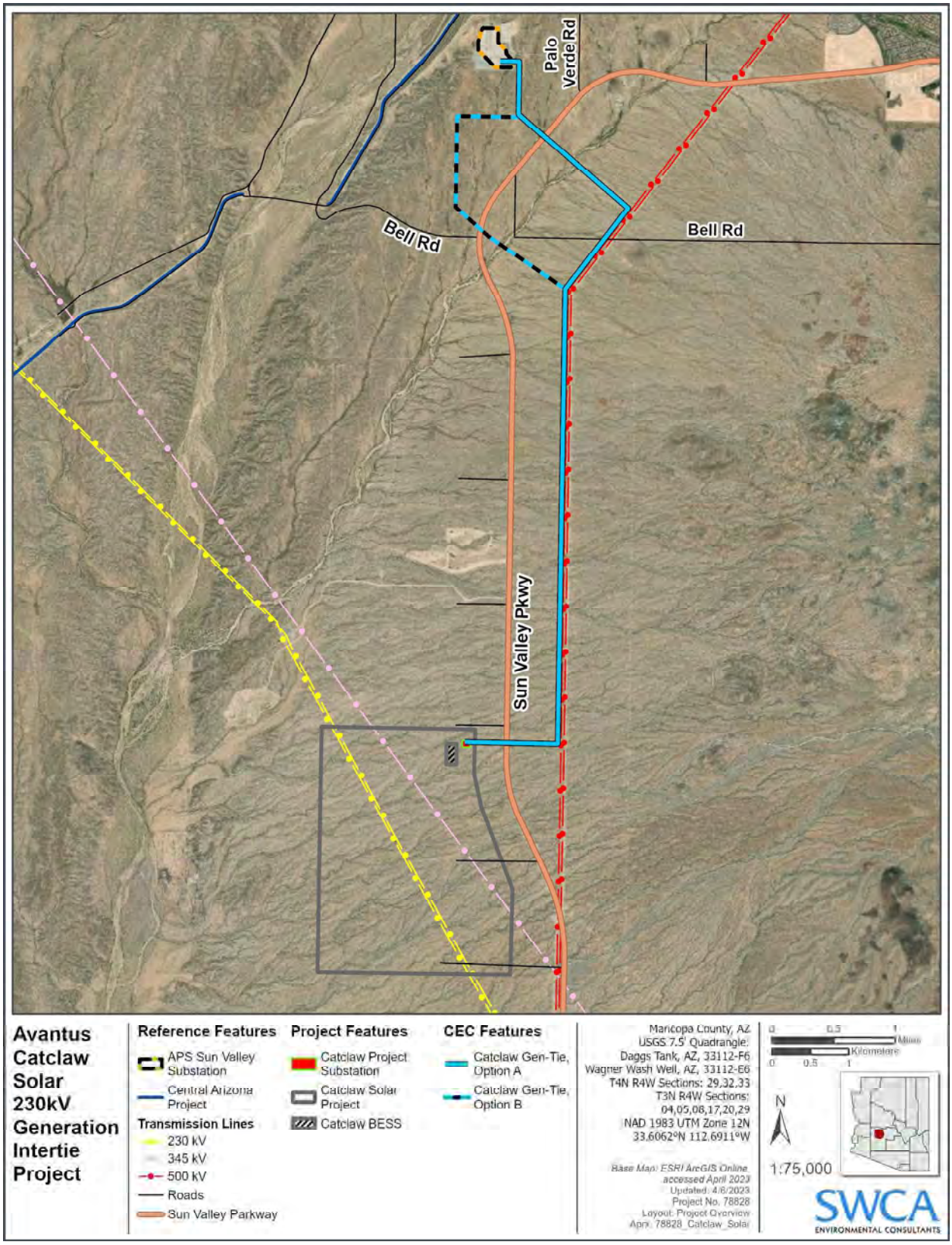

Figure 1. Proposed Project.

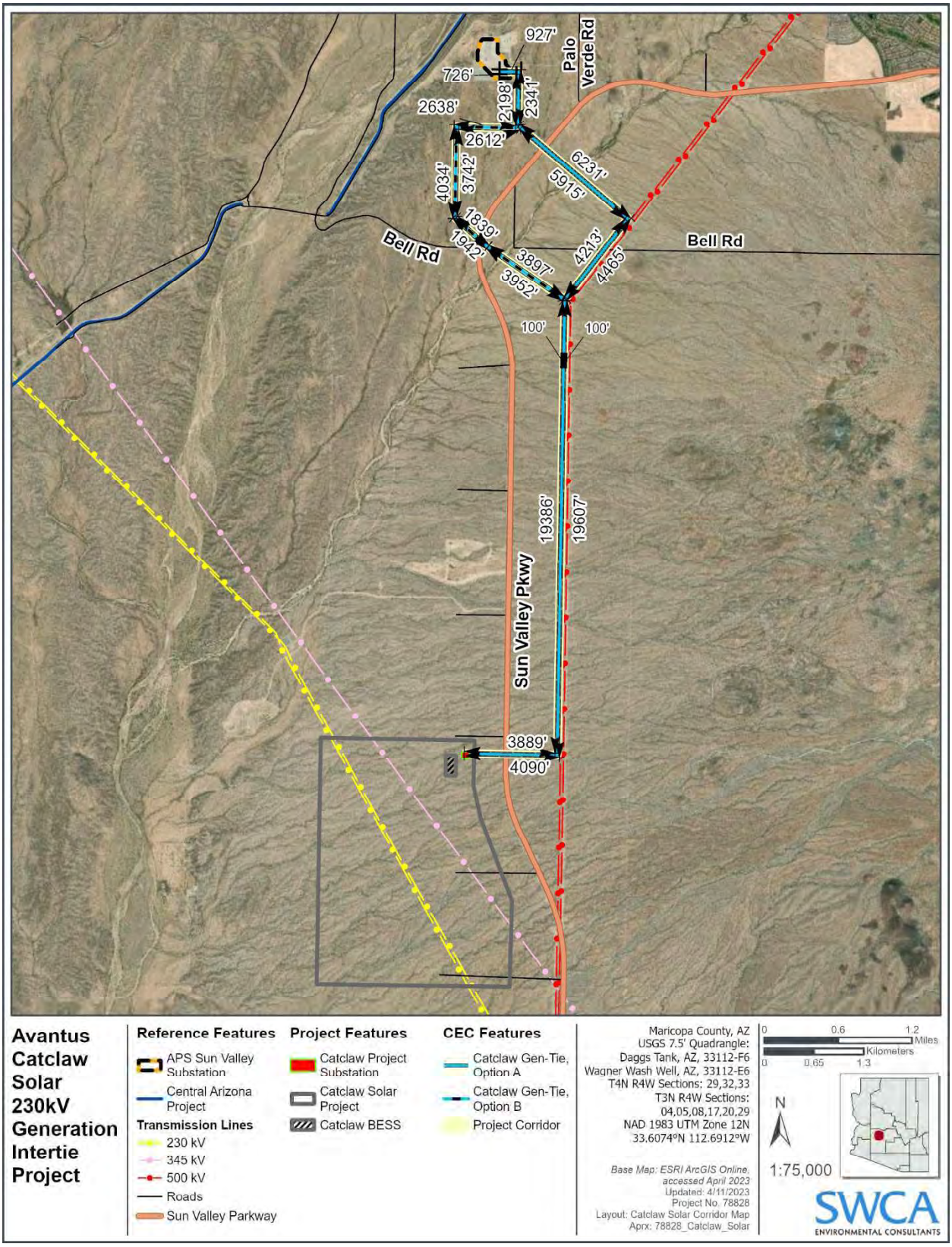

Figure 2. Requested corridor.

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APPLICATION FOR

CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY

1. **Name and address of the Applicant**
   311SV 8me LLC
   4370 Town Center Blvd., Ste 110
   El Dorado Hills, CA 95762

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**
   Tracy Hamilton
   Director, Permitting
   Avantus
   2375 E. Camelback Rd., Ste. 600
   Phoenix, AZ 85016
   Email: thamilton@avantus.com
   Phone: (702) 279-3445

3. **Date on which the applicant filed a Ten-Year Plan in compliance with ARS § 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-23-0016 on January 20, 2023.

4. **Description of the proposed facility, including:**

   a. **With respect to an electric generating plant:**

      Not applicable.

   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 Project is 230 kilovolt (kV) alternating current, single circuit.

         (2) **Description of the proposed structures:**

            The Project would use steel H-frame or monopole tangent structures, typically ranging from 90 to 125 feet tall. Near each substation and at turning points along the route, the Project would use three-pole dead-end structures. Within each substation, the Project may use A-frame riser structures. The structures are expected to have a weathering steel finish; conductors would have a non-specular finish to reduce visibility. Variations may be required to achieve site-specific mitigation objectives or meet site-specific engineering requirements. Conceptual drawings of the typical structure types that may be used for the Project are included in Exhibit G.

(3) Description of proposed switchyards and substations:

The purpose of the Project Substation is to step up the voltage of the solar-facility collector circuits from 34.5kV to 230kV. The Project Substation is expected to occupy approximately 3 acres, with dimensions of approximately 375 feet by 320 feet, in the northeast corner of the Solar Project. The Project Substation is likely to include a control building, 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.

(4) Purpose for constructing said transmission line:

The purpose of the Project is to connect the Catclaw Solar Project to the regional electric grid.

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 geographical points between which the Project will run are the same for Option A and Option B.

The southern terminus of the Project would be the Project Substation, located in Section 29, Township 3 North, Range 4 West, Maricopa County, Arizona. Specifically, the Project Substation is planned for construction on Assessor's Parcel Numbers 504-72-014C and 504-72-015A, approximately 0.25 mile west of Sun Valley Parkway between Milepost 114 and Milepost 115.

The northern terminus of the Project would be the existing Sun Valley Substation located on Assessor's Parcel Number 503-84-040A, in Section 29, Township 4 North, Range 4 West, Maricopa County, Arizona.

(2) Straight-line distance between such points:

The straight-line distance between the Project Substation and the existing Sun Valley Substation is approximately 5.6 miles.

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

Using Option A, the Project would be approximately 7 miles. The majority of Option A follows an existing transmission corridor with two 500kV transmission lines.

Using Option B, the Project would be approximately 7.4 miles. More than half of Option B would follow an existing transmission corridor with two 500kV transmission lines.

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:

With either Option A or Option B, the Project ROW would be up to 200 feet wide within the requested corridor. The location of the Project's alignment within the

corridor would be determined according to site-specific design and environmental factors.

The requested Project CEC corridor is 200 feet wide (100 feet on either side from the centerline of Option A and Option B) for the length of the Project. The requested CEC corridor is shown on Figure 2.

(2) Nominal length of spans:

The minimum span length between structures is estimated to be approximately 450 feet. The maximum span length between structures is approximately 885 feet. Depending on site-specific engineering requirements, shorter span lengths may be necessary where the Project may cross existing infrastructure.

(3) Maximum height of supporting structures:

At specific locations structures may be up to approximately 125 feet above ground.

(4) Minimum height of conductor above ground:

The minimum height of the conductor above grade would be determined by local, state, and national code requirements and is approximately 27 feet, as currently designed. All clearances will be in accordance with applicable codes and regulations.

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 to construct Option A is approximately $6 to $10 million. This is only an estimate and actual costs may vary. Additional project costs are not currently known.

The estimated cost associated with access to the land required for Option A is approximately $81,400.

The estimated cost to construct Option B is approximately $7 to $11 million. This is only an estimate and actual costs may vary. Additional project costs are not currently known.

The estimated cost associated with access to the land required for Option B is approximately $81,400.

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 Project Substation is shown on Figure 1; a preliminary layout of the Project Substation is included as Exhibit G-5. The Project Substation is expected to occupy approximately 3 acres, with dimension of approximately 375 feet by 320 feet, in the northeast corner of the Solar Project, approximately 0.25 mile west of Sun Valley Parkway, between Mileposts 114 and 115.

The proposed route for Option A is shown in Figure 1. Option A starts at the Project Substation and proceeds east for approximately 0.7 mile, spanning over Sun Valley Parkway. Option A then proceeds north and northeast, parallel to and west of existing transmission lines, for approximately 4.5 miles. Option A then turns northwest for approximately 1.2 miles, again spanning Sun Valley Parkway. Option A then turns

directly north for approximately 0.4 mile, then turns west for approximately 0.2 mile, entering and terminating at the Sun Valley Substation.

Starting at the Project Substation, Option B follows the same alignment as Option A for approximately 4.4 miles. From that point, Option B proceeds northwest for approximately 1.1 miles, spanning over Sun Valley Parkway before turning north. Option B then turns directly north for approximately 0.75 mile. Option B then turns directly east for approximately 0.5 mile, then turns north for approximately 130 feet to rejoin the alignment of Option A.

The Project Substation, Option A, and Option B are shown on Figure 1.

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.).

Option A is approximately 7 miles long and is located entirely on privately owned land, with two segments spanning Sun Valley Parkway, a principal arterial road maintained by the Maricopa County Department of Transportation.

Option B is approximately 7.4 miles long and is located entirely on private property, with two segments spanning Sun Valley Parkway.

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 Project, using either Option A or Option B, is located on land within the jurisdiction of the City of Buckeye, Arizona. Option A and Option B cross areas zoned in the City of Buckeye as Planned Community (PC). A gen-tie is considered a "utility facility, minor" and is permitted in all City of Buckeye zoning districts except the Downtown Residential (DR) zoning district. The Applicant has coordinated with the City of Buckeye and confirmed that the Project is permitted in the PC zoning district. The Applicant is currently working with the City of Buckeye regarding the land use and zoning requirements for the Solar Project. The Applicant will obtain all necessary land use entitlements from the City of Buckeye for the Solar Project prior to construction.

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 available secondary and field data related to land use, biological resources, visual resources, cultural resources, recreational resources, 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.

311SV 8me LLC

By: /s/ _____
Thomas Buttgenbach, 311SV 8me LLC
President

I HEREBY CERTIFY that on this 24th day of April 2023, I have delivered to the Arizona Corporation Commission twenty-five (25) copies of this Application for a Certificate of Environmental Compatibility.

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EXHIBIT A. LOCATION MAP AND LAND USE MAPS

In accordance with Arizona Administrative Code Rules of Practice and Procedure R14-3-219, 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 on 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:

- Exhibits A-1a and A-1b illustrate the land ownership and surface jurisdiction for the Project and land within 1 mile of the Project (Study Area).
- Exhibits A-2a and A2-b illustrate existing land use within the Study Area.
- Exhibits A-3a and A3-b illustrate planned land use for areas within the Study Area.

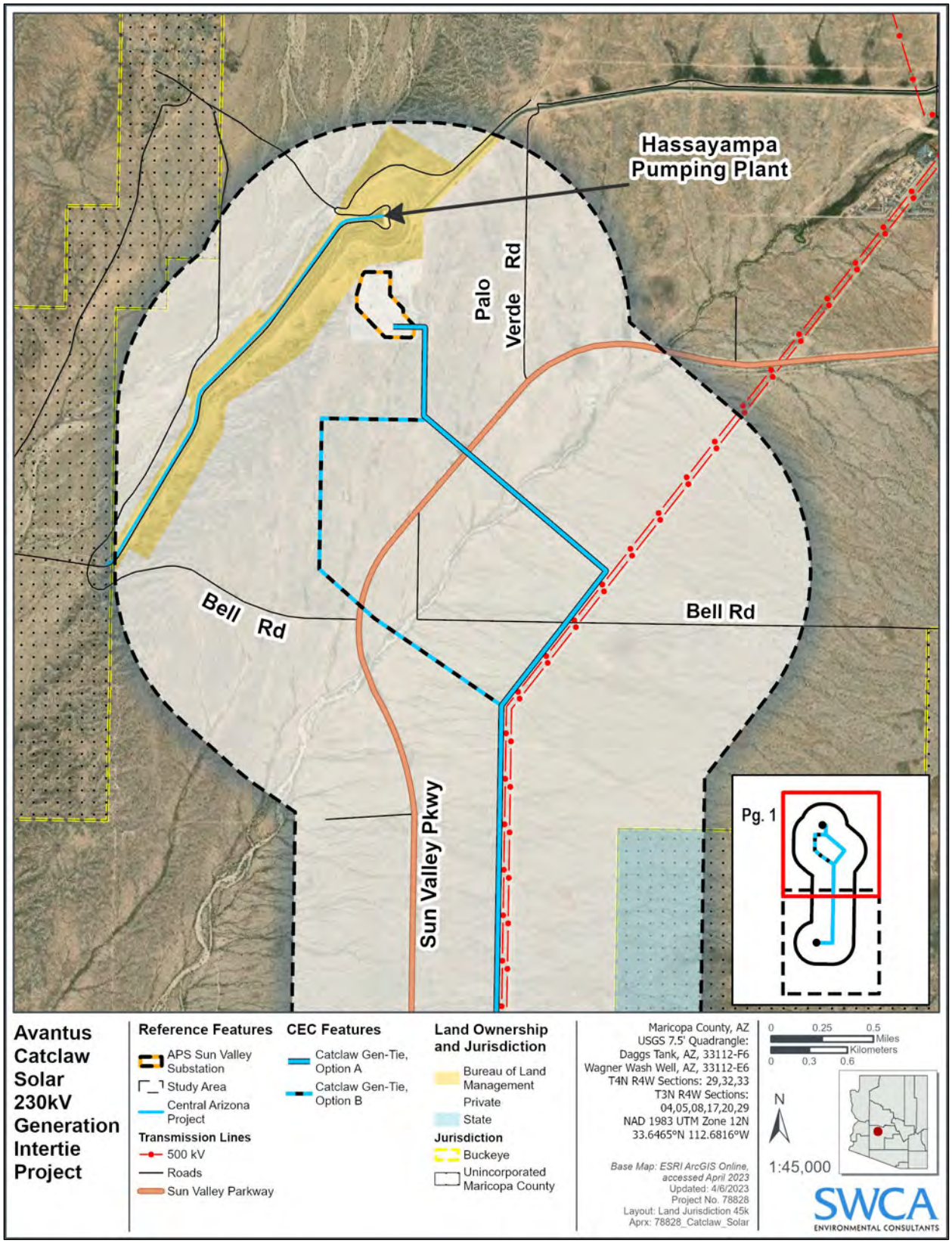

Exhibit A-1a. Land ownership and surface jurisdiction.

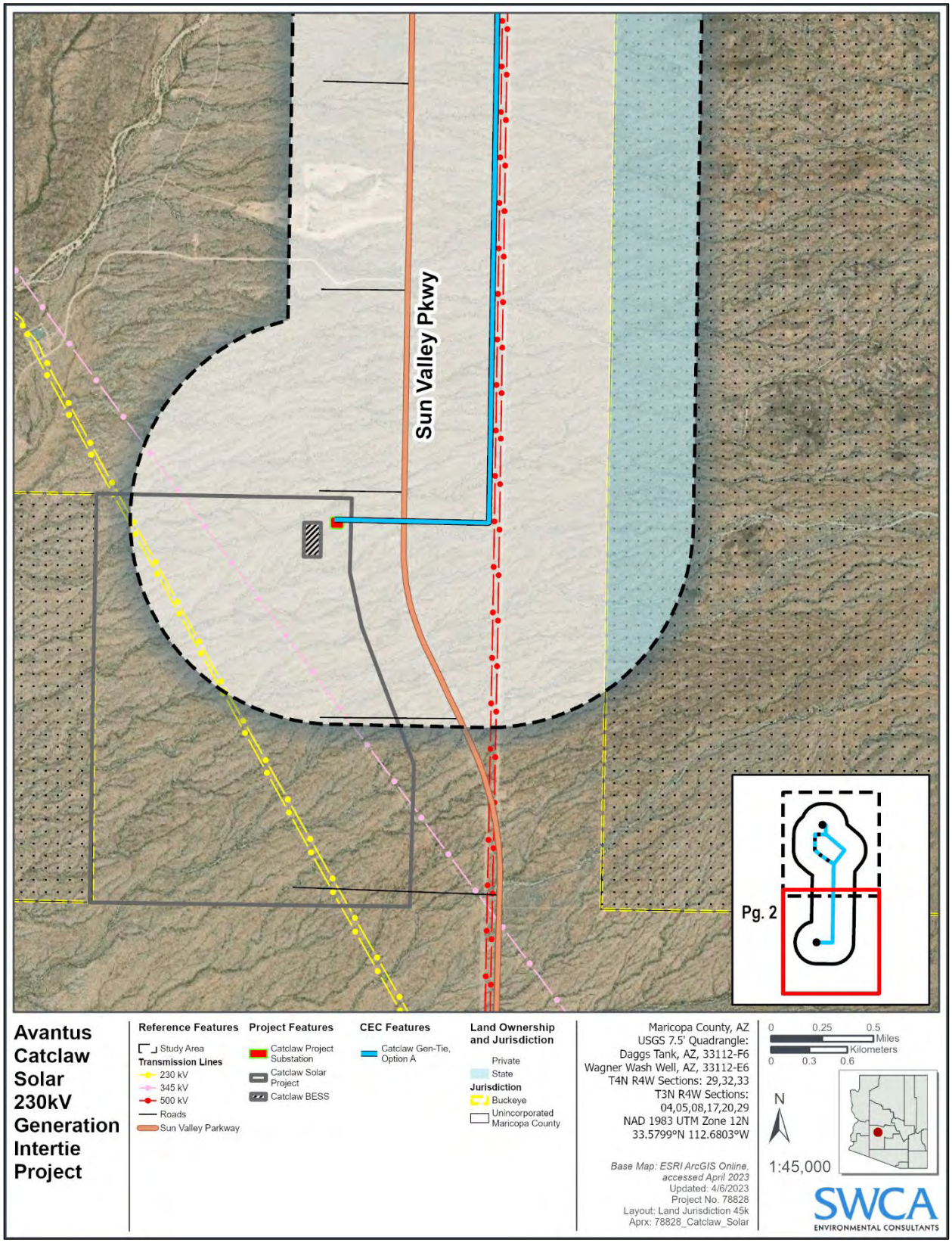

Exhibit A-1b. Land ownership and surface jurisdiction.

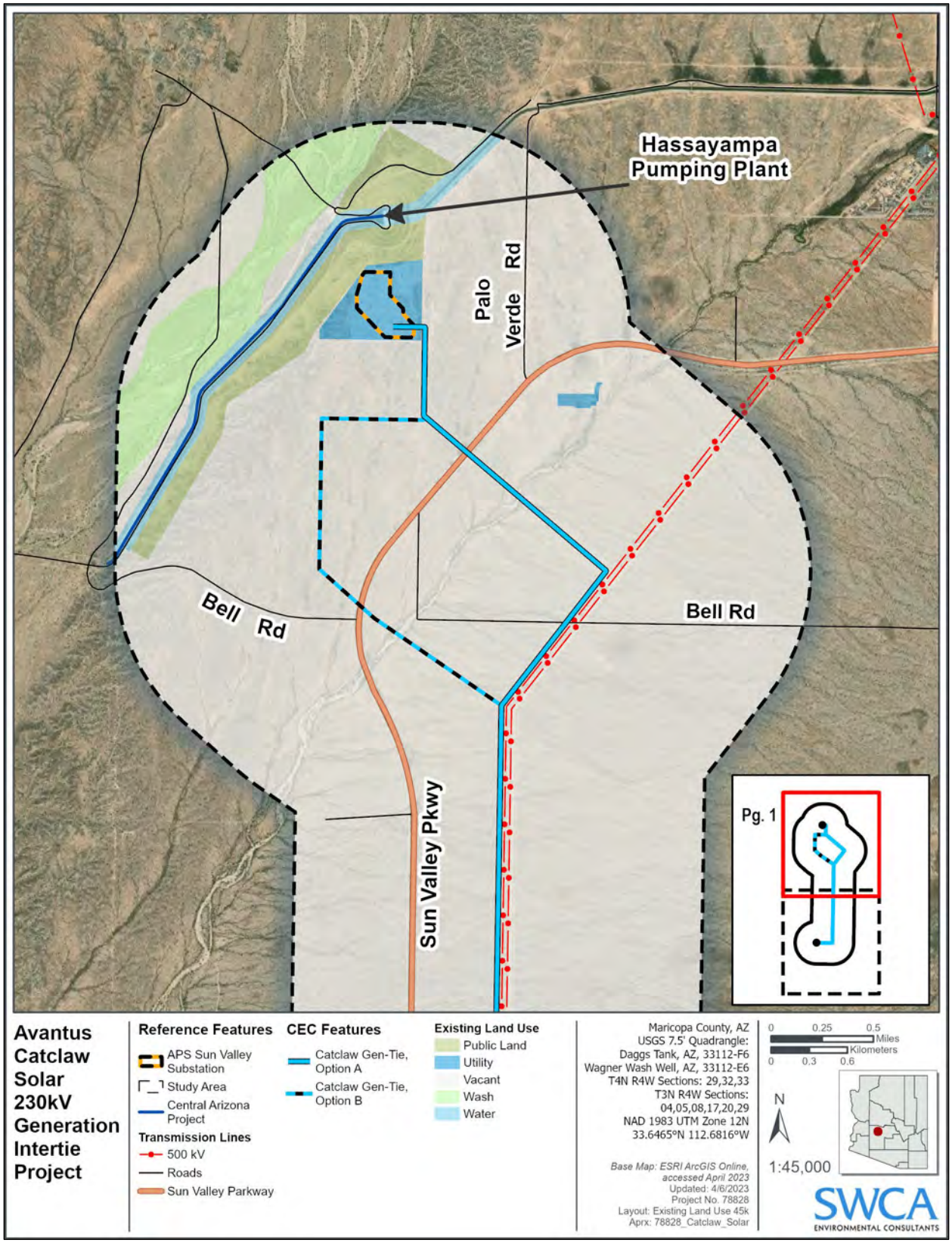

Exhibit A-2a. Existing land use.

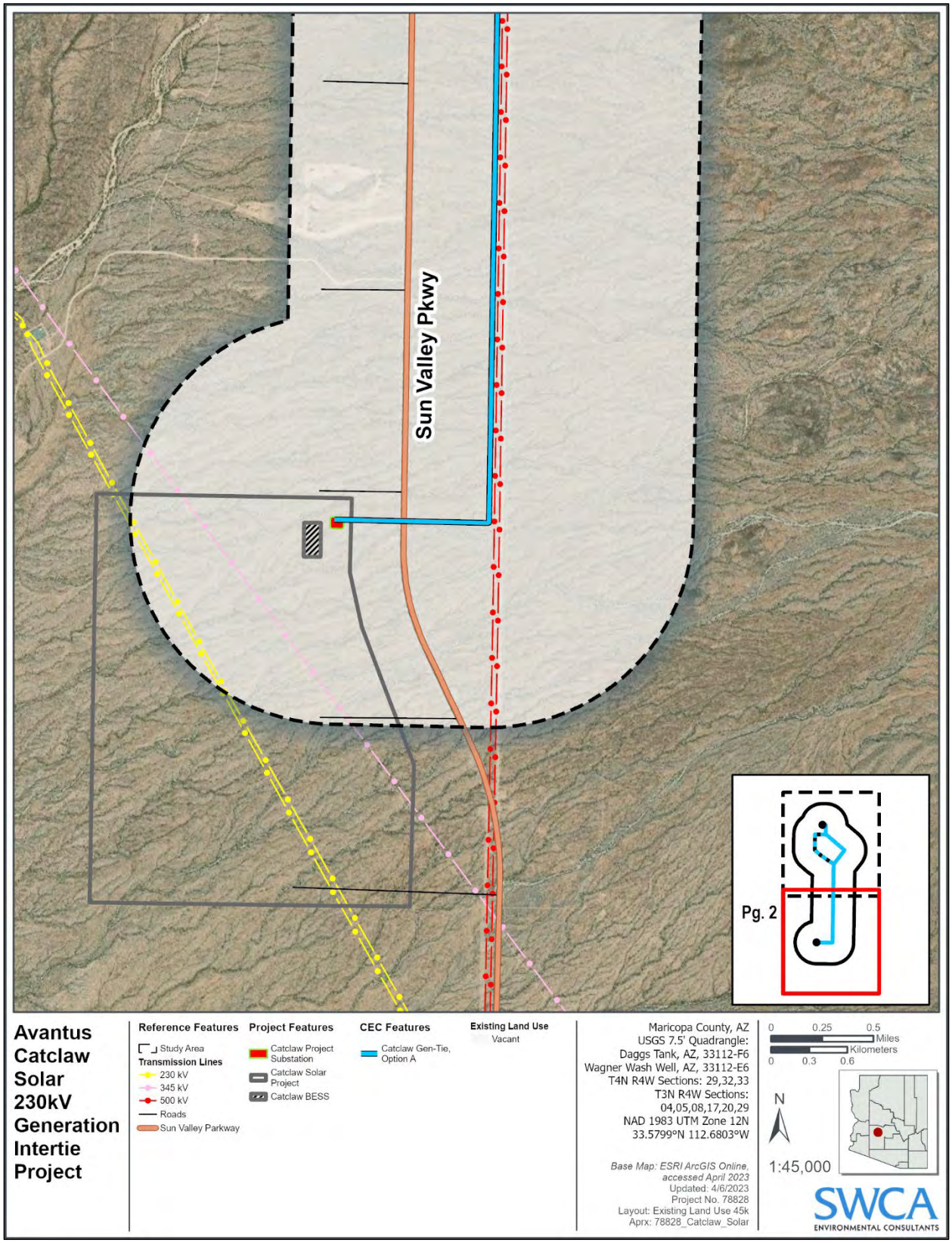

Exhibit A-2b. Existing land use.

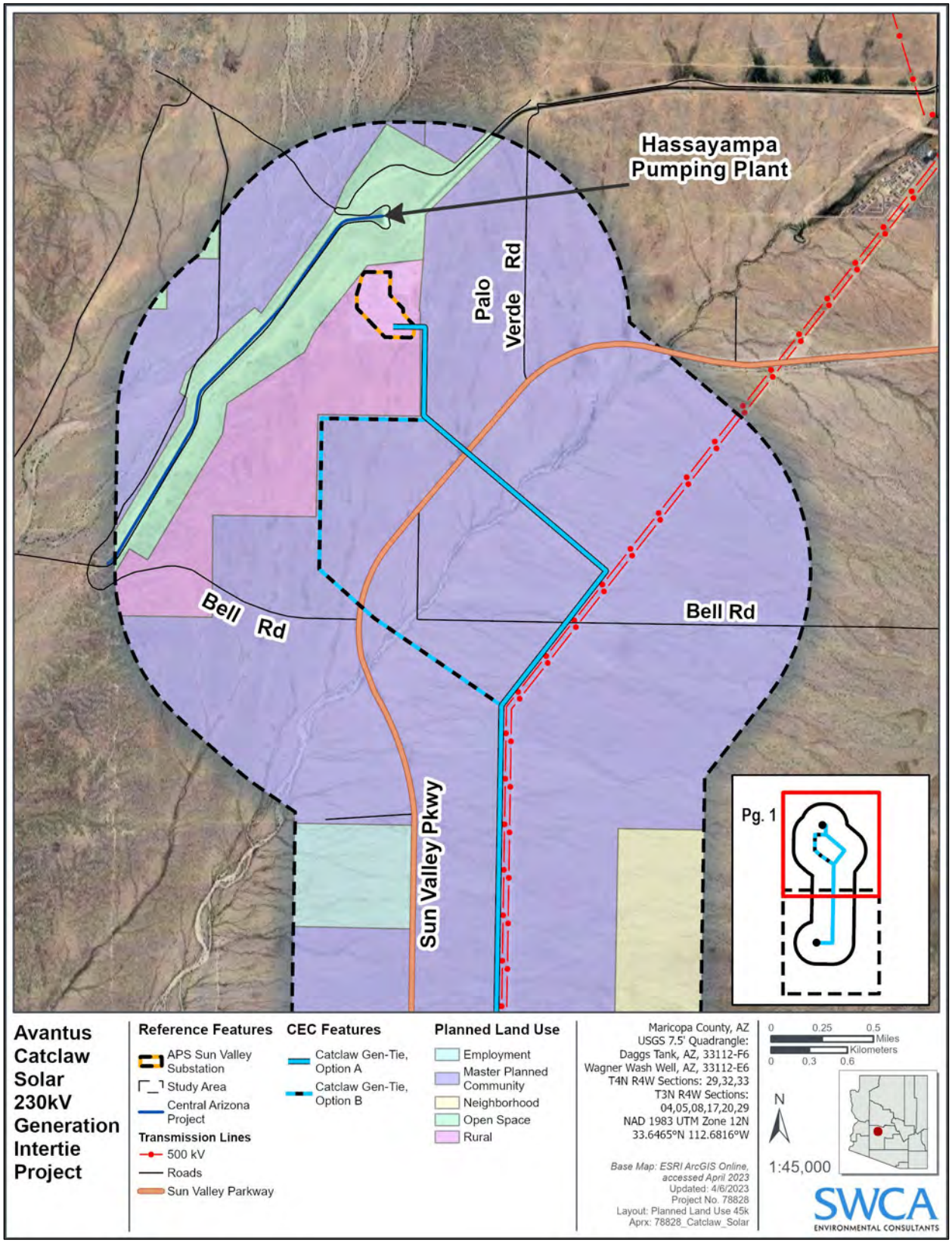

Exhibit A-3a. Planned land use.

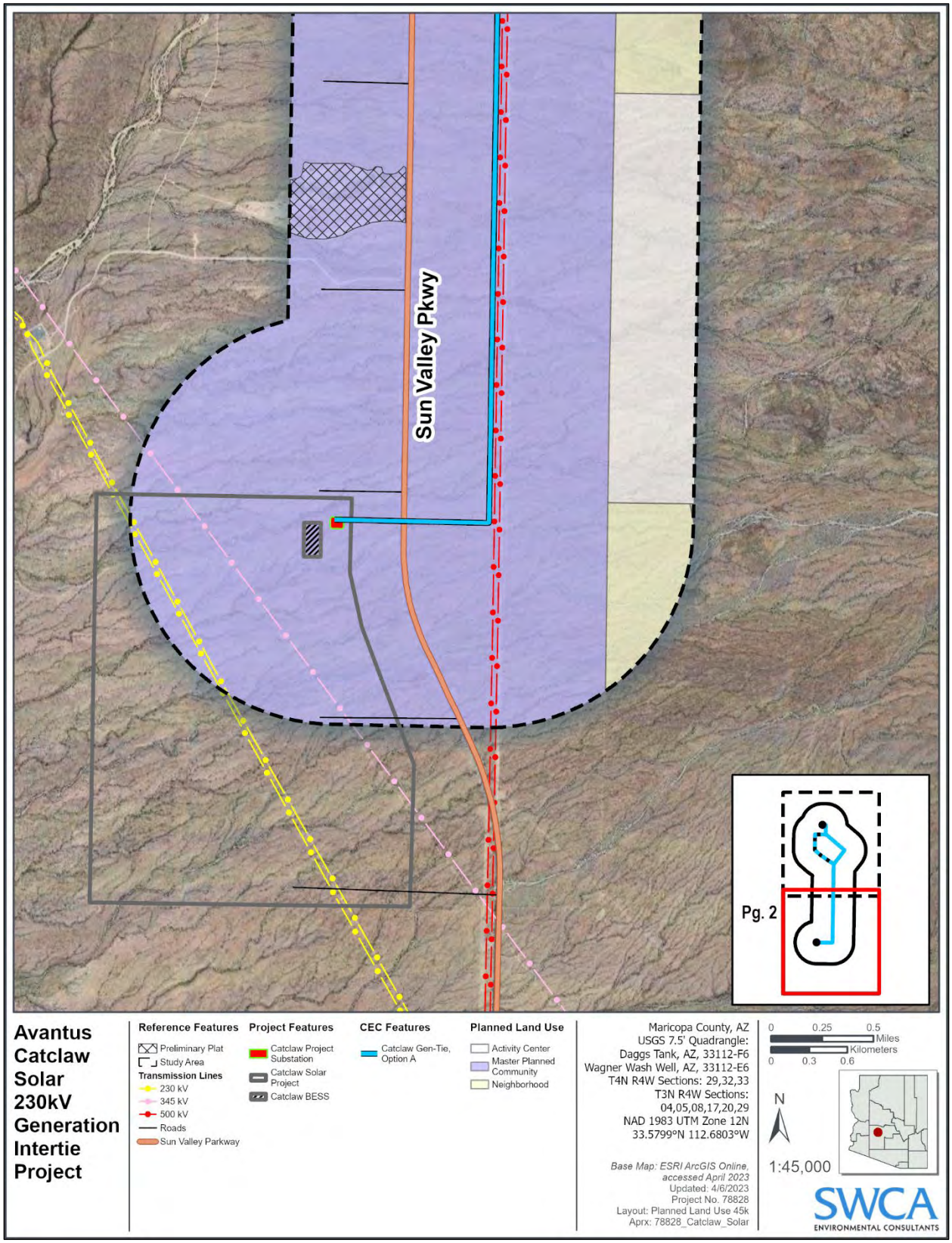

Exhibit A-3b. Planned land use.

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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

311SV 8me LLC retained SWCA Environmental Consultants (SWCA) to complete environmental analyses, including evaluations of land use, biological, visual, cultural, and recreational resources for the Project (inclusive of Option A and B) and a one-mile buffer (herein called the Study Area). The Study Area consists of lands under the jurisdiction of the City of Buckeye, Maricopa County, the Arizona State Land Department (ASLD), and the U.S. Department of the Interior Bureau of Land Management (BLM). The Project is proposed on private lands solely under the jurisdiction of the City of Buckeye, Arizona. This exhibit provides a detailed inventory and evaluation of existing and planned land uses within the Study Area. Biological, visual, recreational, and cultural resources, as well as noise evaluations, are discussed in subsequent Exhibits C, D, E, F, and I.

Land Use

Inventory

Methodology used in land use inventory included a review of desktop data such as maps and aerial imagery, including the City of Buckeye Planning and Zoning online GIS maps, Maricopa Association of Governments (MAG) Land Use Explorer (MAG 2023), and the Maricopa County Planning and Development Department's interactive mapping service (Maricopa County 2023). Additionally, relevant planning documents were reviewed including the *Imagine Buckeye 2040 General Plan* (City of Buckeye 2018) and *Vision 2030, Maricopa County Comprehensive Plan* (Maricopa County 2016).

Jurisdiction and Land Ownership

The Study Area includes lands under the jurisdiction of the City of Buckeye, Maricopa County, the BLM, and the ASLD; Exhibit A-1a and A-1b display landownership in the Study Area. The Project Substation, Option A, and Option B are on private property, with two short aerial crossings of the Maricopa County maintained Sun Valley Parkway.

Existing Land Use

Vacant and utility are the most prevalent land use categories in the Study Area. Other land uses within the Study Area include public land, transportation, wash, and water. Overall, the Study Area can be described as rural in character, with large amounts of vacant land and transmission infrastructure present. Several high-voltage transmission lines exist within the Study Area, as shown in Table B-1. The existing land uses within the Study Area are displayed on Exhibits A-2a and A-2b and described in detail below.

Public Land – The BLM Hassayampa Field Office manages the land directly surrounding the Central Arizona Project (CAP) Hayden-Rhodes aqueduct and Hassayampa Pumping Plant; the CAP is managed and operated by the Central Arizona Water Conservation District (CAWCD).

Utility – Utilities within the Study Area include six existing high-voltage transmission lines (see Table B-1) and the existing Arizona Public Service Company (APS)–owned Sun Valley Substation.

Table B-1. Transmission Lines in the Immediate Vicinity of the Project

Owner	Voltage
Arizona Public Service Company	500 kV
Arizona Public Service Company	500 kV
Unknown	500 kV
Western Power Area Administration	345 kV
Arizona Public Service Company	230 kV
Arizona Public Service Company	230 kV

Transportation – Transportation in the Study Area is predominately associated with Sun Valley Parkway, a four-lane roadway with a functional roadway classification of "principal arterial" (MCDOT 2023a).

Vacant – Numerous large tracts of privately and publicly owned undeveloped land are present within the Study Area, including State Trust parcels administered by the ASLD.

Water – Water use is associated with the CAP canal system and the Hassayampa Pumping Plant located in the northern portion of the Study Area.

Wash – Wash land use is associated with the Hassayampa River, which travels through the northernmost part of the Study Area, parallel to the CAP.

Future Land Use

Data discussed in this section were derived from the *Imagine Buckeye 2040 General Plan* (City of Buckeye 2018), the *Vision 2030, Maricopa County Comprehensive Plan* (Maricopa County 2016), and field studies. In March 2023, the Applicant sent letters to relevant jurisdictions to provide Project information and request new or additional information on plans or planned developments in the vicinity of the Project. Exhibit H provides a copy of the letter, written responses, and other correspondence from relevant jurisdictions.

Future land uses within the Study Area are mapped on Exhibits A-3a and A-3b and can generally be characterized as suburban. Specifically, *Imagine Buckeye 2040 General Plan* describes planned land uses within the Study Area as *activity center*, *employment*, *master planned community*, *neighborhood*, *open space*, and *rural*. The Project is proposed on parcels with a planned use designation of *master planned community* and *rural*, both of which allow for infrastructure projects, defined as ". . .all types of non-building, man-made structures and systems, such as, utility pipes, electrical power generation and transmission systems, roads bridges, water and sewer treatment facilities and other similar systems and structures . . ." (City of Buckeye 2018).

The Project crosses various master planned communities including Sun Valley Villages I&II and Sun Valley Villages III&IV. The City of Buckeye approved a community master plan for Sun Valley Villages I&II in 2006. An area plan figure for Sun Valley Villages III&IV is available for review on the City of Buckeye's planning and zoning webpage (City of Buckeye 2023). Neither master planned community has started construction; the Applicant has coordinated with the current landowner to develop the Project. As noted above, Option A and Option B cross areas zoned as Planned Community (PC). A gen-tie is considered a "utility facility, minor" and is permitted in all City of Buckeye zoning districts except the Downtown Residential (DR) zoning district.

The Teravalis Master Planned community has been platted on approximately 100 acres west of Sun Valley Parkway and approximately one mile north of the Project Substation. Preliminary land development activities appear to be underway at the site. The platted area is displayed on Exhibit A-3a.

Impact Assessment and Results

Land use impacts may be defined as restrictions on land use that would result from the construction or operation of the Project, or incompatibility with existing land use plans. Typically, restrictions on land use would result from ROW or easement acquisition across a property. To minimize land use impacts, both Option A and Option B were planned to follow existing linear features such as existing transmission lines and roadways, where feasible.

Option A is approximately 7.0 miles long; Option B is approximately 7.4 miles long. Both routes traverse private property with two portions that would aerially cross the Maricopa County Department of Transportation maintained Sun Valley Parkway. No structures are proposed on public land. The Project would generally follow existing linear features including Sun Valley Parkway and two 500kV transmission lines. Neither a general plan amendment nor a zoning district change are required to construct the Project gen-tie. Overall, the Project would minimize impacts by paralleling existing linear features and is compatible with existing and future land uses. Therefore, the Project, using Option A or Option B, would have minimal impact on existing and planned land use.

Groundwater and Water Use Considerations

Relevant Statute

As stated in ARS 40-360.13, *For facilities subject to the requirements of this article within the service area of a city or town in an active management area, as such terms are used and defined in title 45, chapter 2, the power plant and transmission line siting committee shall consider, as a criterion for issuing a certificate of environmental compatibility, the availability of groundwater and the impact of the proposed use of groundwater on the management plan established under title 45, chapter 2, article 9 for the active management area.*

Overview and Impact Assessment

The Project is within the City of Buckeye, which is in the Phoenix Active Management Area (AMA). The AMAs were established under Arizona's 1980 Groundwater Management Act (ARS Title 45, Chapter 2).

The Project would not require new groundwater wells, and the Applicant does not anticipate the use of any existing groundwater wells during construction or operation of the Project. Water necessary for dust suppression for construction and maintenance activities would likely be purchased from a commercial source or a water user with sufficient rights and appropriation. Water would then be trucked to the Project site where it would be stored in an on-site water storage tank. Therefore, the Project would have no impact on the Phoenix AMA; thus, it is fully compatible with the management plans of the Phoenix AMA, as required.

Literature Cited

Arizona Department of Transportation. 2020. *Map Book, 2020 Edition*. Available at: https://azdot.gov/sites/default/files/media/2020/10/2020-mapbook.pdf. Accessed March 2023.

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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 Environmental Consultants (SWCA) conducted a biotic resource review to identify areas of biological wealth and the rare, threatened, and/or endangered species that may occur at or in the vicinity of the Project. SWCA consulted data sources including the following:

- Topographical and aerial maps, 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 (Exhibits C-1a through C-1k).
- Species information obtained from the USFWS Environmental Conservation Online System, the Arizona Game and Fish Department (AGFD) Online Environmental Review Tool (Exhibits C-2a through C-2k), 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 Online Environmental Review Tool applied a 3-mile buffer beyond the Project Area. This buffer fully encompasses the one-mile radius Study Area.

In addition, a SWCA biologist with expertise in the 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 March 2, 2023, and April 4, 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 the 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 threatened or endangered 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 many wildlife species are regulated in some manner through the **AGFD's hunting and fishing license system**.

- Arizona prepared a Comprehensive Wildlife Conservation Strategy in 2006 (AGFD 2006), later renamed 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 due to substantial data gaps and unknown conservation status but for which 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-l 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 the following categories: 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) (Arizona Revised Statutes 3-903; Arizona Administrative Code 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, agaves, yuccas, 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.

- The ADA administers Arizona noxious weed regulations under Arizona Administrative Code R3-4-245. The ADA 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

SWCA biologists with expertise in the biology of flora and fauna of the region surveyed the Study Area on March 2 and April 4, 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 February 28 and April 6, 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 Exhibits C-1a through C-1k) (USFWS 2023a). In addition, the AGFD Online Environmental Review Tool was queried on February 27 and April 6, 2023, to generate a list of special-status species with records within 3 miles of the Project Area and a list of SGCNs with modeled suitable habitat intersecting the Project Area (see Exhibits C-2a through C-2k) (AGFD 2023b). Lastly, SWCA reviewed the AGFD's Project Evaluation Program comment letter dated April 3, 2023, and incorporated relevant information and recommendations into this Application (see Exhibit H-5).

Summary of Occurrence

The USFWS and AGFD identified several endangered, threatened, candidate, and other special-status species that are known to occur or may occur in the region (i.e., within the Study Area for the USFWS and within the Project Area plus a 3-mile buffer for the AGFD). These special-status species and the likelihood of their presence in the vicinity of the Study Area 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 Riparian Ecosystem IBA, is approximately 16 miles south of the Study Area along the Gila River (Audubon 2023).

Areas of biological wealth in the vicinity of the Project include the Hassayampa Conservation Opportunity Area (occurring across the northern portion of the Study Area), Maricopa County Landscape Movement Area #1 (CAP canal), Maricopa County Riparian Movement Area #43 (Wagner Wash), Potential Linkage Zone #65 (White Tanks – Hassayampa River), an unnamed Wildlife Connectivity Zone, and a named

Wildlife Connectivity Zone (White Tanks-Belmonts-Vultures-Heiroglyphics CA) occurring in the vicinity of the Study Area (AGFD 2023a). Sun Valley Parkway occurs within the Project Area and may act as a barrier to wildlife movement.

The Hassayampa Conservation Opportunity Area is composed of lands within the Hassayampa River floodplains from its confluence with the Gila River upstream to the Town of Wickenburg. This area provides a crucial travel corridor for wildlife, habitat for upland and riparian species, and migration stopover sites and breeding habitat for migratory birds.

Potential Linkage Zones, including Linkage #65 (White Tanks – Hassayampa River), "represent areas that are important to Arizona's Wildlife and natural ecosystems" (Arizona Wildlife Linkage Workgroup 2006). Species known to utilize this linkage zone include bighorn sheep (*Ovis canadensis*), bobcat (*Lynx rufus*), javelina (*Tayassu tajacu*), mule deer (*Odocoileus hemionus*), mountain lion (*Puma concolor*), and Sonoran desert tortoise (*Gopherus morafkai*). Current threats and barriers to wildlife that occur within the linkage zone include border security, Sun Valley Parkway, and urbanization throughout the area.

Landscape Movement Area #1 (CAP canal) acts as both a barrier and a linkage opportunity within Maricopa County. The footprint of the canal currently creates a barrier to wildlife movement. However, right-of-way easements on lands adjacent to the canal could function as a linkage for some wildlife species (AGFD 2012). Species known to utilize this movement area include coyote (*Canis latrans*), javelina, kit fox (*Vulpes macrotis*), mule deer, and various raptor species. Current threats and barriers to wildlife movement in this area include urbanization, the CAP canal itself, development, roadways, developed recreational facilities, and agricultural development.

Riparian Movement Area #43 (Wagner Wash) contributes to connectivity between White Tank Mountains and Hassayampa River but does not directly connect the two areas, whereas Wildlife Connectivity Zones are broadly defined areas considered crucial to maintaining landscape connectivity for species movement as opposed to a distinctive pathway for species movement. Species known to utilize this movement area include mountain lion, mule deer, javelina, and Sonoran desert tortoise. Current threats and barriers to wildlife movement in this area include Sun Valley Parkway, urbanization, new arterial roads, the CAP canal, and the Festival Ranch.

Federally Listed Threatened and Endangered Species

One species listed as endangered, 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 and endangered species are California least tern (*Sterna antillarum browni*) and yellow-billed cuckoo (*Coccyzus americanus*). The candidate species identified in the USFWS species list is monarch butterfly (*Danaus plexippus*). The species' federal status and potential for occurrence in the vicinity of the Project are presented in Table C-1.

Table C-1. Evaluation of Federally Listed Species Occurrences in the Vicinity of the Project Area

Common Name (Scientific Name)	Status*	Range or Habitat Requirements	Occurrence Status
Birds			
Bald eagle (*Haliaeetus leucocephalus*)	BGEPA MBTA	Occur in aquatic habitats with open water or Southwest arid regions with available food and roost sites. Nonbreeding eagles range 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, and eagles may move through the area.

Common Name (Scientific Name)	Status*	Range or Habitat Requirements	Occurrence Status
California least tern (*Sterna antillarum browni*)	E	Forms nesting colonies on barren to sparsely vegetated areas. Nests in shallow depressions on open sandy beaches, sandbars, gravel pits, or exposed flats along shorelines of inland rivers, lakes, reservoirs, and drainage systems at elevations below 2,000 feet above mean sea level (amsl). Found in Maricopa, Mohave, and Pima Counties.	Unlikely to occur. Suitable habitat for species occurrence is not present in the Project Area or the Study Area. The nearest potentially suitable habitat is approximately 16 miles south of the Study Area along the Gila River.
Golden eagle (*Aquila chrysaetos*)	BGEPA MBTA	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.
Yellow-billed cuckoo (*Coccyzus americanus*)	T	Typically found in riparian woodland vegetation (cottonwood [*Populus* sp.], willow [*Salix* sp.], or saltcedar [*Tamarix ramosissima*]) 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 16 miles south of the Study Area along the Gila River.
Insects			
Monarch butterfly (*Danaus plexippus*)	C	Habitat is complex. Generally, breeding areas are virtually all patches of milkweed (*Asclepias* sp.). The species occurs throughout Arizona during the summer and migrates to winter in Mexico and California, though 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 en route to larval food plants or nectar resources. No *Asclepias* species were observed in the Project Area for larval use, but nectar sources are available for foraging and migration (Mapper 2023).

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

Sources: 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; MBTA = Migratory Bird Treaty Act; USFWS status: C = candidate; E = endangered; T = threatened

Bald and Golden Eagles

Bald and golden eagles are protected under both the MBTA and the BGEPA.

The bald eagle is protected under the MBTA and BGEPA and is a 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 meters in height) deciduous or coniferous trees, which tend to be located near aquatic foraging sites (<50 meters) but may be located 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/non-breeding 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 non-breeding range of the species and 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 65 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 are 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 sizeable 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), and 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 in the Mohawk Mountains, approximately 87 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.

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.
- SGCN in Arizona, which are species identified by the AGFD as warranting heightened attention because of low and declining populations, are prioritized into tiers. Tier 1 species are those that the AGFD has deemed vulnerable and that are federally listed as either 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 CCA, 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 due to substantial data gaps and unknown conservation status, but where conservation concern may be warranted.

The species in these categories (other than those also designated as federally threatened or endangered, candidate, experimental non-essential populations, or BGEPA-protected species, which are addressed above) have occurrence records or predicted habitat modeled within 3 miles of the Project Area (AGFD 2023b). These species are discussed and listed below 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 website (USFWS 2023b)

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

Common Name (*Scientific Name*)	Habitat and Notes	Status*		Occurrence Status Project Area
		Federal	State (Tier)	
Amphibians				
Arizona toad (*Anaxyrus microscaphus*)	Found in rocky streams bordered by willows (*Salix* spp.) and cottonwoods (*Populus* sp.), predominantly within pine (*Pinus* sp.)–oak (*Quercus* spp.) forests. Have been found in irrigation ditches, flooded irrigation fields, and reservoirs. Adults are active at temperatures between 22 and 35 degrees Celsius. Adults are nocturnal, while the young exhibit diurnal activity.	Under 12-month ESA Review	SGCN (2)	Unlikely to occur. Suitable habitat is not present within the Project Area.
Lowland leopard frog (*Lithobates yavapaiensis*)	Found in rocky streams, in canyon habitats surrounded by conifer forests or in ponds and stream pools. Usually found in areas with scrub desert biotic communities. Greatest threats to species continuation include habitat alteration, fragmentation, and introduction of non-native 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 or Study Area.
Sonoran Desert toad (*Incilius alvarius*)	Found in Sonoran desertscrub, semidesert grasslands, oak, and occasionally pine-oak woodland habitats up to about 5,800 feet. Associated with major rivers and edges of agriculture; though 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., wash habitat) occurs within the Project Area. However, breeding is unlikely as no permanent ponds or streams occur within the Project Area or Study Area.
Birds				
Abert's towhee (*Melozone aberti*)	Found often in riparian areas among dense understories containing cottonwood and mesquite bosques. Have been found in agricultural fields.	MBTA	SGCN (2)	May occur. Suitable habitat occurs within the Project Area and Study Area.
American bittern (*Botaurus lentiginosus*)	Found in wetlands dominated by tall dense vegetation and breed exclusively in wetlands, primarily freshwater wetlands and marshlands.	MBTA	SGCN (2)	Unlikely to occur. No wetlands or marshes occur within the Project Area or Study Area.
American kestrel (*Falco sparverius*)	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 tress, abandoned woodpecker cavities, cavities in buildings or cliffs, and similar sites.	MBTA BCC†	SGCN (2)	May occur. The Project Area and Study Area contain suitable habitat for foraging and nesting in woodpecker cavities.
American peregrine falcon (*Falco peregrinus anatum*)	Occurs in forested habitats near sheer cliffs, particularly next to riparian forests.	MBTA	SGCN (1)	Unlikely to occur. Suitable habitat for species occurrence is not present within the Project Area or Study Area.

Common Name (*Scientific Name*)	Habitat and Notes	Status*		Occurrence Status Project Area
		Federal	State (Tier)	
Bendire's thrasher (*Toxostoma bendirei*)	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 desertscrub biotic communities. Nesting is known to occur in low trees, shrubs, and cacti including mesquite (*Prosopis* spp.), cholla (*Cylindropuntia* spp.), yucca (*Yucca* sp.), paloverde (*Parkinsonia* sp.), and saltbush (*Atriplex* sp.).	MBTA BCC	SGCN (2)	May occur. The Project Area and Study Area contain suitable habitat for foraging and nesting.
Brewer's sparrow (*Spizella breweri*)	A shrub obligate species strongly associated with sagebrush (*Artemisia* 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 meter from the ground. During its non-breeding migratory season, frequently found in low desert, arid-adapted vegetation including desertscrub, sagebrush, and creosote bush (*Larrea tridentata*).	MBTA	SGCN (2)	May occur. The Project Area and Study Area contain suitable habitat for species occurrence.
Bullock's oriole (*Icterus bullockii*)	Found in open woodlands, riparian woodlands, and along deciduous forest edges	MBTA BCC†	SGNC (2)	Unlikely to occur. No suitable habitat for species occurrence is present in the Project Area or Study Area.
Cactus wren (*Campylorhynchus brunneicapillus*)	Non-migratory 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, though they have been observed nesting in buildings in the past.	MBTA BCC†	SGCN (2)	Known to occur. Species was observed during the site visit.
Chestnut-collared longspur (*Calcarius ornatus*)	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.
Costa's hummingbird (*Calypte costae*)	Found in Sonoran and Mojave desertscrub near washes of native desert vegetation or rocky slopes of saguaros (*Carnegiea gigantea*) and creosote bush lowlands.	MBTA BCC	SGCN (2)	May occur. Suitable habitat is present within the Project Area.
Elf owl (*Micrathene whitney*i)	Known to occupy diverse habitats. In the Sonoran Desert, they are known to use desert ironwood (*Olneya tesota*), ocotillo (*Fouquieria splendens*), paloverde, and saguaro. Nesting most often occurs in saguaro and other columnar cacti, Fremont cottonwood (*Populus fremontii*), honey mesquite (*Prosopis glandulosa*), and Goodding's willow (*Salix gooddingii*).	MBTA	SGCN (3)	May occur. The Project Area and Study Area contain suitable habitat for foraging and nesting. Desert ironwood, ocotillo, paloverde, and saguaros were observed during the site visit.
Ferruginous hawk (*Buteo regalis*)	Favors open scrublands, woodlands, and grasslands.	MBTA BCC†	SGCN (2)	May occur. Winter foraging habitat is present in the Project Area and Study Area.

Common Name (*Scientific Name*)	Habitat and Notes	Status*		Occurrence Status Project Area
		Federal	State (Tier)	
Gila woodpecker (*Melanerpes uropygialis*)	Occurs in Sonoran desertscrub with saguaros present, or riparian woodlands with mature trees.	MBTA BCC	SGCN (2)	Known to occur. Species was observed during the site visit.
Gilded flicker (*Colaptes chrysoides*)	Found in Sonoran desertscrub with saguaros present, or riparian woodlands with mature trees.	MBTA BCC	SGCN (2)	May occur. Suitable habitat is present within the Project Area.
Gray flycatcher (*Empidonax wrightii*)	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.
Harris's hawk (*Parabuteo unicinctus*)	Found in savannas, open woodlands, and semi-desert habitats. Frequently observed near water sources, both natural and man-made. Often uses saguaro for nesting sites	MBTA BCC†	SGCN (2)	May occur. The Project Area contains suitable habitat for foraging and potential nesting sites in saguaros.
Inca dove (*Columbina inca*)	Found in open areas with scattered desertscrub vegetation in arid or semi-arid climates. Usually nests in trees or shrubs but have been known to nest in cacti and buildings.	MBTA	SGCN (2)	May occur. The Project Area contains suitable habitat for species occurrence.
LeConte's thrasher (*Toxostoma lecontei*)	Occurs in Sonoran desertscrub dominated by creosote bush, with scattered trees used for nesting.	MBTA BCC	SGCN (2)	May occur. Suitable habitat is present within the Project Area and Study Area.
Lincoln's sparrow (*Melospiza lincolnii*)	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.
Loggerhead shrike (*Lanius ludovicianus*)	Found in open areas with scattered trees and shrubs. Frequently observed in savannas and desertscrub biotic communities.	MBTA BCC†	SGCN (2)	Known to occur. Species was observed during the site visit.
Prairie falcon (*Falco mexicanus*)	Found in open areas, predominantly in mountainous areas, steppes, plains, or prairies. Non-breeding wintering individuals have been known to forage in agricultural fields.	MBTA BCC†	SGCN (2)	Unlikely to occur. The Project Area does not contain suitable foraging or nesting habitat.
Sagebrush sparrow (*Artemisiospiza nevadensis*)	Found in shrubby, open flats and sagebrush plains.	MBTA	SGCN (3)	Known to occur. Species was observed during the site visit.
Savannah sparrow (*Passerculus sandwichensis*)	Non-breeding winter visitor to Arizona. Utilizes fields, pastures, and golf courses.	MBTA BCC†	SGCN (2)	May occur. The Project Area contains suitable habitat for foraging in the form of pastures.
Sprague's pipit (*Anthus spragueii*)	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.
Swainson's thrush (*Catharus ustulatus*)	During migration, found in a wide range of wooded and shrubby habitats with dense undergrowth. Nesting occurs in riparian woodlands or within aspen forests.	MBTA	SGCN (2)	Unlikely to occur. No suitable habitat for species occurrence is present within the Project Area.

Common Name (*Scientific Name*)	Habitat and Notes	Status*		Occurrence Status Project Area
		Federal	State (Tier)	
Verdin (*Auriparus flaviceps*)	Found in arid, desert habitats, frequently observed in mesquite and creosote bush vegetation. Known to nest in shrubs, small trees, and cacti.	MBTA BCC	SGCN (2)	May occur. The Project Area does contain suitable habitat for species occurrence.
Vesper sparrow (*Pooecetes gramineus*)	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 non-breeding individuals to occur.
Western burrowing owl (*Athene cunicularia hypugaea*)	Found in open areas with low brush cover, including grasslands, agricultural margins, and desertscrub. Year-round resident or migratory.	MBTA BCC	SGCN (2)	May occur. Desertscrub vegetation provides suitable habitat for species occurrence in the Project Area and Study Area.
Western screech-owl (*Megascops kennicottii*)	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.
Reptiles				
Regal horned lizard (*Phrynosoma solare*)	Found in rocky and gravelly habitats throughout arid and semi-arid plains, hills, canyons, and mountain slopes. Commonly associated with sloping terrain and scattered desert vegetation including creosote bush, mesquite, and saguaro.	-	SGCN (2)	May occur. The Project Area contains suitable habitat for species occurrence.
Sonoran desert tortoise (*Gopherus morafkai*)	Occurs on primarily rocky, and often steep, hillsides and bajadas of Mojave 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.	CCA	SGCN (1)	May occur. The Project Area does occur within the species known range and the Study Area occurs within Category I habitat. Suitable habitat for breeding occurs within the southern portion of the Project Area, and the species may move across the entirety of the Project Area.
Variable sandsnake (*Chilomeniscus stramineus*)	Found in sandy or loamy soils of dunes, arroyos and wash borders in areas with desertscrub vegetation including paloverde and saguaro.	-	SGCN (2)	May occur. The Project Area and Study Area contain suitable habitat for species occurrence.
Mammals				
Antelope jackrabbit (*Lepus alleni*)	Found in arid grasslands with scattered shrubs, foothills, mesas, and bajadas. Less common in barren open desert.	-	SGCN (2)	May occur. Suitable habitat for species occurrence is present in the Project Area and Study Area.
Arizona pocket mouse (*Perognathus amplus*)	Burrowing species found in a variety of desertscrub habitats with vegetation including creosote bush, mesquite, paloverde, and cacti.	-	SGCN (2)	May occur. The Project Area contains suitable habitat for species occurrence.
Bailey's pocket mouse (Chaetodipus baileyi)	A burrowing species found in low desert, sparsely vegetated flats and rocky slopes with vegetation including mesquite, brittlebush, paloverde, ocotillo, and jojoba.	-	SGCN (2)	May occur. The Project Area and Study Area contain suitable habitat for species occurrence.

Common Name (*Scientific Name*)	Habitat and Notes	Status*		Occurrence Status Project Area
		Federal	State (Tier)	
California leaf-nosed bat (*Macrotus californicus*)	Mostly found in Sonoran desertscrub. Primarily roosts in mines, caves, and rock shelters. Nocturnal roosts include a variety of human-made structures, rock shelters, and mines between elevations of 160 and 3,980 feet amsl.	-	SGCN (2)	May occur. The Project Area is within the range of this species and contains suitable foraging habitat, though no suitable roosting habitat was observed in the Project Area.
Cave myotis (*Myotis velifer*)	Typically found in desertscrub with creosote bush, brittlebush (*Encelia* 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 is within the range of this species and contains suitable foraging habitat, though no suitable habitat for roosting was observed within the Project Area.
Greater western mastiff bat (*Eumops perotis californicus)*	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 and 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.
Hoary bat (*Lasiurus cinereus*)	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.
Mexican free-tailed bat (*Tadarida brasiliensis*)	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 is within the range of this species and contains suitable foraging habitat, though no suitable roosting habitat was observed in the Project Area.
Pale Townsend's big-eared bat (*Corynorhinus townsendii pallescens*)	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 utilize the Project Area for foraging. No roosting habitat is present.
Pocketed free-tailed bat (*Nyctinomops femorosaccus*)	Found in desertscrub. Roosts in rock crevices and caves and in buildings at times.	-	SGCN (2)	May occur. The species may utilize the Project Area for foraging. No roosting habitat is present.
Western red bat (*Lasiurus blossevillii*)	Occurs in riparian areas, particularly in broad-leaf deciduous forests.	- -	SGCN (2)	May occur. The Project Area contains habitat suitable for species occurrence (i.e., riparian areas). However, no roosting potential is present in the Project Area.
Western yellow bat (*Lasiurus xanthinus*)	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.

Common Name (*Scientific Name*)	Habitat and Notes	Status*		Occurrence Status Project Area
		Federal	State (Tier)	
Yuma myotis (*Myotis yumanensis*)	Found in a variety of habitats including riparian, desertscrub, moist woodlands, and forests. Prefers 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.

Sources: 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

CCA = Candidate Conservation Agreement

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 eight of these species in the Project Area (AGFD 2023b) (see Exhibits C-2a through C-2k). Of these eight species, six may occur in the Project Area and Study Area but were not observed during field studies: Bendire's thrasher (*Toxostoma bendirei*), Costa's hummingbird (*Calypte costae*), gilded flicker (*Colaptes chrysoides*), LeConte's thrasher (*Toxostoma lecontei*), verdin (*Auriparus flaviceps*), and western burrowing owl (*Athene cunicularia hypugaea*) (see Table C-2). 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 riparian areas in the Study Area for nesting, roosting, foraging, or reproduction.

Species of Greatest Conservation Need

Twenty-nine species categorized as SGCN Tier 1 or 2 (excluding those federally listed species that have already been addressed in the previous section) have the potential to occur within the proposed Study Area (see Table C-2). Of these 29 species, 26 may occur in the Project Area and three are known to occur in the Project Area and Study Area. Of the 29 species that may occur or are known to occur within the Project Area and Study Area, 17 are birds, three are reptiles, eight are mammals, and one is an amphibian (see Table C2). The bird species that may occur are Abert's towhee (*Melozone aberti*), American kestrel (*Falco sparverius*), Bendire's thrasher, Brewer's sparrow (*Spizella breweri*), cactus wren (*Campylorhynchus brunneicapillus*), Costa's hummingbird, ferruginous hawk (*Buteo regalis*), Gila woodpecker, gilded flicker, Harris's hawk (*Parabuteo unicinctus*), Inca dove (*Columbina inca*), LeConte's thrasher, loggerhead shrike (*Lanius ludovicianus*), Savannah sparrow (*Passerculus sandwichensis*), verdin, vesper sparrow (*Pooecetes gramineus*), and western burrowing owl. The reptile species that may occur in the Project Area are the regal horned lizard (*Phrynosoma solare*), Sonoran desert tortoise, and variable sandsnake (*Chilomeniscus stramineus*). The mammal species that may occur in the Project Area are antelope jackrabbit (*Lepus alleni*), Arizona pocket mouse (*Perognathus amplus*), Mexican free-tailed bat (*Tadarida brasiliensis*), California

leaf-nosed bat (*Macrotus californicus*), cave myotis (*Myotis velifer*), pale Townsend's big-eared bat (*Corynorhinus townsendii pallescens*), pocketed free-tailed bat (N*yctinomops femorosaccus*), and western red bat (*Lasiurus blossevillii*). The amphibian species that may occur is Sonoran Desert toad (*Incilius alvarius*).

No SGCN fish species are likely to occur within 3 miles of the proposed Project Area.

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

State-Protected Native Plants

The ANPL provides a list of plant species—largely cacti, agaves, yuccas, 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. Ten plant species covered under the ANPL were observed in the Study Area during surveys: saguaro (*Carnegia gigantea*), California barrel cactus (*Ferocactus cylindraceus*), desert ironwood (*Olneya tesota*), blue paloverde (*Parkinsonia florida*), honey mesquite (*Prosopis glandulosa*), velvet mesquite (*Prosopis velutina*), Engelmann's hedgehog cactus (*Echinocereus engelmannii*), jumping cholla (*Cylindropuntia fulgida*), teddybear cholla (*Cylindropuntia bigelovii*), and ocotillo (*Fouquieria splendens*).

Noxious Weeds

No noxious weeds were observed in 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

The Project Area and Study Area intersect the CAP canal and Wagner Wash Wildlife Corridors, the Hassayampa COA, and the White Tanks-Belmonts-Vultures-Heiroglyphics CA. A Wildlife Connectivity Zone and an unnamed Wildlife Connectivity Zone occur within the Project (Option A and Option B) and the one-mile Study Area. These impacts would be localized and would not negatively impact the intersecting areas of biological wealth outside of the Project Area. Furthermore, as the Project would disturb minimal habitat during construction, the overall loss of habitat in these areas would be extremely small compared to the total biological wealth habitat mapped in the vicinity of the Project.

The proposed Project, using Option A or Option B, would result in minimal disturbance to the landscape. However, the small disturbance footprint and relatively short time frame 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.

Federally Listed Threatened and Endangered Species

The Project Area and Study Area are within the known range of the monarch butterfly, a candidate species.

Habitat in the Study Area may be suitable for use by monarch butterfly. No milkweed (*Asclepias* spp.) was observed in the Study Area; however, monarch butterflies may utilize other plants in the Study Area for foraging but not for reproduction (USFWS 2020). As such, any potential Project impacts on 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 and Golden Eagles

No suitable bald eagle nesting or foraging habitat (e.g., flowing rivers or lakes containing fish) and no tall trees or cliffs suitable for eagle perching are located within the Project Area or Study Area. However, 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 March 2023. No impacts to bald or golden eagles would be expected to occur 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

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; 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.

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 in 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 Area. Similarly, because of the available habitat outside the Project, 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 in 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.

Special-Status Bird Species

Golden eagles may forage in the Project Area and Study Area, but no nesting habitat is present. Due to 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. Bald eagles may occur within the Study Area during the non-breeding season; however, they would be drawn toward the Gila River riparian areas approximately 16 miles south of the Project Area and not toward the Project Area. Thus, no impacts to bald eagles resulting from the Project would be expected.

Potential impacts to special-status bird species could include changes in behavior due to 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 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

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 those described for mammals.

Special-Status Amphibian Species

Potential Project-related impacts to special-status amphibian species would include death, injury, or impacts arising from behavior changes 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 those described for mammals. As Option B contains slightly increased potential for surface water resources (e.g., riparian area and drainages), this alternative could lead to increased impacts on amphibians. However, the overall loss of habitat would be minor and project activities would result in minimal habitat disturbance.

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 during the Project's vegetation-clearing activities. However, the Project, using Option A or Option B, would occupy a relatively small area compared to the amount of open habitat in Study Area; therefore, 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; therefore, the Project would be unlikely to contribute to an increase in 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 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 since suitable nesting habitat for migratory bird species is present in the Project Area.
- If a Sonoran desert tortoise is encountered within the Project Area, the AGFD's *Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects* (AGFD 2023d) should be followed.
- 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 within the same day, escape ramps, which can be short lateral trenches or wooden planks sloping to the surface, should be constructed at least every 90 meters; 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 the AGFD's *Guidelines for Solar Development in Arizona* (AGFD 2009) and *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 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 washing equipment prior to and following mobilization to the Project Area.

Conclusion

The proposed Project is not likely to significantly affect any rare, threatened, endangered, or special-status species. No ESA-listed species are anticipated to be present in the Project Area or Study Area, and none would be affected by the proposed Project. The Project Area and Study Area intersect areas of biological wealth; however, the Project-related disturbance would be small compared to the overall habitat occurring within these areas of biological wealth. Altogether, species that prefer riparian areas may experience a slight increase in potential adverse effects if the Project is constructed using Option B. Species that prefer Sonoran Desertscrub may experience a slight increase in potential adverse effects if Option A is constructed. However, neither option is expected to affect such species in a material way.

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 standard guidelines as design features for the Project, and preconstruction surveys for migratory bird nests would aid in compliance with the MBTA.

IPaC U.S. Fish & Wildlife Service

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

Maricopa County, Arizona

Local office

Arizona Ecological Services Field Office

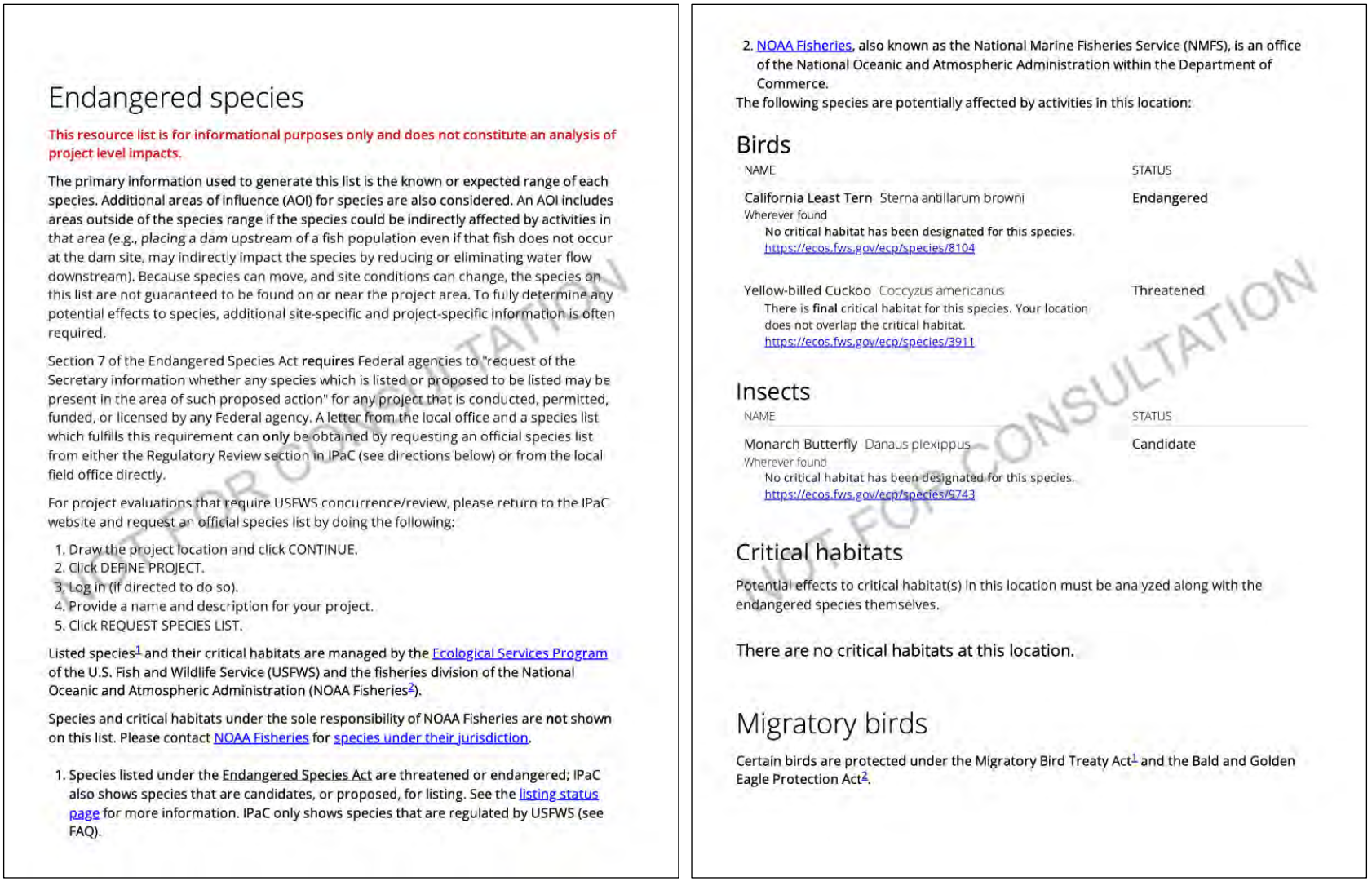
(602) 242-0210
(602) 242-2513

9828 North 31st Ave

9828 North 31st Ave
#c3
Phoenix, AZ 85051-2517

NOT FOR CONSULTATION

Exhibit C-1a. U.S. Fish and Wildlife Service IPaC Report, February 28, 2023.



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 species[1] 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 Fisheries[2]).

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
California Least Tern Sterna antillarum browni Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8104	Endangered
Yellow-billed Cuckoo Coccyzus americanus 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 Danaus plexippus 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.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Exhibit C-1b. U.S. Fish and Wildlife Service IPaC Report, February 28, 2023.

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-incidental-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
Costa's Hummingbird Calypte costae 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/9470	Breeds Jan 15 to Jun 10
Gila Woodpecker Melanerpes uropygialis 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:

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.

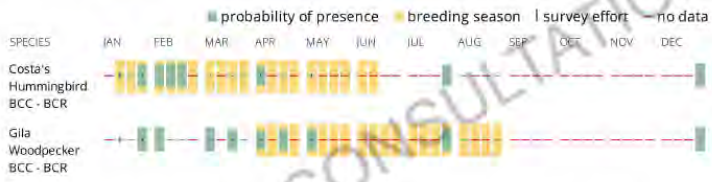
Exhibit C-1c. U.S. Fish and Wildlife Service IPaC Report, February 28, 2023.

Survey Effort (i)
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).

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

Exhibit C-1d. U.S. Fish and Wildlife Service IPaC Report, February 28, 2023.

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.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible 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 result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image 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. Metadata should be consulted to determine the date 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

Exhibit C-1e. U.S. Fish and Wildlife Service IPaC Report, February 28, 2023.

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, 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 specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Exhibit C-1f. U.S. Fish and Wildlife Service IPaC Report, February 28, 2023.

IPaC **U.S. Fish & Wildlife Service**

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

Maricopa County, Arizona

Local office

Arizona Ecological Services Field Office

(602) 242-0210
(602) 242-2513

9828 North 31st Ave
#c3
Phoenix, AZ 85051-2517

Exhibit C-1g. U.S. Fish and Wildlife Service IPaC Report, April 6, 2023.

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 species[1] 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 Fisheries[2]).

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
California Least Tern Sterna antillarum browni Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8104	Endangered
Yellow-billed Cuckoo Coccyzus americanus 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 Danaus plexippus 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.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Exhibit C-1h. U.S. Fish and Wildlife Service IPaC Report, April 6, 2023.

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-incidental-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
Costa's Hummingbird Calypte costae 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/9470	Breeds Jan 15 to Jun 10
Gila Woodpecker Melanerpes uropygialis 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:

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.

Exhibit C-1i. U.S. Fish and Wildlife Service IPaC Report, April 6, 2023.

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?

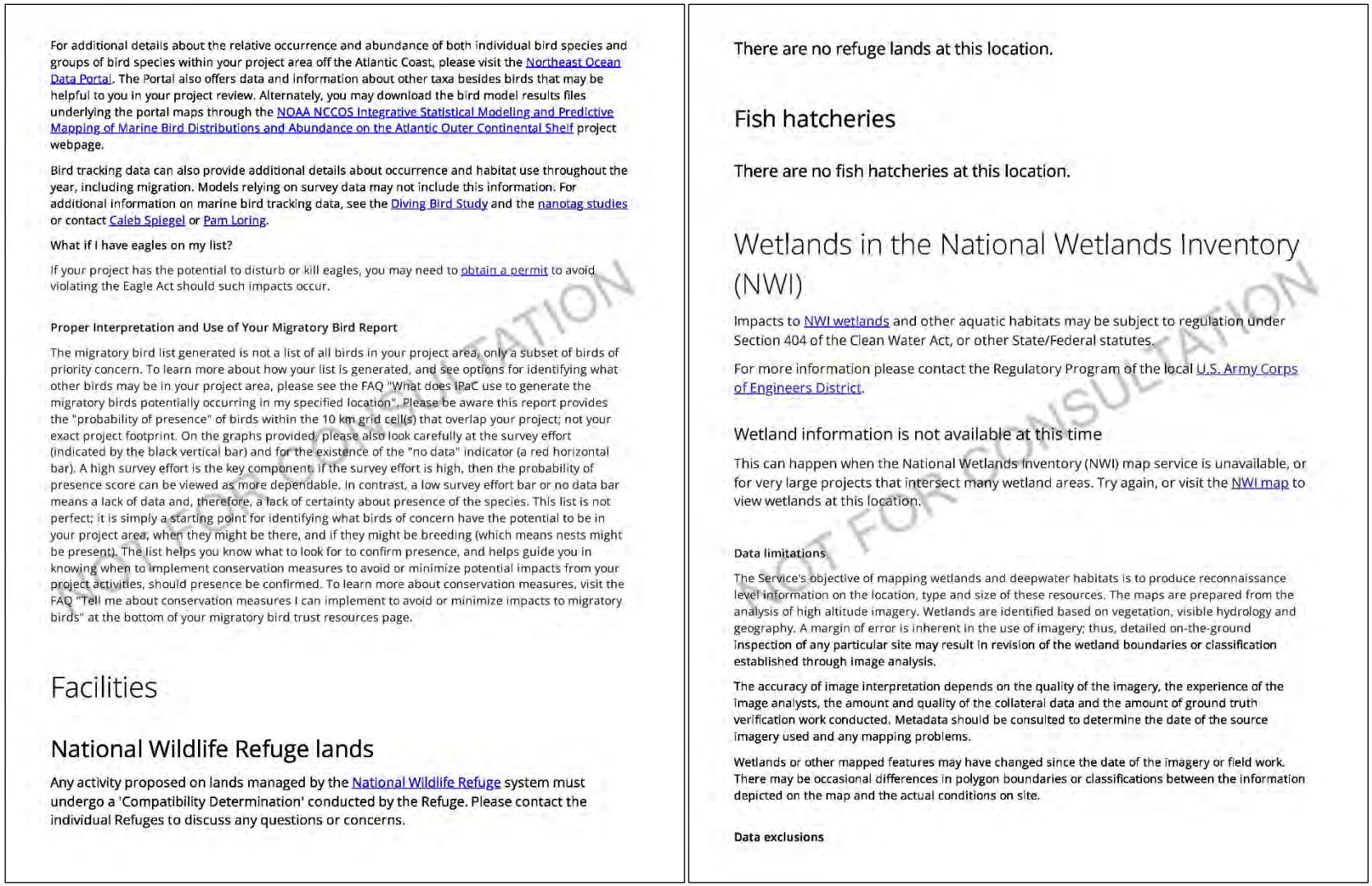
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

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).

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

Exhibit C-1j. U.S. Fish and Wildlife Service IPaC Report, April 6, 2023.



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.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible 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 result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image 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. Metadata should be consulted to determine the date 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

Exhibit C-1k. U.S. Fish and Wildlife Service IPaC Report, April 6, 2023.

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, 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 specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Exhibit C-1l. U.S. Fish and Wildlife Service IPaC Report, April 6, 2023.

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:
Catclaw Solar CEC

User Project Number:
78828-001

Project Description:
230 kV Generation Tie-line Development

Project Type:
Energy Storage/Production/Transfer, Energy Transfer, Power line/electric line (new)

Contact Person:
Lyndsey Bradshaw

Organization:
SWCA Environmental Consultants

On Behalf Of:
PRIVATE

Project ID:
HGIS-18539

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

Disclaimer:

1. This Environmental Review is based on the project study area that was entered. The report must be updated if the project study area, location, or the type of project changes.
2. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area. This review is also not intended to replace environmental consultation (including federal consultation under the Endangered Species Act), land use permitting, or the Departments review of site-specific projects.
3. The Departments Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. HDMS data contains information about species occurrences that have actually been reported to the Department. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. 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-2a. Arizona Environmental Online Review Tool Report, February 27, 2023.

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

Arizona Game and Fish Department
Project ID: HGIS-18539
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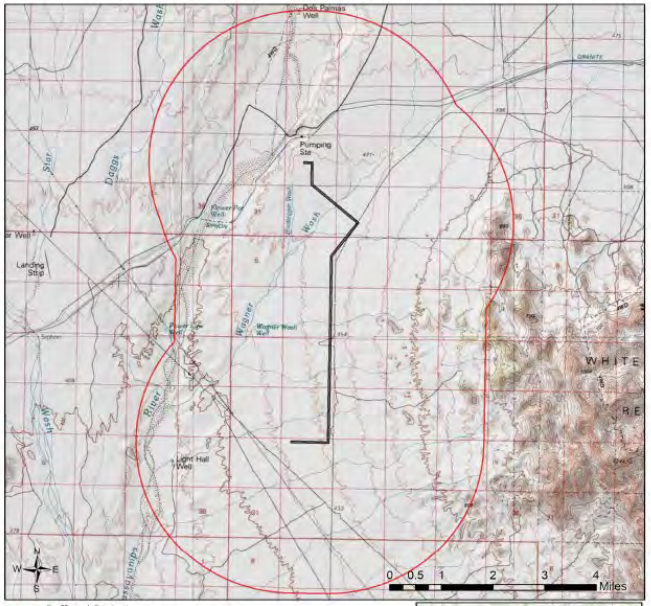
Review Date: 2/27/2023 02:48:36 PM

Catclaw Solar CEC

USA Topo Basemap With Locator Map



Buffered Project Boundary

Project Boundary

Project Size (acres): 140.44

Lat/Long (DD): 33.6368 / -112.6756

County(s): Maricopa

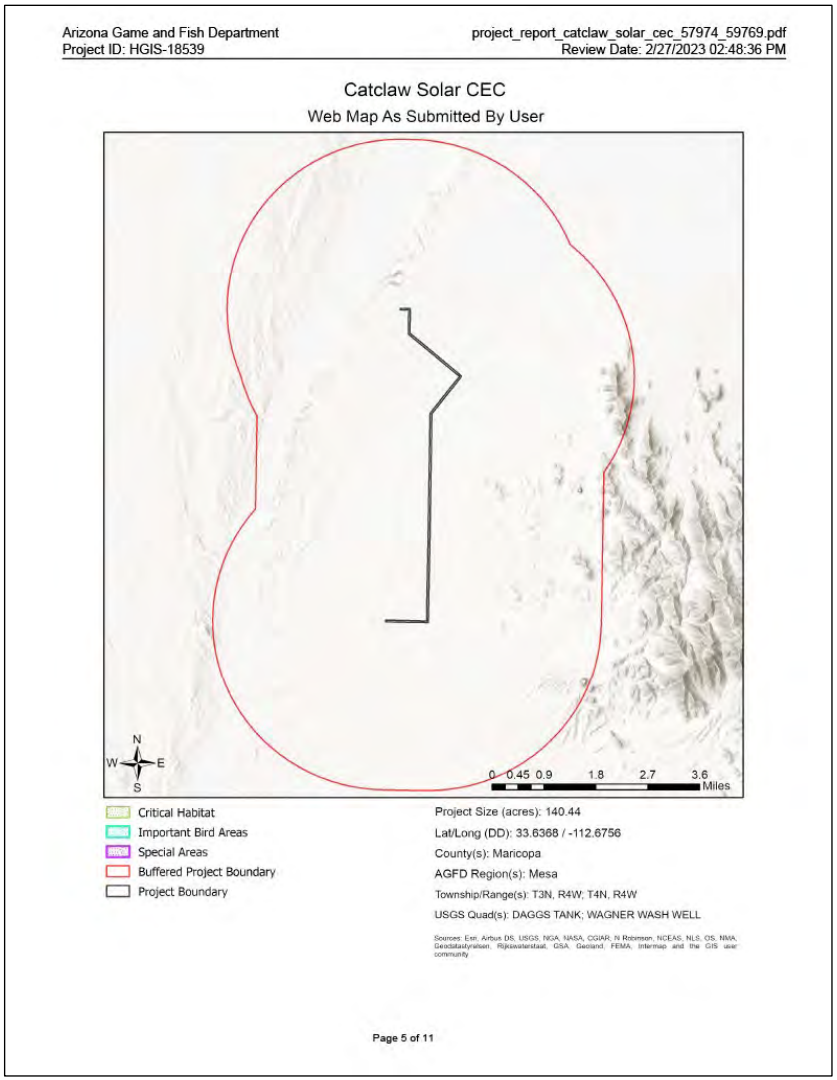
AGFD Region(s): Mesa

Township/Range(s): T3N, R4W; T4N, R4W

USGS Quad(s): DAGGS TANK; WAGNER WASH WELL

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-2b. Arizona Environmental Online Review Tool Report, February 27, 2023.



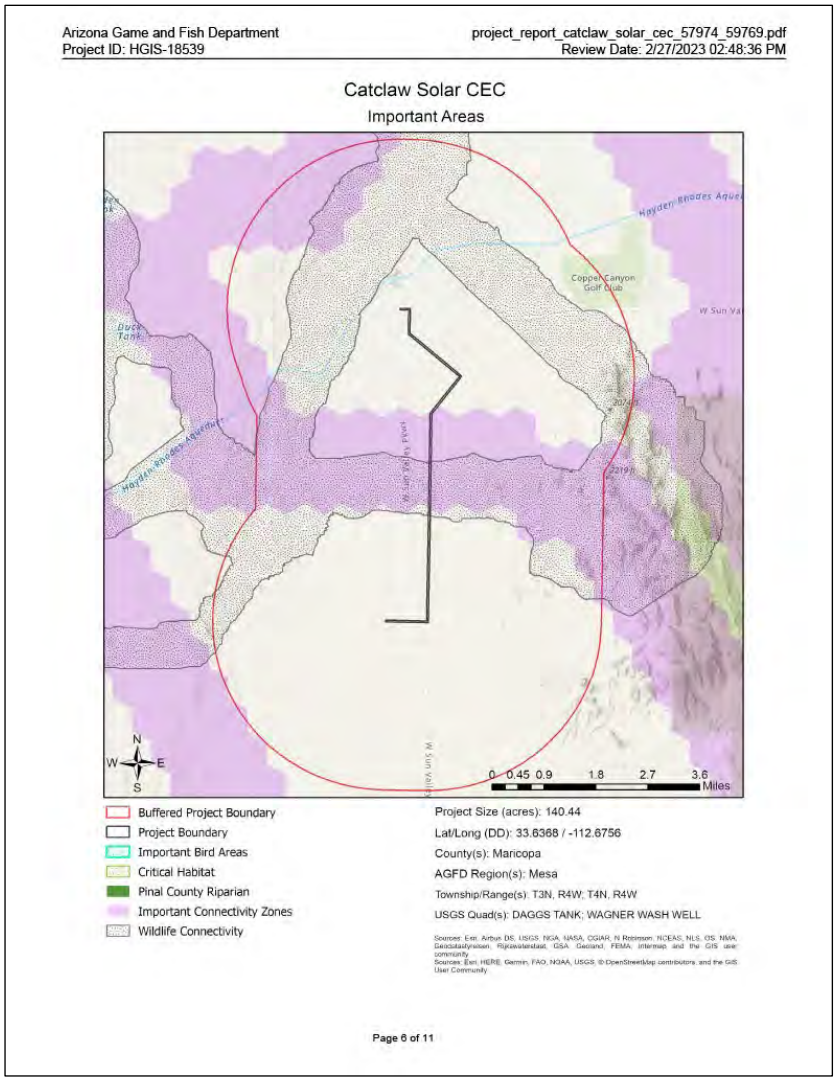
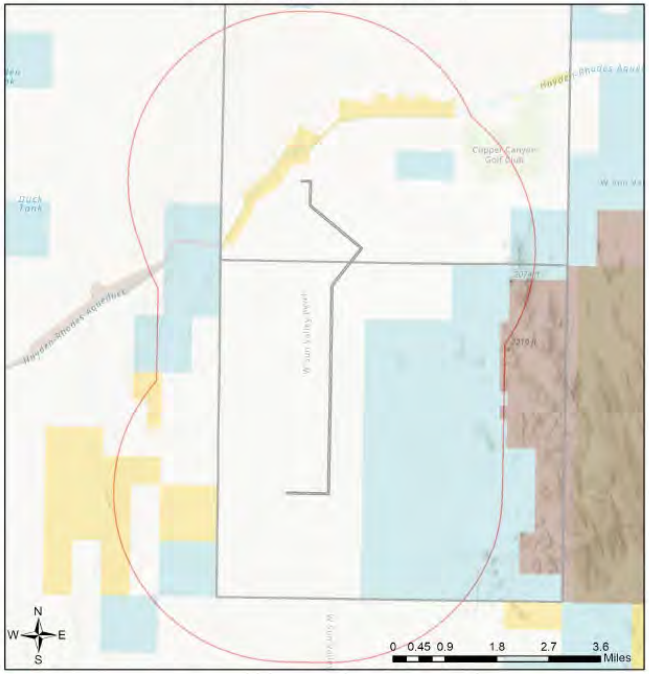


Exhibit C-2c. Arizona Environmental Online Review Tool Report, February 27, 2023.

Catclaw Solar CEC

Township/Ranges and Land Ownership



- Buffered Project Boundary
- Project Boundary
- AZ Game & Fish Dept.
- BLM
- BOR
- Indian Res.
- Military
- Mixed/Other
- National Park/Mon.
- Private
- State & Regional Parks
- State Trust
- US Forest Service
- Wildlife Area/Refuge
- Township/Ranges

Project Size (acres): 140.44
Lat/Long (DD): 33.6368 / -112.6756
County(s): Maricopa
AGFD Region(s): Mesa
Township/Range(s): T3N, R4W; T4N, R4W
USGS Quad(s): DAGGS TANK; WAGNER WASH WELL

Arizona Game and Fish Department
Project ID: HGIS-18539
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Review Date: 2/27/2023 02:48:36 PM

Special Status Species Documented within 3 Miles of Project Vicinity

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Gopherus morafkai	Sonoran Desert Tortoise	CCA	S	S		1

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

Special Areas Documented that Intersect with Project Footprint as Drawn

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
CAP Canal	Maricopa County Wildlife Movement Area - Landscape					
Important Connectivity Zone	Wildlife Connectivity					
Wagner Wash	Maricopa County Wildlife Movement Area - Riparian/Wash					
White Tanks - Belmonts - Vultures - Heiroglyphics CA	Wildlife Connectivity					

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

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

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Anaxyrus microscaphus	Arizona Toad	SC		S		2
Anthus spragueii	Sprague's Pipit	SC				2
Aquila chrysaetos	Golden Eagle			S		2
Artemisiospiza nevadensis	Sagebrush Sparrow					
Athene cunicularia hypugaea	Western Burrowing Owl	SC	S	S		2
Auriparus flaviceps	Verdin					2
Botaurus lentiginosus	American Bittern					2
Buteo regalis	Ferruginous Hawk	SC		S		2
Calcarius ornatus	Chestnut-collared Longspur					2
Calypte costae	Costa's Hummingbird					2
Campylorhynchus brunneicapillus	Cactus Wren					2
Catharus ustulatus	Swainson's Thrush					2
Chaetodipus baileyi	Bailey's Pocket Mouse					2
Chilomeniscus stramineus	Variable Sandsnake					2
Coccyzus americanus	Yellow-billed Cuckoo (Western DPS)					
Colaptes chrysoides	Gilded Flicker			S		2
Columbina inca	Inca Dove					2
Corynorhinus townsendii pallescens	Pale Townsend's Big-eared Bat	SC	S	S		1
Empidonax wrightii	Gray Flycatcher					2
Eumops perotis californicus	Greater Western Bonneted Bat					
Falco mexicanus	Prairie Falcon					2

Exhibit C-2d. Arizona Environmental Online Review Tool Report, February 27, 2023.

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
Incilius alvarius	Sonoran Desert Toad					2
Lanius ludovicianus	Loggerhead Shrike	SC				2
Lasiurus blossevillii	Western Red Bat		S			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
Macrotus californicus	California Leaf-nosed Bat	SC		S		2
Megascops kennicottii	Western Screech-owl					
Melanerpes uropygialis	Gila Woodpecker					2
Melospiza lincolnii	Lincoln's Sparrow					2
Melozone aberti	Abert's Towhee		S			2
Micrathene whitneyi	Elf Owl					
Myotis velifer	Cave Myotis	SC		S		2
Myotis yumanensis	Yuma Myotis	SC				2
Nyctinomops femorosaccus	Pocketed Free-tailed Bat					2
Parabuteo unicinctus	Harris's Hawk					2
Passerculus sandwichensis	Savannah Sparrow					2
Perognathus amplus	Arizona Pocket Mouse					2
Phrynosoma solare	Regal Horned Lizard					2
Pooecetes gramineus	Vesper Sparrow					2
Spizella breweri	Brewer's Sparrow					2
Tadarida brasiliensis	Brazilian Free-tailed Bat					
Toxostoma bendirei	Bendire's Thrasher					2
Toxostoma lecontei	LeConte's Thrasher			S		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					
Odocoileus hemionus	Mule Deer					
Puma concolor	Mountain Lion					
Zenaida asiatica	White-winged Dove					
Zenaida macroura	Mourning Dove					

Arizona Game and Fish Department
Project ID: HGIS-18539
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Project Type: Energy Storage/Production/Transfer, Energy Transfer, Power line/electric line (new)

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

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

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

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

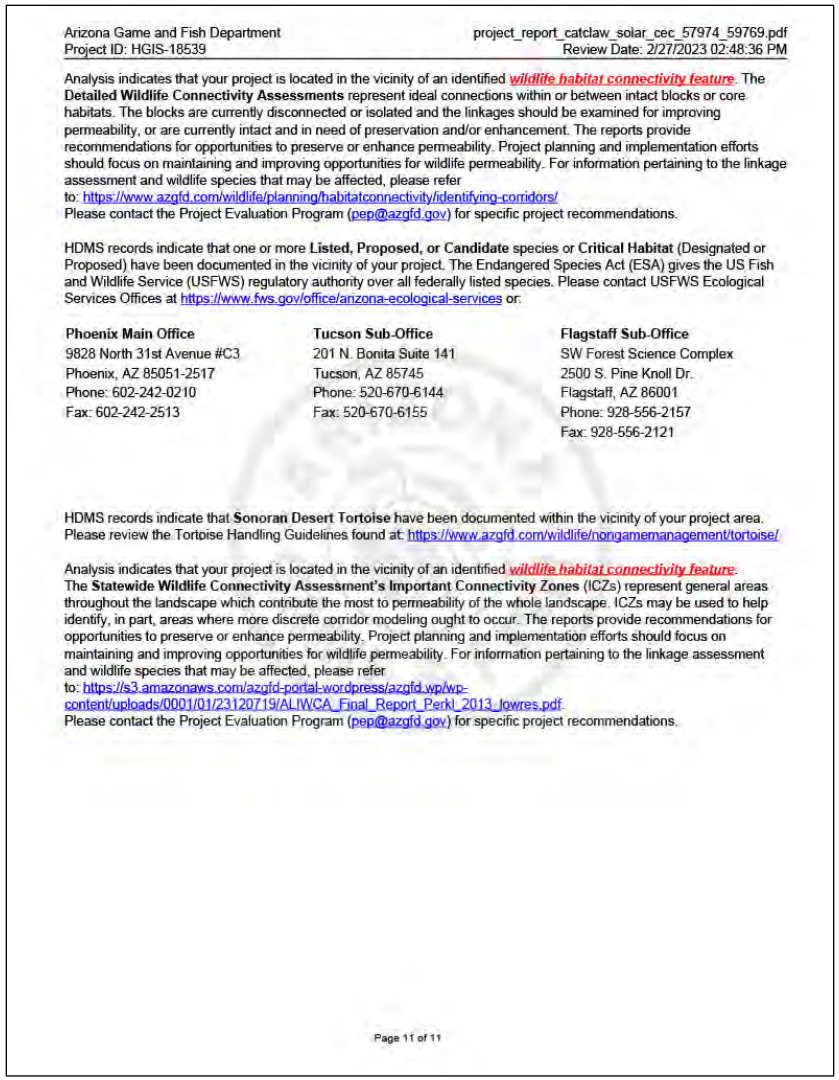
Based on the project type entered, coordination with State Historic Preservation Office may be required (https://azstateparks.com/).

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.

Project Location and/or Species Recommendations:
Analysis indicates that your project is located in the vicinity of an identified ***wildlife habitat connectivity feature***. The **County-level Stakeholder Assessments** contain five categories of data (Barrier/Development, Wildlife Crossing Area, Wildlife Movement Area- Diffuse, Wildlife movement Area- Landscape, Wildlife Movement Area- Riparian/Washes) that provide a context of select anthropogenic barriers, and potential connectivity. The reports provide recommendations for opportunities to preserve or enhance permeability. Project planning and implementation efforts should focus on maintaining and improving opportunities for wildlife permeability. For information pertaining to the linkage assessment and wildlife species that may be affected, please refer to: https://www.azgfd.com/wildlife/planning/habitatconnectivity/identifying-corridors/.
Please contact the Project Evaluation Program (pep@azgfd.gov) for specific project recommendations

Exhibit C-2e. Arizona Environmental Online Review Tool Report, February 27, 2023.



Arizona Game and Fish Department
Project ID: HGIS-18539

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Review Date: 2/27/2023 02:48:36 PM

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

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

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

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

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

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

Analysis indicates that your project is located in the vicinity of an identified ***wildlife habitat connectivity feature***. The **Statewide Wildlife Connectivity Assessment's Important Connectivity Zones** (ICZs) represent general areas throughout the landscape which contribute the most to permeability of the whole landscape. ICZs may be used to help identify, in part, areas where more discrete corridor modeling ought to occur. The reports provide recommendations for opportunities to preserve or enhance permeability. Project planning and implementation efforts should focus on maintaining and improving opportunities for wildlife permeability. For information pertaining to the linkage assessment and wildlife species that may be affected, please refer to: https://s3.amazonaws.com/azgfd-portal-wordpress/azgfd.wp/wp-content/uploads/0001/01/23120719/ALIWCA_Final_Report_Perkl_2013_lowres.pdf
Please contact the Project Evaluation Program (pep@azgfd.gov) for specific project recommendations.

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Exhibit C-2f. Arizona Environmental Online Review Tool Report, February 27, 2023.

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:
Catclaw Solar Reroute

User Project Number:
78828.001

Project Description:
Solar site facility and generation intertie 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-18826

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

Disclaimer:

1. This Environmental Review is based on the project study area that was entered. The report must be updated if the project study area, location, or the type of project changes.
2. This is a preliminary environmental screening tool. It is not a substitute for the potential knowledge gained by having a biologist conduct a field survey of the project area. This review is also not intended to replace environmental consultation (including federal consultation under the Endangered Species Act), land use permitting, or the Departments review of site-specific projects.
3. The Departments Heritage Data Management System (HDMS) data is not intended to include potential distribution of special status species. Arizona is large and diverse with plants, animals, and environmental conditions that are ever changing. Consequently, many areas may contain species that biologists do not know about or species previously noted in a particular area may no longer occur there. HDMS data contains information about species occurrences that have actually been reported to the Department. Not all of Arizona has been surveyed for special status species, and surveys that have been conducted have varied greatly in scope and intensity. Such surveys may reveal previously undocumented population of species of special concern.
4. 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:
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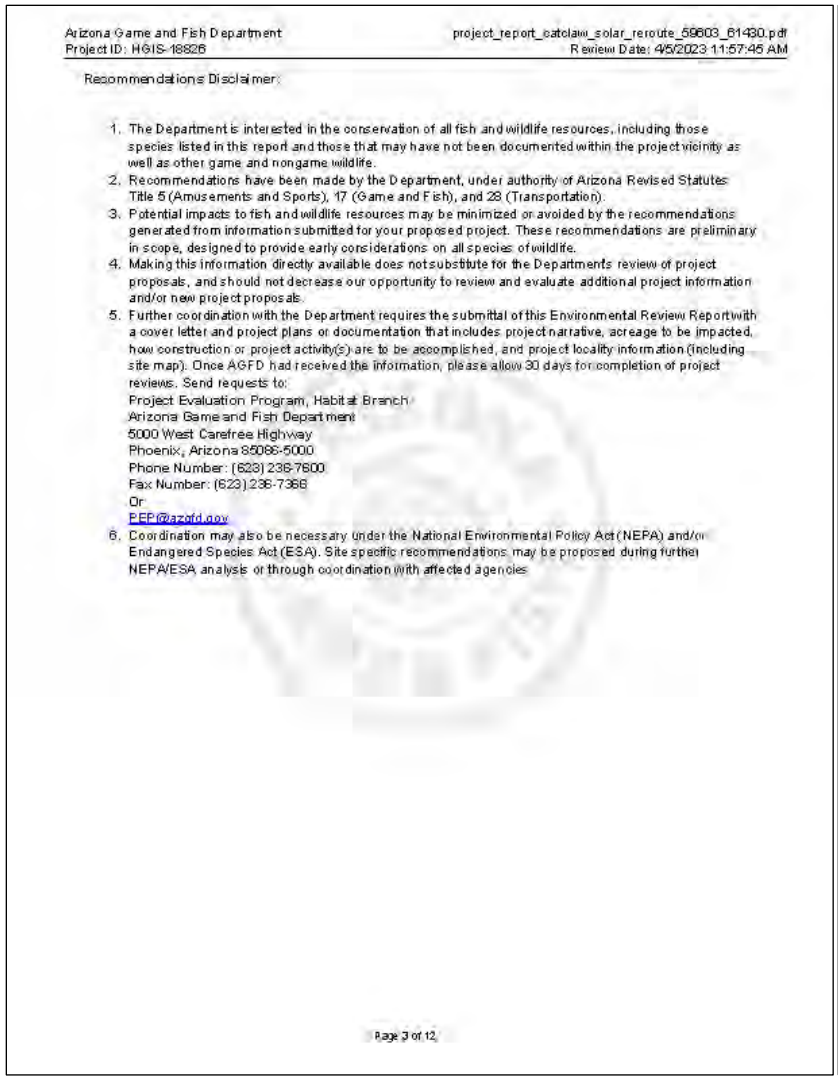
Exhibit C-2g. Arizona Environmental Online Review Tool Report, April 6, 2023.



Arizona Game and Fish Department
Project ID: HGIS-18826

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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 Departments 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.

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Arizona Game and Fish Department
Project ID: HGIS-18826

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Review Date: 4/5/2023 11:57:45 AM

Catclaw Solar Reroute

USA Topo Basemap With Locator Map

Buffered Project Boundary

Project Boundary

Project Size (acres): 23.11

Lat/Long (DD): 33.6395 / -112.6910

County(s): Maricopa

AGFD Region(s): Mesa

Township/Range(s): T3N, R4W; T4N, R4W

USGS Quad(s): DAGGS TANK

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

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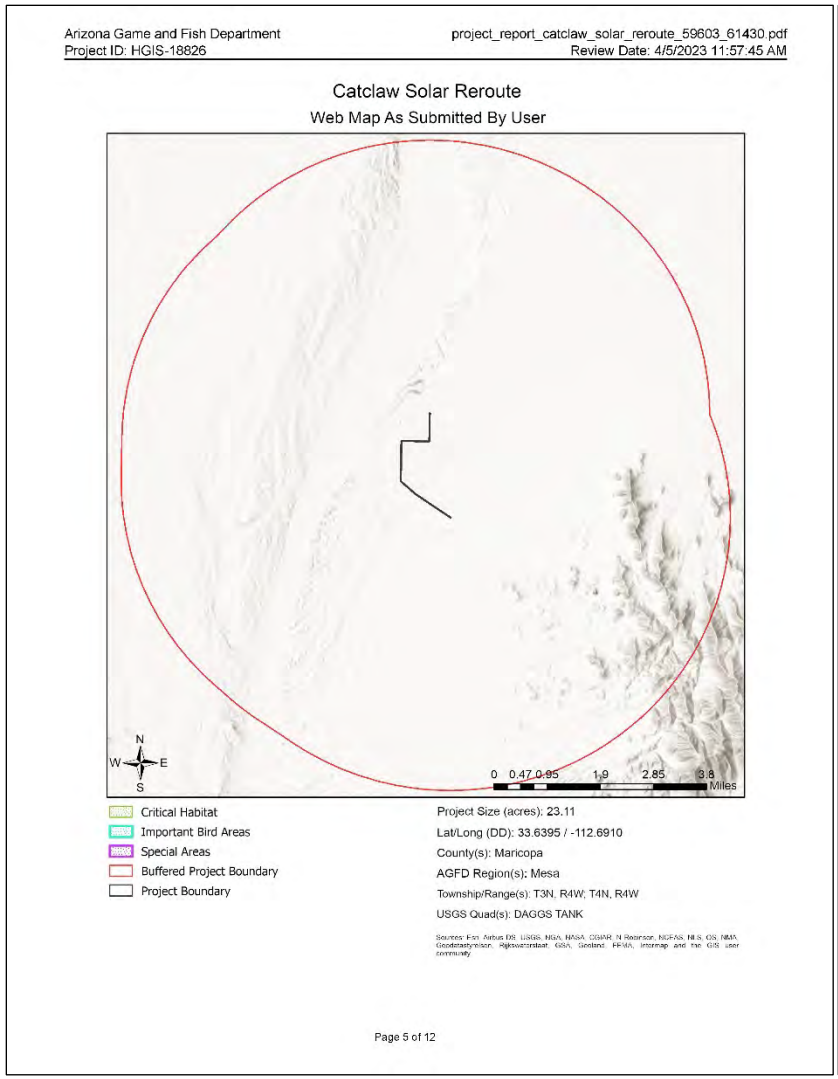
Exhibit C-2h. Arizona Environmental Online Review Tool Report, April 6, 2023.



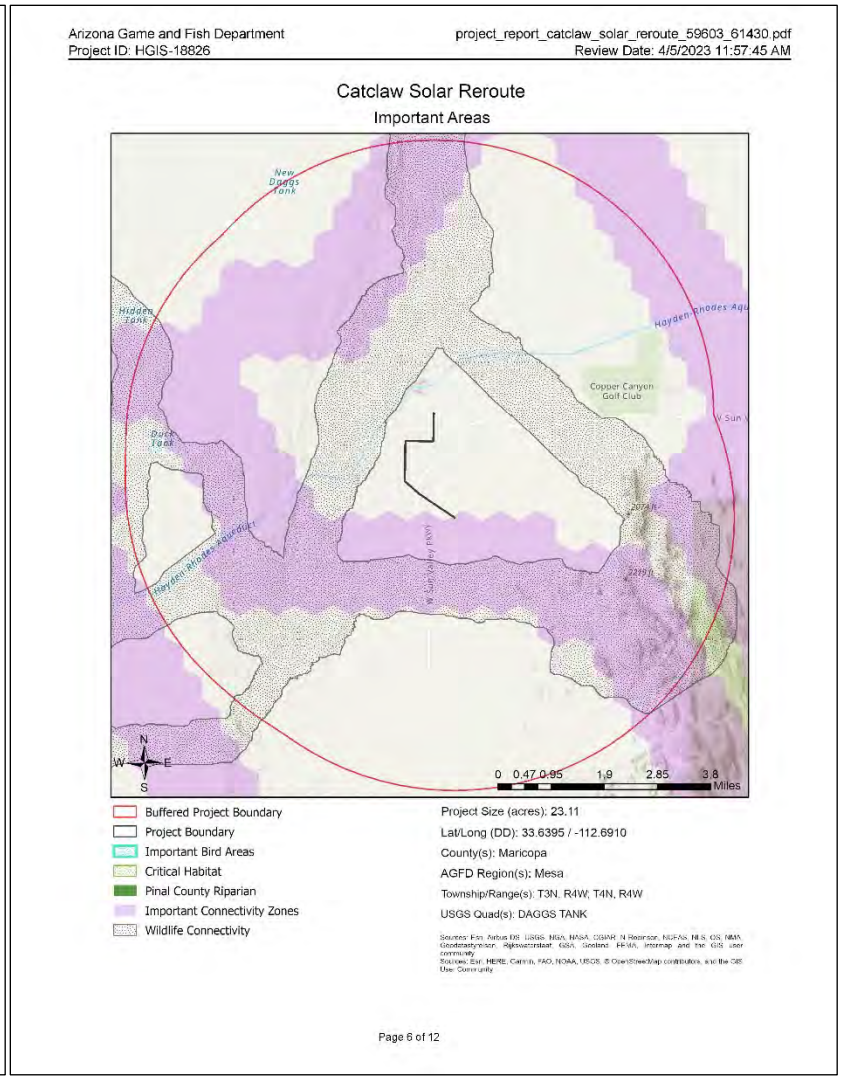
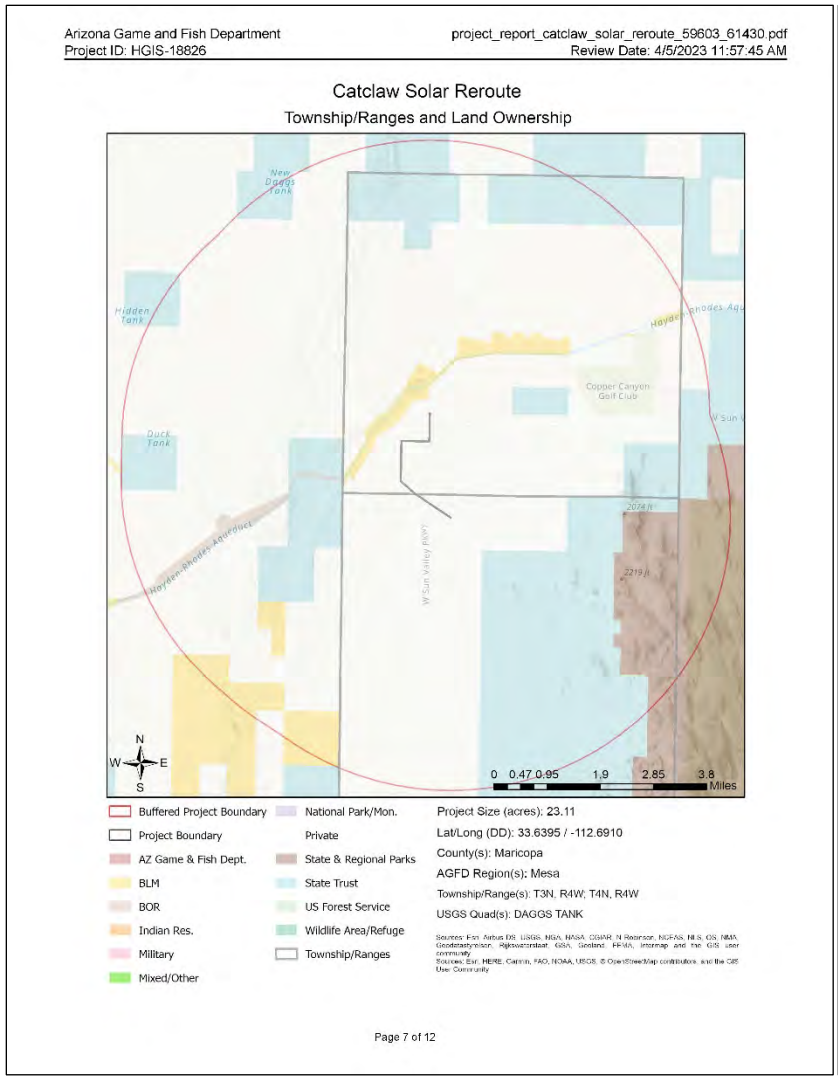


Exhibit C-2i. Arizona Environmental Online Review Tool Report, April 6, 2023.



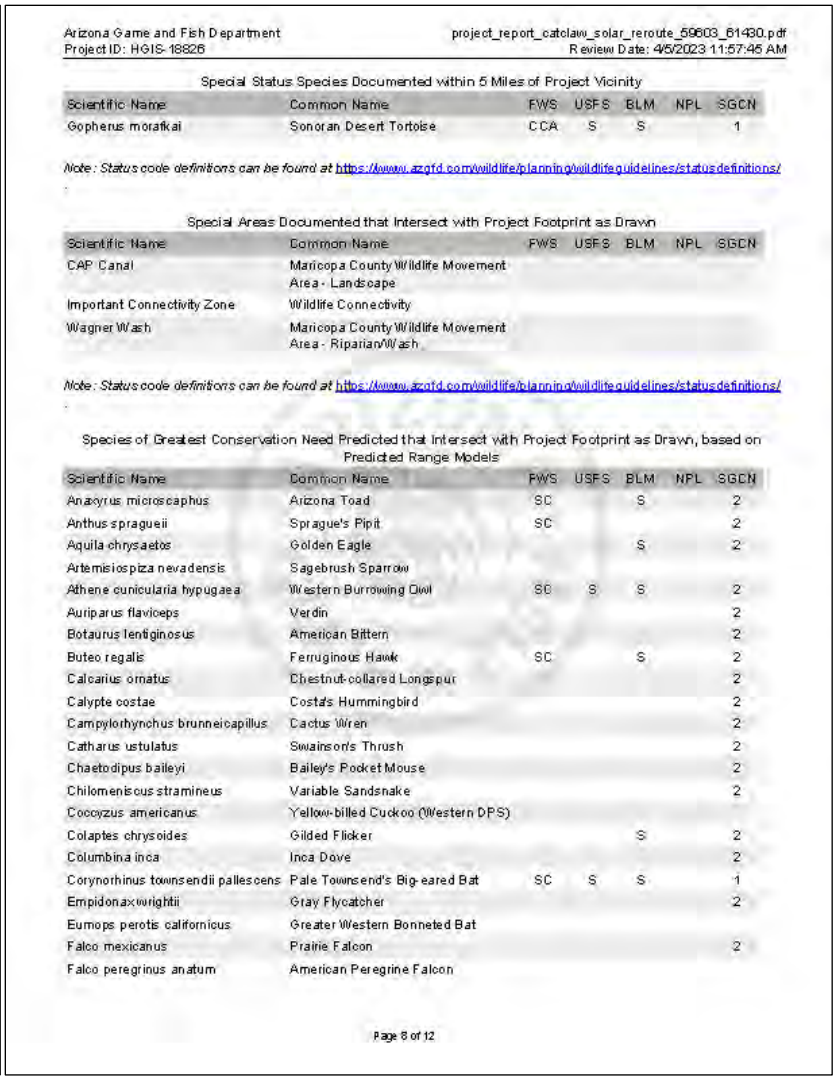


Exhibit C-2j. Arizona Environmental Online Review Tool Report, April 6, 2023.

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 sparverius	American Kestrel					2
Gopherus morafkai	Sonoran Desert Tortoise	CCA	S	S		1
Icterus bullockii	Bullock's Oriole					2
Incilius alvarius	Sonoran Desert Toad					2
Lanius ludovicianus	Loggerhead Shrike	SC				2
Lasiurus blossevillii	Western Red Bat		S			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
Macrotus californicus	California Leaf-nosed Bat	SC		S		2
Megascops kennicottii	Western Screech-owl					
Melanerpes uropygialis	Gila Woodpecker					2
Melospiza lincolnii	Lincoln's Sparrow					2
Micrathene whitneyi	Elf Owl					
Myotis velifer	Cave Myotis	SC		S		2
Myotis yumanensis	Yuma Myotis	SC				2
Nyctinomops femorosaccus	Pocketed Free-tailed Bat					2
Parabuteo unicinctus	Harris's Hawk					2
Passerculus sandwichensis	Savannah Sparrow					2
Perognathus amplus	Arizona Pocket Mouse					2
Phrynosoma solare	Regal Horned Lizard					2
Pooecetes gramineus	Vesper Sparrow					2
Spizella breweri	Brewer's Sparrow					2
Tadarida brasiliensis	Brazilian Free-tailed Bat					
Toxostoma bendirei	Bendire's Thrasher					2
Toxostoma lecontei	LeConte's Thrasher			S		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					
Odocoileus hemionus	Mule Deer					
Puma concolor	Mountain Lion					
Zenaida asiatica	White-winged Dove					
Zenaida macroura	Mourning Dove					

Arizona Game and Fish Department
Project ID: HGIS-18826
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Review Date: 4/5/2023 11:57:45 AM

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.

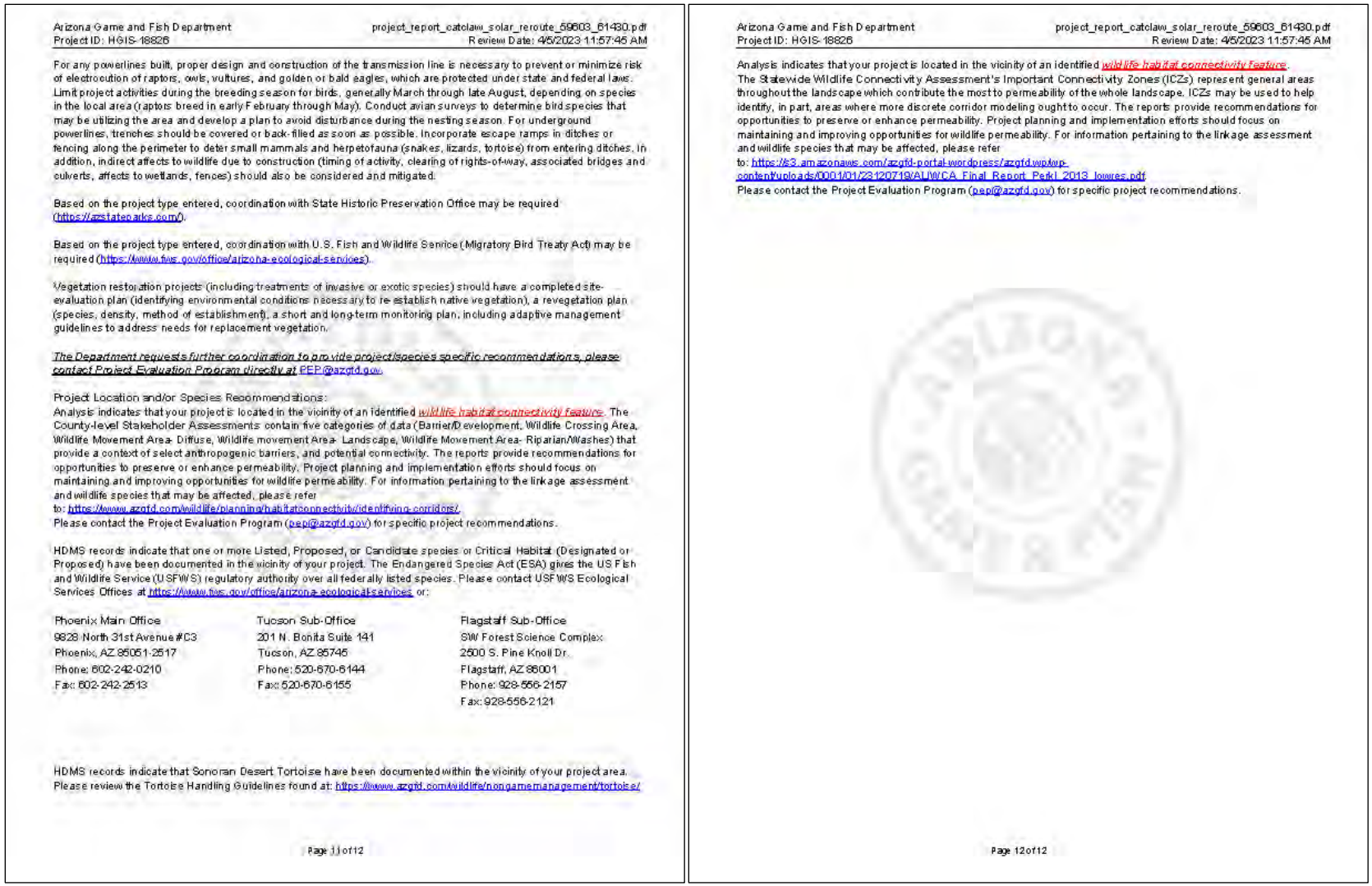
Minimize the potential introduction or spread of exotic invasive species, including aquatic and terrestrial plants, animals, insects and pathogens. Precautions should be taken to wash and/or decontaminate all equipment utilized in the project activities before entering and leaving the site. See the Arizona 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/imapservices/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-2k. Arizona Environmental Online Review Tool Report, April 6, 2023.



Arizona Game and Fish Department — project_report_catclaw_solar_reroute_59603_61430.pdf
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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:
Analysis indicates that your project is located in the vicinity of an identified *wildlife habitat connectivity feature*. The County-level Stakeholder Assessments contain five categories of data (Barrier/Development, Wildlife Crossing Area, Wildlife Movement Area- Diffuse, Wildlife movement Area- Landscape, Wildlife Movement Area- Riparian/Washes) that provide a context of select anthropogenic barriers, and potential connectivity. The reports provide recommendations for opportunities to preserve or enhance permeability. Project planning and implementation efforts should focus on maintaining and improving opportunities for wildlife permeability. For information pertaining to the linkage assessment and wildlife species that may be affected, please refer
to: https://www.azgfd.com/wildlife/planning/habitatconnectivity/identifying-corridors/.
Please contact the Project Evaluation Program (pep@azgfd.gov) for specific project recommendations.

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

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

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

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

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

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Analysis indicates that your project is located in the vicinity of an identified *wildlife habitat connectivity feature*.
The Statewide Wildlife Connectivity Assessment's Important Connectivity Zones (ICZs) represent general areas throughout the landscape which contribute the most to permeability of the whole landscape. ICZs may be used to help identify, in part, areas where more discrete corridor modeling ought to occur. The reports provide recommendations for opportunities to preserve or enhance permeability. Project planning and implementation efforts should focus on maintaining and improving opportunities for wildlife permeability. For information pertaining to the linkage assessment and wildlife species that may be affected, please refer
to: https://s3.amazonaws.com/azgfd-portal-wordpress/azgfd.wp/wp-content/uploads/0001/01/23120719/ALIWCA_Final_Report_Perkl_2013_lowres.pdf.
Please contact the Project Evaluation Program (pep@azgfd.gov) for specific project recommendations.

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Exhibit C-2l Arizona Environmental Online Review Tool Report, April 6, 2023.

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EXHIBIT D. BIOLOGICAL RESOURCES

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

> *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

To identify the plant and wildlife species that may occur within the Project, including Option A, Option B, and within one mile of the Project (i.e., the Study Area), SWCA Environmental Consultants (SWCA) consulted publicly available data sources, including the following:

- Topographical and aerial maps
- Arizona Game and Fish Department (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 completed a survey of portions of the Study Area on March 2 and April 4, 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 is entirely located within the Lower Colorado River Valley subdivision of the Sonoran Desertscrub biotic community (Brown 1994). The Study Area is mostly within the Lower Colorado River Valley subdivision of the Sonoran Desertscrub biotic community, but the easternmost edge of the Study Area lies within the Arizona Upland subdivision of the Sonoran Desertscrub biotic community (Brown 1994). The Study Area is at elevations ranging from approximately 1,250 to 1,590 feet above mean sea level. Outside of the Study Area, the White Tank Mountains are approximately 4 miles east of the Project, the Hassayampa River is approximately 2.5 miles west of the Project, and Interstate 10 is approximately 8.5 miles north of the Project. North Sun Valley Parkway, a paved, divided highway, occurs within the Project Area and Study Area. The Phoenix metropolitan area lies approximately 11 miles east of the Study Area, and the Gila River lies approximately 16 miles to the south.

Land uses in the Study Area include largely native, undisturbed desert with electrical infrastructure and substations, roads, a few residential structures, and disturbed areas that may be related to current or past gravel mining in the areas. Land Use in the vicinity of the Study Area include residential subdivisions. The Project and Study Area are flat to open topography with xeroriparian vegetation scattered throughout, particularly in the southern portion of the Project Area. Many unnamed minor ephemeral drainages occur within the Project and Study Area. The Project, using Option A or Option B, would span the Wagner Wash,

an ephemeral drainage that flows roughly northeast to southwest toward the Hassayampa River[1]. The Hayden-Rhodes Aqueduct occurs within the northwestern part of the Study Area outside of the Project Area.

Vegetation

Portions of the Project Area and Study Area have been disturbed for dirt roads, existing electrical lines and associated access roads, North Sun Valley Parkway, and scattered residential or commercial uses. The Project Area and Study Area also contain Sonoran desertscrub dominated by saguaro (*Carnegiea gigantea*), creosote bush (*Larrea tridentata*), and triangle bur ragweed (*Ambrosia deltoidea*). Other native species that occur include blue paloverde (*Parkinsonia florida*), brittlebush (*Encelia farinosa*), California barrel cactus (*Ferocactus acanthodes*), catclaw acacia (*Senegalia greggii*), Coues' cassia (*Senna covesii*), crucifixion thorn (*Castela emoryi*), desert ironwood (*Olneya tesota*), doubleclaw (*Probosicea parviflora*), Engelmann's hedgehog cactus (*Echinocereus engelmannii*), fourwing saltbush (*Atriplex canescens*), honey mesquite (*Prosopis glandulosa*), jumping cholla (*Cylindropuntia fulgida*), ocotillo (*Fouguieria splendens*), teddybear cholla (*Cylindropuntia bigelovii*), velvet mesquite (*Prosopis velutina*), and whitethorn acacia (*Vachellia constricta*). Non-native species were observed in the Subroute Option Project Area during the site visit, including Asian mustard (*Brassica tournefortii*) and stinknet (*Oncosiphon piluliferum*), both of which are noxious weed species. Noxious weed species listed by Arizona Department of Agriculture are discussed in Exhibit C.

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

Wildlife Species

Bird species observed in the Study Area during surveys included American kestrel (*Falco sparverius*), black-throated sparrow (*Amphispiza bilineata*), cactus wren (*Campylorhynchus brunneicapillus*), common raven (*Corvus corax*), curve-billed thrasher (*Toxostoma curvirostre*), Gila woodpecker (*Melanerpes uropygialis*), horned lark (*Eremophila alpestris*), house finch (*Haemorhous mexicanus*), loggerhead shrike (*Lanius ludovicianus*), mourning dove (*Zenaida macroura*), northern flicker (*Colaptes auratus*), red-tailed hawk (*Buteo jamaicensis*), sage thrasher (*Oreoscoptes montanus*), sagebrush sparrow (*Artemisiospiza nevadensis*), swainson's hawk (*Buteo swainsoni*), tree swallow (*Tachycineta bicolor*), western meadowlark (*Sturnella neglecta*), white-crowned sparrow (*Zonotrichia leucophrys*), white-throated sparrow (*Zonotrichia leucophrys*), and yellow-rumped warbler (*Setophaga coronata*). American kestrel, cactus wren, Gila woodpecker, loggerhead shrike, and sagebrush sparrow are addressed in Exhibit C. Cattle (*Bos taurus*) were observed during the field survey. No other wildlife species were observed during the field visit.

Habitat for bat species or potential bat roost sites (abandoned buildings) has the potential to be present in the Study Area but was not observed during surveys.

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 both the Lower Colorado River Valley and Arizona Upland subdivisions of the Sonoran Desertscrub biotic community evaluated for this report included mammals found in *Mammals of Arizona* (Hoffmeister 1986:Table 4.1). 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 both the Lower

[1] The confluence of the Wagner Wash and the Hasssayama River is approximately 2.5 miles west/northwest of the Project Substation.

Colorado River Valley and Arizona Upland subdivisions 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-, and large-sized 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. Abandoned buildings were not observed in the portions of the Study Area adjacent to Project; 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 in the Study Area

Common Name (*Scientific Name*)	**Habitat**
Arizona pocket mouse (*Perognathus amplus*)	Found in desertscrub habitats.
Badger (*Taxidea taxus*)	Found in grassland and desertscrub.
Black-tailed jackrabbit (*Lepus californicus*)	Occurs in open habitat with scattered patches of shrubs, including plains, fields, and deserts.
Bobcat (*Lynx rufus*)	Found in various habitats including woodlands, river bottomlands, deserts, and mountains.
Botta's pocket gopher (*Thomomys bottae*)	Found in extremely xeric locations below 11,000 feet above mean sea level with variable soils and ground cover ranging from open to grasslands. Occurs in roadsides, valleys, and mountain meadows.
Cactus mouse (*Peromyscus eremicus*)	Found in deserts and pinyon-juniper (*Pinus* spp.–*Juniperus* spp.) woodland, Occurs in rocky, sandy, or loamy soils. Found in rock heaps, stone walls, burrows, woodrat houses, and brush fences.
Coyote (*Canis latrans*)	Occurs in all habitat types, including agricultural, urban, and suburban areas.
Deer mouse (*Peromyscus maniculatus*)	Upland and riparian habitats, including open areas, brushlands, and coniferous and deciduous forests.
Desert cottontail (*Sylvilagus audubonii*)	Found in grasslands, brushlands, edges of foothill woodlands, willow thickets, and occasionally in cultivated fields or under buildings.
Desert kangaroo rat (*Dipodomys deserti*)	Occurs in low deserts, often sandy soil with sparse vegetation including alkali sink, shadscale *(Atriplex confertifolia*) scrub, and creosote bush (*Larrea tridentata*).
Desert pocket mouse (*Chaetodipus penicillatus*)	Occurs in sparsely vegetated sandy desert floors.
Harris's antelope squirrel (*Ammospermophilus harrisii*)	Occurs in low, dry vegetated desert. Prefers rocky soil or rocky slopes but can occur in sandy areas also.
Javelina (=collared peccary) (*Tayassu tajacu*)	Found in deserts, shrublands, cities, and agricultural areas.
Kit fox (*Vulpes macrotis*)	Occurs in open desert, primarily in shrubby or grassy habitat.

Common Name (*Scientific Name*)	Habitat
Merriam's kangaroo rat (*Dipodomys merriami*)	Occurs in low deserts in sparsely vegetated areas.
Mountain lion (*Puma concolor*)	Generally prefers mountainous, undisturbed areas. Stream courses and ridgetops used for travel corridors.
Mule deer (*Odocoileus hemionus*)	Occurs in mountains and lowlands, often associated with successional vegetation.
Ord's kangaroo rat (*Dipodomys ordii*)	Found in open sparsely vegetated grasslands or shrublands with sandy soil.
Round-tailed ground squirrel (*Xerospermophilus tereticaudus*)	Found in Sonoran desertscrub, alkali sink, and creosote bush communities in low, flat areas and avoids rocky hills.
Spotted ground squirrel (*Xerospermophilus spilosoma*)	Often associated with dry, sandy soil in grasslands or desertscrub.
Striped skunk (*Mephitis mephitis*)	Usually lives in areas near water, including rivers, streams, and irrigated places. Lives in natural cavities, burrows dug by other species, and human-made structures.
White-throated woodrat (*Neotoma albigula*)	Found in brushlands, rocky cliffs, creosote bush scrub, mesquite-yucca (*Prosopis* spp.–*Yucca* spp.), and pinyon-juniper woodland.
Bat Species	
Big brown bat (*Eptesicus fuscus*)	Occurs in variable habitat, from ponderosa pine (*Pinus ponderosa*) forests, pinyon-juniper woodlands, the lower edge of spruce-fir (*Picea* spp.–*Abies* 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.
Big free-tailed bat (*Nyctinomops macrotis*)	Rocky, rugged areas in a wide variety of biotic communities. Roosts primarily in crevices, but are occasionally found in in buildings, caves, or tree cavities.
California myotis (*Myotis californicus*)	Found in desert ranges and flatlands; desertshrub-oak (*Quercus* spp.) to ponderosa pine zones. Migratory; winter distribution in southern Arizona, south of the Gila River. Roosts in crevices and cracks in canyon walls, caves, and mine shafts, and under bark in trees or snags.
Canyon bat (*Parastrellus hesperus*)	Occurs in deserts, woodlands, and shrublands. Roosts in boulders, cracks, and crevices.
Fringed myotis (*Myotis thysanodes*)	Middle elevation grassland, desert, riparian, and woodland habitats. Roosts in caves, mines, cliff faces, rock crevices, old buildings, bridges, and snags. Migratory and hibernates for the winter.

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

Birds

The Lower Colorado River Valley subdivision of the Sonoran Desertscrub biotic community generally consists of open, sparsely vegetated habitats that do not support bird communities as diverse as those found in other subdivisions of Sonoran Desertscrub (Brown 1994). In contrast, the Arizona Upland subdivision of the Sonoran Desertscrub biotic community often supports a rich bird community (Brown 1994). Birds have potential to use the Study Area and Project Area for their life-history needs (i.e., foraging, nesting, or perching). Table D-2 lists the bird species that may occur in the Study Area. Cactus wren, Gila woodpecker, loggerhead shrike, and sagebrush sparrow were observed in the Project Area and are addressed in Exhibit C.

Table D-2. Bird Species That May Occur in the Study Area

Common Name (*Scientific Name*)	Habitat
Anna's hummingbird (*Calypte anna*)	Occurs in chaparral, coastal scrub, oak savannas, and open woodland. Also common in urban and suburban settings.
Ash-throated flycatcher (*Myiarchus cinerascens*)	Occurs in dry scrub, open woodlands, and deserts. Cavity nester that breeds in this part of Arizona.

Common Name (*Scientific Name*)	Habitat
Black-throated sparrow* (*Amphispiza bilineata*)	Common in semi-open areas such as canyons, washes, and desertscrub.
Common raven* (*Corvus corax*)	Found in most habitat types in select open areas. Regularly encountered in rural, agricultural, and urban settings. Year-round resident.
Curve-billed thrasher* (*Toxostoma curvirostre*)	Found in creosote bush, desertscrub, grasslands, and residential areas.
Gambel's quail (*Callipepla gambelii*)	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 (*Bubo virginianus*)	Occurs in a wide variety of habitats including agricultural and residential areas as well as woodlands and orchards.
Greater roadrunner (*Geococcyx californianus*)	Occurs in open, arid country with scattered shrubs, trees, or cacti. Also common in agricultural areas and urban and suburban settings. Year-round resident.
House finch* (*Carpodacus mexicanus*)	Occurs in arid scrub and brush, open woodland, oak-juniper, and pine-oak habitats, and towns and cultivated lands. Year-round resident.
Ladder-backed woodpecker (*Picoides scalaris*)	Occurs in thorn forests, deserts, and desertscrub, often confined to mostly xeric areas.
Lesser nighthawk (*Chordeiles acutipennis*)	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* (*Zenaida macroura*)	Occurs in a wide variety of habitats, most regularly in desertscrub, shrubby grasslands, and open woodlands. Also found in rural and urban habitats.
Northern mockingbird (*Mimus polyglottos*)	Prefers open and partly open situations. Occurs in areas of scattered brush or trees to semidesert, and around towns and cultivated areas.
Phainopepla (*Phainopepla nitens*)	Occurs in Arizona during the breeding season. Found in desert washes, where they feed heavily on desert mistletoe berries.
Red-tailed hawk* (*Buteo jamaicensis*)	Occurs in a wide variety of open habitats. Elevated perches are important. Year-round resident.
Turkey vulture (*Cathartes aura*)	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 (*Tyrannus verticalis*)	Prefers open areas in many habitat types including desert, rural, and agricultural areas. Migratory.
White-crowned sparrow* (*Zonotrichia leucophrys*)	Occurs in woodlands, shrubland, croplands, suburbs, old fields, and conifer woodlands.
White-winged dove (*Zenaida asiatica*)	Habitat generalist, including desertscrub, 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.

Reptiles

Both the Lower Colorado River Valley subdivision and the Arizona Upland subdivision of the Sonoran Desert biotic community are home to many reptile species (Brown 1994). Species typical of Sonoran desertscrub may occur in the portions of the Project Area and Study Area containing native vegetation. 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
Arizona chuckwalla (*Sauromalus ater*)	Occurs in Sonoran and Mohave desertscrub, in rocky habitats including boulder fields, outcroppings on hillsides and slopes, and lava fields.

Common Name (*Scientific Name*)	**Habitat**
Banded Gila monster (*Heloderma suspectum cinctum*)	Ranges from desertscrub to lower reaches of Great Basin Conifer Woodland and Madrean Evergreen Woodland. Commonly found above the flats in rocky drainages and rugged terrain.
Coachwhip (*Coluber flagellum*)	Typically occurs in desertscrub 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 (*Uta stansburiana*)	Typically occurs in desertscrub, semidesert grasslands, Great Basin grasslands, and interior chaparral.
Desert horned lizard (*Phrynosoma* [*Doliosaurus*] *platyrhinos*)	Occurs in desertscrub communities in flat, open areas with sparse vegetation. Can also be found on rocky bajadas and hillside.
Desert iguana (*Dipsosaurus dorsalis*)	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 nightsnake (*Hypsiglena chlorophaea*)	Ranges from flat, open sandy deserts to steep, rocky, and wooded slopes.
Desert spiny lizard (*Sceloporus magister*)	Found in Sonoran desertscrub, Great Basin desertscrub, Semidesert grassland, interior chaparral, and woodlands.
Gophersnake (*Pituophis catenifer*)	Found in biotic communities up to Alpine Tundra. Occurs in deserts, forests, and coastal grasslands.
Groundsnake (*Sonora semiannulata*)	Occurs in a wide variety of biotic communities. Occurs in steep rocky canyons, slopes, bajadas, foothills, and low valleys, as well as residential areas in the Phoenix metropolitan area.
Long-nosed leopard lizard (*Gambelia wislizeni*)	Found in desertscrub and semidesert grasslands.
Long-nosed snake (*Rhinocheilus lecontei*)	Occurs in deserts, dry prairies, arid river valleys, thornbrush, and shrubland.
Mohave rattlesnake (*Crotalus scutulatus*)	Found in desertscrub and semidesert grassland, usual in relatively level terrain.
Ornate tree lizard (*Urosaurus ornatus*)	Occurs in most biotic communities from desertscrub to subalpine.
Sidewinder (*Crotalus cerastes*)	Typically occurs in flat, open desert with sandy or loamy soils.
Spotted leaf-nosed snake (*Phyllorhynchus decurtatus*)	Found in creosote bush flats and washes in Sonoran desertscrub.
Tiger whiptail (*Aspidoscelis tigris*)	Occurs in a wide variety of habitats including creosote bush flats, sandy washes, canyons, and hillsides. Found in desertscrub, semidesert grasslands, and lower reaches of chaparral.
Western banded gecko (*Coleonyx variegatus*)	Ranges from dry creosote bush flats to rugged, rocky slopes to barren high desert plateaus.
Western patch-nosed snake (*Salvadora hexalepis*)	Found in flatlands and low valleys from desertscrub to woodlands.
Zebra-tailed lizard (*Callisaurus draconoides*)	Found primarily in desertscrub. Occurs in flatlands and broad, sandy washes.

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

*Observed during field reconnaissance

Amphibians

There are no perennial water sources within the Project Area; the manmade Hayden-Rhodes aqueduct is within the Study Area. Native amphibians are unlikely to occur in the Project Area or Study Area because of the lack of ponds, local canals, irrigated fields, or low-lying areas subject to floods during monsoon storms. The non-native American bullfrog (*Lithobates catesbeianus*) has the potential to occur in or near the Hayden-Rhodes aqueduct.

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

Common Name (*Scientific Name*)	Habitat
Amphibians	
American bullfrog* (*Lithobates catesbeianus*)	Introduced in Arizona. Occurs in a wide variety of aquatic habitats from cattle tanks and canals to ponds, reservoirs, and marshes.

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

*Non-native species

Fish Species

The only perennial aquatic habitat in the Study Area is the Hayden-Rhodes Aqueduct, which occurs outside of the Project Area. Introduced fish have the potential to occur within the Study Area within the Hayden-Rhodes Aqueduct. Many of these fish represent invasive species that have been released or sportfish that have been stocked or released into waterways connected to the canals. No native fish species would be expected to occur.

There are no small agricultural canals within the Project Area or Study Area, and fish would not be expected to be swept into any portion of the Project Area from the Hayden-Rhodes Aqueduct. There is no suitable aquatic habitat for fish within the Project Area.

The Central Arizona Project (CAP) canal is known to carry fish, though 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 upstream reach during the 2005–2009 study (Kesner and Marsh 2010): black bullhead (*Ameiurus melas*), bluegill (*Lepomis macrochirus*), channel catfish (*Ictalurus punctatus*), common carp (*Cyprinus carpio*), grass carp (*Ctenopharyngodon idella*), green sunfish (*Lepomis cyanellus*), largemouth bass (*Micropterus salmoides*), pacu (Family Serrasalmidae), redear sunfish (*Lepomis microlophus*), red shiner (*Cyprinella lutrensis*), striped bass (*Morone saxatilis*), smallmouth bass (*Micropterus dolomieu*), sunfish hybrids (Family Centrarchidae), and threadfin shad (*Dorosoma petenense*).

Summary of Potential Effects

Vegetation

The Project involves work primarily within undisturbed Sonoran Desertscrub dominated by saguaro, creosote bush, and triangle bur ragweed, though some previously disturbed areas occur (i.e., existing roadway). Vegetation would be removed in areas where power poles would be placed, where the Project Substation would be built, and where access roads may be constructed. Because Option B is longer than Option A, that route would result in an increase in vegetation disturbance. However, regardless of whether the Project uses Option A or Option B, Project construction would not substantially affect the Lower Colorado River Valley subdivision of the Sonoran Desert biotic community native vegetation community at the landscape level because of the relatively small area of disturbance compared to the abundant Sonoran Desertscrub vegetation present in the one-mile Study Area and vicinity. The Arizona Upland subdivision of the Sonoran Desertscrub biotic community would not be affected because only the northeasternmost corner of the Study Area outside of the Project Area is mapped within that community, and no construction activities would occur outside of the Project Area.

Mammalian Species

Project construction could potentially result in injury or mortality 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 species' life history, 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 would be temporary. The loss and degradation of mammal habitat from short- and long-term Project activities would be minor given that permanently disturbed areas would be limited to the Project Substation, potential access roads, and power pole sites. and the one-mile Study Area contains abundant undisturbed desert habitat outside of the Project. The Project crosses one wildlife movement corridor (White Tanks–Hassayampa River potential linkage zone), and the Study Area intersects other movement corridors as discussed in Exhibit C. Mammal species that typically occur in the nearby hilly or mountainous areas in the vicinity of the Project may use those corridors. However, the small disturbance footprint and relatively short time frame 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 mostly occur during the day. Some roosting habitats may occur in the Study Area, but none are present in Option A or Option B for the Project. The loss of potential foraging habitat in the Project 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.

Project construction 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. These impacts would cease with completion of construction activities.

Overall, it is possible that Option A may result in fewer impacts on mammals given that Option A is about 0.4 mile shorter than Option B. However, the difference in impacts between Option A and Option B is anticipated to be negligible because both routes traverse similar habitats and Sonoran Desertscrub is abundant in the surrounding area.

Bird Species

Birds, including raptors, can collide with power lines, resulting in injury or death (Avian Power Line Interaction Committee [APLIC] 2012). Birds that are large-bodied, are fast flyers, have large wing spans, or 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 birds that nest or forage 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; therefore, collision risk is lower in areas where multiple transmission lines are collocated 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 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.

Potential impacts from increased noise, vibration, or human presence at the Project and from loss, degradation, and fragmentation would be the same as those described for terrestrial mammals. Option B is 0.4 mile longer than Option A and could have more potential perches for hunting. Similar to mammals, potential Project impacts on birds may be greater for Option B because of its slightly increased disturbance area. However, as described for mammals, the difference in potential impacts between Option A and Option B are anticipated to be negligible because both routes traverse similar habitats and Sonoran Desertscrub is abundant in the surrounding area.

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 due to 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 due to the increase in available perches for reptile predators. Similar to mammals, potential Project impacts on reptiles may be greater for Option B because of its greater disturbance area. However, the difference in impacts between Option A and Option B are anticipated to be negligible because both routes traverse similar habitats and Sonoran Desertscrub is abundant in the surrounding area.

Amphibian Species

Apart from the amphibians noted above in Table C-2, no additional native amphibians are likely to occur in the Project Area or Study Area due to the lack of permanent water, irrigated fields, or places where water pools following rainfall (e.g., stock ponds). Therefore, no impacts on native amphibians are expected to occur because of Project activities associated with either Option A or Option B. American bullfrogs have the potential to disperse across the Study Area from the Hayden-Rhodes Aqueduct when humidity is high. Impacts to this invasive species include death, injury, or impacts arising from behavior changes. The Project would not contribute to the loss of habitat nor result in any adverse impacts on populations because these frogs are introduced and do not naturally occur in Arizona.

Fish Species

Project activities are unlikely to impact fish, which are not expected to occur along Option A or Option B.

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, please 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 Project 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). Preconstruction surveys for nesting birds should be conducted by qualified biologists if vegetation-clearing activities would occur during bird nesting season (generally February–September with January–June for raptors).

- 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 washing equipment prior to and following mobilization to the Project Area.
- If vegetation-disturbing activities are planned during the migratory bird nesting season (February–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 the AGFD's *Guidelines for Solar Development in Arizona* (AGFD 2009) and *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.
- If trenching is included as part of Project construction, the following should be considered to minimize injury to wildlife:
  - when trenches cannot be backfilled in the same day, escape ramps, which can be short lateral trenches or wooden planks sloping to the surface, should be constructed at least every 90 meters;
  - 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.

Conclusion

Portions of the Project Area and Study Area occur within previously disturbed and developed areas with existing roads. Existing transmission lines occur in the vicinity of the Project. Because the Project would disturb relatively little vegetation and there is abundant habitat in the one-mile Study Area and vicinity, impacts on populations of plants and wildlife would be minimal and restricted to individuals. While the magnitude of potential impacts on vegetation and wildlife could be greater for Option B (given its greater length), the difference in impacts between Option A and Option B would likely be negligible because both routes traverse similar habitats and Sonoran Desertscrub is abundant in the surrounding area. At a landscape level, the Project 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:

> *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 scenic areas and visual resources and the effects to these resources potentially resulting from the Project. The Project team completed a visual impact assessment to determine potential effects to visual resources. The methodology for this assessment is described below and includes separate discussions for scenery (i.e., scenic quality) and sensitive viewers. The visual resources inventory and the impact assessment focus on the one-mile Study Area and address scenery and sensitive viewers. The Project is located on private property within the city of Buckeye, Arizona. 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 does not occur within any designated national or state scenic areas.

Methodology

The purpose of the visual impact assessment is to identify and characterize the level of visual modification of the landscape that would result from the construction and operation of the Project. Modification of the landscape is typically described in terms of its degree of visual contrast, which can potentially affect both scenic quality and sensitive viewers. While scenic quality refers to the general characteristics and inherent aesthetic value of the landscape as a resource regardless of specific viewers, the term "sensitive viewers" refers to specific viewers and/or groups of viewers whose views could be affected by potential changes to the landscape. The methods used to conduct this visual impact assessment are consistent with past visual resource studies conducted for similar projects approved by the Arizona Power Plant and Transmission Line Siting Committee.

The visual assessment used a one-mile Study Area around the Project. Visual resource information and data for this assessment were developed based on research, available geographic information system (GIS) data, aerial photography, and on-site field verification and photographic documentation. These data were collected for all land, regardless of jurisdiction, and used to develop a comprehensive understanding of the existing landscape and associated visual resources. Most of the Study Area is private land, with relatively small portions of federally administered and state-administered lands occurring on the periphery; the Project would be on private property (see Figures A-2a and A-2b).

Impacts on both scenic quality and sensitive viewers are determined, in part, by evaluating the visual contrast the proposed facilities would have with the existing landscape. Visual contrast refers to the degree to which the Project features would either match/repeat existing features in the landscape or contrast with features of the existing landscape. The degree of visual contrast considers the existing landforms, vegetation, and built features present in the landscape and is described in terms or 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 contrast analysis is supported by visual simulations prepared for views around the Study Area.

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 of the inherent aesthetic value of the landscape based on the appearance of existing landscape features, including landforms, 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 scenic quality to the anticipated quality considering any contrast introduced by the construction and operation of the proposed Project using visual simulations as support.

Sensitive Viewers

The concept of sensitive viewers refers to individuals for whom the Project may be visible and may be sensitive to potential changes in the scenery. With regard to 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.

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. The duration of view refers to the length of time and associated angle of view at which 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 viewed against a backdrop of landforms, vegetation, and/or built features.

Anticipated viewer sensitivities to visual changes are also discussed within the analysis, 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, while 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 Study Area falls within the Sonoran Basin and Range Level III ecoregion and, more specifically, within the Gila/Salt Intermediate Basins Level IV ecoregion (U.S. Geological Survey 2014). The Sonoran Basin and Range ecoregion consists of generally broad, open landscapes with scattered mountains and vegetation consisting of paloverde (*Parkinsonia* sp.), saguaro cactus (*Carnegiea gigantea*), and other various Sonoran Desert plants. Views of the scenery in the Study Area are mostly open and panoramic in nature and include views of the Belmont Mountains to the west and the White Tank Mountains to the east. Several high-voltage transmission lines are present in the Study Area. As previously noted, approximately two-thirds of the Project would be immediately adjacent to two 500-kilovolt (kV) transmission lines. The majority of the Study Area is vacant/open desert, few occurrences of roads, utility areas, and BLM-administered lands (see Figures A-2a and A-2b).

The open/panoramic views in the Study Area may be considered moderately scenic; however, the existing transmission lines are visually prominent from most vantage points in the Study Area.

Sensitive Viewers

Residences

The nearest residential developments are outside of the one-mile Study Area, located approximately 2.25 miles northeast of Option A and 6 miles south of the Project Substation. As noted in Exhibit B, the Teravalis Master Planned community has been platted on approximately 100 acres approximately one mile north of the Project Substation, west of Sun Valley Parkway. Preliminary land development activities appear to be underway at the Teravalis site; however, no residential structures appeared to be under construction at the time of the site visit.

The existing transmission structures constitute dominant features that are highly visible from the existing residential developments north and south of the Project. Views from existing residences are mostly open and panoramic in nature and include distant views of the Belmont Mountains and utility infrastructure. Residential viewers are assumed to have a long duration of view and high sensitivities to visual changes within the Study Area.

Recreation Areas

There are no dedicated recreation areas within the Study Area (see Exhibit F). Roads and off-highway vehicle (OHV) trails occur in the eastern portion of the Study Area and facilitate dispersed recreation in the White Tank Mountains, outside of the Study Area. Views from the OHV trails include rural landscapes that are dominated by highly visible large-scale transmission lines. Recreational viewers would view the Project in relatively short durations, although may have high sensitivities to visual changes within the Study Area.

Travel Routes

The primary travel route in the Study Area is Sun Valley Parkway. Option A and Option B roughly parallel Sun Valley Parkway; both routes have two perpendicular crossings over that road. Bell Road, a low-use dirt road, intersects the existing 500kV transmission line corridor. Palo Verde Road is a utility access road that will have views of the Project due to its proximity to the alignment. The existing transmission infrastructure within the Study Area is visible to many travel route users.

The views from travel routes are open and panoramic in nature and include visual disturbance from existing transmission infrastructure. Viewers moving along travel routes are expected to have relatively short

durations of view based on travel speeds and relatively low sensitivities to visual changes within the Study Area.

Key Observation Points

The Project team identified four Key Observation Points (KOPs) to represent key vantage points of the Project from travel routes, a residential area, and a recreation area. SWCA Environmental Consultants (SWCA) conducted a visual resources site visit in March 2023 during which existing conditions were photographed and pertinent location information was collected. Table E-2 identifies the Project KOPs.

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

KOP	Location (latitude/longitude)	Sensitive Viewer Group/ Distance from Viewer	Reason for Inclusion
1	View facing east from the edge of a residential community. 33.65687°, -112.634178°	Residential viewers	Existing residential development is limited to the northeast of the Study Area.
2	View facing south from intersection of Sun Valley Parkway and Palo Verde Road. 33.656091°, -112.677578°	Travel route viewers	This point is placed on Sun Valley Parkway in the northern portion of the Study Area.
3	View facing south from Sun Valley Parkway. 33.586334°, -112.686627°	Travel route viewers	This point is placed on Sun Valley Parkway in the southern portion of the Study Area.
4	View facing east from an OHV area. 33.559549°, -112.67283°	Recreational viewers	This area has dispersed recreation opportunities (OHV trails, hiking, etc.). This KOP may also simulate views from future residential development proposed within the Study Area.

Impact Assessment Results

The information below provides a general description of the potential impacts on scenic quality and sensitive viewers from the construction and operation of the Project. Overall, visual impacts associated with the Project would be low because the Project components would appear similar to the existing transmission lines that are adjacent to the Project, which are already visually prominent features in the landscape.

Scenery

The Project, using Option A or Option B, would introduce a 230kV transmission line and associated substation facilities. The lines, forms, colors, textures, and scale of the Project facilities would be similar in appearance to other transmission line infrastructure in the Study Area. Transmission structures for the Project would likely be shorter than the existing 500kV lattice-type structures, which are often between 130 and 140 feet tall. The Project is expected to create low impacts to the existing, moderate scenic quality of the Study Area. Project components would generally be visible but would not attract attention and would be subordinate to other built features within the landscape, resulting 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

The nearest residential development is approximately 2.25 miles northeast of Option A; the same residential area is approximately 2.6 miles from Option B. Views of the proposed Project structures as seen from the existing residences northeast of the Study Area would be visually subordinate to, and difficult to discern from, the existing transmission lines. The residences are within a relatively flat valley landform and would view the Project from a generally neutral position. The residences are over 1 mile from the Project and, due to distance, gently undulating topography, and vegetation, the proposed structures are not readily apparent. The proposed structures are backdropped against distant mountains and placed amid existing transmission structures, further reducing visual contrast of the proposed Project.

Residential views of the Project are represented by KOP 1 (see Exhibit G-6, which includes a simulation of Option A). From KOP 1, the lines, forms, colors, textures, and scale of the Project using Option A appear as a relatively minor feature near the horizon. Furthermore, Project components would be similar to those found within the existing visual setting. Despite the anticipated long duration of view by residents, the Project would not attract attention and would be subordinate to other built features within the landscape, resulting in a weak degree of contrast and low impacts.

Given the greater viewing distance between Option B and the residential area represented by KOP 1, visual impacts are anticipated to be somewhat reduced for Option B as compared to Option A. From KOP 1, Option B would appear as an even smaller feature on the horizon compared to Option A, as simulated in Exhibit G-6. Furthermore, the lines, forms, colors, and textures of the Project using Option B would be similar to the existing transmission facilities. Therefore, Option B is unlikely to attract attention, and would be subordinate to other built features in the landscape, resulting in a weak degree of contrast and low visual impacts.

As noted in Exhibit B, the Teravalis Master Planned community has been platted on approximately 100 acres approximately one mile north of the Project Substation, west of Sun Valley Parkway (the Teravalis Master Planned Community is approximately 2 miles south from where Option B branches off Option A). Views of the Project from the platted area would likely be similar to those represented in Exhibit G-9, the visual simulation for KOP 4. Measured perpendicular to the Project, KOP 4 is a similar distance from the Project as the platted area—about 0.4 mile. Additionally, KOP 4 and the platted area are in the same general area along the Project. From the platted area viewing east, the lines, forms, colors, textures, and scale of the Project components would be similar to the existing 500kV transmission lines in the existing visual setting. The Project would likely use transmission structures that area shorter than those supporting the existing 500kV lines; therefore, the Project would be subordinate to other built features within the landscape, resulting in a weak degree of contrast and low impacts.

Recreation Areas

Recreation opportunities in the Study Area are limited to OHV trails where landscape views are relatively short in duration. The trails are relatively flat and the Project, using Option A or Option B, would be seen from a neutral position on the landscape. Views of existing transmission infrastructure in this area are prominent due to being skylined against the horizon, as portrayed at KOP 4 (see Exhibit G-9). The Project would introduce lines, forms, colors, and textures like the existing utility infrastructure in the area. Option B would also introduce lines, form, colors, and textures that are similar to the existing 500kV transmission lines. Using Option A or Option B, the Project would introduce a weak degree of contrast, and the Project structures would be compatible with the existing visual disturbance.

Travel Routes

Both travel route KOPs (KOPs 2 and 3) capture views from Sun Valley Parkway, the main roadway through the Study Area. The Project would be viewed in short duration by commuters, and the transmission alignment may be viewed as either crossing the road perpendicularly or paralleling the road through the

Study Area. Based on the generally flat landform on which the Project would be located, views of the Project from travel routes would generally be from a neutral position and would include skylined views of the transmission lines, where visible.

KOP 2 represents views from the intersection of Palo Verde Road and Sun Valley Parkway (see Exhibit G-7, which includes a simulation of Option A). Project structures would be skylined from the vantage point of KOP 2. The lines, forms, colors, textures, and scale of the Project features would be similar to the existing transmission infrastructure. The Project would be seen but not attract viewer attention as the additional visual contrast is compatible with the landscape due to the existing transmission lines.

The visual simulation for KOP 2 (see Exhibit G-7) is generally representative of the Project using Option B, although Option B is farther from KOP 2 as compared to Option A. For Option B, structures would likely be skylined from the KOP 2 vantage point and generally for travel route viewers on Sun Valley Parkway. The aerial span of Sun Valley Parkway would have a similar appearance for Option A and Option B, although the crossing for Option B would be approximately one mile south. Both crossing locations are generally flat, with similar landscapes; the aerial crossing for Option B is not substantially nearer to any sensitive viewers. The lines, forms, colors, textures, and scale of Option B would, furthermore, be similar to the existing transmission lines in the area. Like Option A, Option B would be visible to travelers on Sun Valley Parkway but would not attract undue attention.

KOP 3 (see Exhibit G-8, which includes a simulation of Option A) represents views from Sun Valley Parkway, north of where the Project would cross Sun Valley Parkway (near the Project Substation). KOP 3 is south of the point where Option A and Option B diverge; therefore, the visual simulation for KOP 3 (Exhibit G-8) is representative of either route. Similar to KOP 2, views at KOP 3 would introduce skylined transmission structures that are visually similar to the existing transmission infrastructure. The Project may attract viewer attention where it would cross Sun Valley Parkway, but those views would be very short in duration.

Project contrast and visual impact as seen from the two travel route KOPs would be low. The Project could be seen but would be subordinate to the existing transmission infrastructure and the scale of the overall landscape.

Conclusion

Overall, the Project, using Option A or Option B, would be similar in form, line, color, and texture compared with existing transmission infrastructure in the Study Area, which would result in low impacts to scenery. Impacts to sensitive viewers would be low overall as a result of perceived contrast due to intervening visual elements and the duration of view of the Project within the Study 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 (Arizona Revised Statutes 41-861 through 41–864), which 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 (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 an event that made a significant contribution to the broad pattern of history.
- Criterion (b): be associated with the life of a historically significant person.
- Criterion (c): have distinctive characteristics of a type, period, or method of construction, represents the work of a master, possesses high artistic value, or represents a significant and distinguishable entity whose components may lack individual distinction.
- Criterion (d): has yielded or is likely to yield important pre-historical or historical information.

Methodology

The Study Area for the purpose of assessing potential impacts to historic sites and structures, as well as archaeological sites, is defined as a one-mile-radius buffer from the Project (Option A and Option B), and Project Substation. SWCA reviewed archival records to identify such properties within the Study Area. Data sources searched include AZSITE, Arizona's statewide cultural resources database, which includes records from the Arizona State Museum (ASM), Arizona State University, SHPO, and the BLM; the National Register of Historic Places database; the ARHP list; General Land Office (GLO) plat maps; and historic-era topographic maps.

Previous Cultural Resources Projects

The records review identified 25 prior cultural resources surveys that have taken place within the one-mile Study Area and Project Area. These projects took place from 1972 to 2015 in support of transportation improvements, irrigation improvements, electrical transmission lines, fiber-optic lines, and private development. Of these, six cultural surveys intersect and cover the entire Project Area (Table E-3).

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

Agency Number	Project Name	Organization	Year
A-75-199.MNA	Palo Verde Nuclear Generating Station-Westwing	Museum of Northern Arizona	1975
1986-52.ASM	State Land Survey	ASM	1986
1986-194.ASM	White Tank Mountain Regional Parkway Project	Archaeological Consulting Services, Ltd.	1986
2003-341.ASM	Sun Valley 13,000 Acre Survey	SWCA	2003
2004-1076.ASM	APS West Valley North Project	URS Corporation	2004
2006-128.ASM	Accipiter Survey (Sun Valley-Lake Pleasant Fiber Loop Project)	Tierra Right-of-Way Services	2006

Note: Shading indicates that SWCA believes these surveys can be relied upon for current inventory purposes.

The SHPO has provided guidance for the reliance on survey data that is 10 years or older (SHPO 2004). Surveys conducted before 1995 did not use the current ASM site definition criteria (ASM 1995). Of the remaining six surveys, three of them did not use a survey strategy that would meet current methodological standards for full coverage in Arizona. For the remaining three surveys, the principal investigators meet current state and federal professional qualification standards. Lastly, it is unlikely that there are additional resources present in the current area of potential effects that have become at least 50 years old since the previous surveys were conducted. SWCA believes these three surveys can be relied upon for current inventory purposes and cover approximately 217.8 acres (95.6 percent) of the proposed Project Area. A 10.1-acre area within Option B has not previously been adequately surveyed.

Historic-era Sites

The records review identified three historic-era sites, none of which intersect the Project Area (Table E-4). Sites AZ T:6:56(ASM) and AZ T:6:72(ASM) are historic-era refuse scatters that were recommended not eligible for listing in the ARHP. Site AZ T:6:59(ASM) is an isolated stone fireplace that was determined not eligible for listing in the ARHP. 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 scatters listed in the table below no longer qualify as sites.

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 T:6:56(ASM)	Euro-American / 1890–1940s	Refuse scatter	Recommended not eligible	Foster et. al (2002)	0.18
AZ T:6:59(ASM)	Euro-American / ca. 1920s	Fireplace/chimney and refuse scatter	Recommended not eligible	Foster et al. (2002)	0.47
AZ T:6:72(ASM)	Euro-American / ca. 1907–1961	Refuse scatter and possible two-track road	Determined not eligible	Lundin (2003)	0.62

Historic-era Structures

The records review did not identify any historic-era structures from the AZSITE database.

The GLO plat of Township 3 North, Range 4 West, approved in 1919, depicts an unnamed road crossing east-west through Sections 19, 20, and 21 within the Study Area and the Project, and an unnamed road intersecting Section 6 within the Study Area. The GLO plat of Township 4 North, Range 4 West, also filed in 1919; depicts an unnamed road crossing northeast-southwest through Sections 28, 29, 31, and 32 within the Study Area, Option A, and Option B.

The 1954 U.S. Geological Survey (USGS) Phoenix, Arizona, 1:250,000 scale topographic map depicts an unimproved road paralleling and intersecting Option A and Option B. Two transmission lines are depicted within the Study Area. The 1957 USGS White Tanks, Arizona, 1:62,500 scale topographic map additionally depicts an unimproved road intersecting the Project Area and New Tank and four unimproved roads in the Study Area.

Historical aerial photographs of the area from 1953 depict the same unimproved road that parallels and intersects the Option A and Option B. Modern aerial photography indicates that the four historic-era roads intersecting the Project are still in use (Maricopa County 2023).

Archaeological Sites

There is one previously recorded archeological site within the one-mile Study Area that does not intersect the Project Area (Table E-5). Site AZ T:6:42(ASM) is a Hohokam limited activity area that was determined not eligible for listing in the ARHP.

Table E-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 T:6:42(ASM)	Hohokam / prehistoric	Rock pile, rock ring, and an artifact scatter	Determined not eligible	Stubing (1999)	0.23

Assessment of Effects

A project can have direct and/or indirect effects on historic sites and structures and archaeological sites when it alters the characteristics that qualify it for listing in the ARHP. 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, but are not limited to, the following:

- 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

The records review did not identify any sites that would be directly affected by the proposed Project. The historical map research identified four unnamed unimproved roads intersecting the Project Area. These roads were not recorded as significant sites or structures during the previous surveys and likely would not be ARHP-eligible properties. The roads also appear to be still in use and would be avoided by Project activities.

Indirect Effects

No ARHP-eligible properties were identified within the Study Area.

Conclusion

The records review identified that approximately 217.8 acres (95.6 percent) of Project (Option A and Option B) has been previously adequately surveyed for cultural resources. A 10.1-acre area within Option B has not been previously adequately surveyed. The available records indicated that there are no historic properties that would be affected by direct or indirect effects from implementation of the Project. Four historic-era roads intersect the Project Area but are still in use and would be avoided by Project activities. If requested by the SHPO, the Applicant would survey the 10.1-acres to ensure that no historic properties are adversely affected by the Project.

Literature Cited

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.

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.

Foster, M.S., R. Ryden, M. Peters, and A. Lack. 2002. *An Archaeological Survey of 13,000 Acres for the Sun Valley Development, Maricopa County, Arizona*. SWCA Cultural Resources Report No. 02-340. SWCA Environmental Consultants, Phoenix, Arizona.

Lundin, D.R. 2003. *An Archaeological Survey of 3,766 Acres for the Festival Ranch Project in Northern Maricopa County, Arizona*. SWCA Cultural Resources Report No. 02-450. SWCA Environmental Consultants, Phoenix, Arizona.

Maricopa County. 2023. Historic Aerial Photography. Available at: https://gis.maricopa.gov/GIO/HistoricalAerial/index.html. Accessed March 2023.

Stubing, M. 1999. *Archaeological Survey for the Hassayampa Riverbank Stabilization Project, Maricopa County, Arizona*. SWCA Cultural Resources Report No. 99-112. SWCA Environmental Consultants, Phoenix, Arizona.

U.S. Geological Survey. 2014. USGS Ecoregions of Arizona. Available at: https://pubs.usgs.gov/of/2014/1141/. Accessed January 2023.

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EXHIBIT F. RECREATION

As stated in the Arizona Corporation Commission Rules of Practice and Procedure R14-3-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 the City of Buckeye. Currently, there are no dedicated open spaces or community parks located within the Project Area (City of Buckeye 2016). As previously stated, the Project, using Option A or Option B, and Project Substation would be entirely on private property, which in general is not open to the public for recreation.

The City of Buckeye's Parks and Recreation Master Plan identifies a number of proposed "secondary paths"[2] that cross Option A and Option B. Additionally, the Parks and Recreation Master Plan identifies a number "accessible trails"[3] running parallel to existing transmission lines (City of Buckeye 2016: 82, 88). The Project would not impede the development of any of the secondary paths or accessible trails identified in the Buckeye Parks and Recreation Master Plan.

The White Tank Mountain Regional Park is located approximately 2.5 miles east of the Project boundaries; the Skyline Regional Park is located approximately 5 miles southeast of the Project boundaries. Additionally, Tartesso Community Park and Tartesso Community Sports Park are located 4.75 miles south of the Project.

Within the Study Area and surrounding region, dispersed recreational opportunities such as off-road vehicle use, hiking, camping, bird watching, rockhounding, and horseback riding are available on public land. Generally, all State lands can be accessed by the public using a Special Use Permit, which would provide similar recreational opportunities. Recreational users may occasionally use public roadways for walking, biking, and general transportation, as well as for incidental uses such as bird watching.

Therefore, the Project would not impact existing recreational opportunities in the Project Area or the Study Area. The Applicant does not have plans to develop public "recreational aspects" along Option A or Option B.

Literature Cited

City of Buckeye. 2016. *Parks and Recreation Master Plan*, Buckeye, Arizona. Available at: https://www.buckeyeaz.gov/home/showpublisheddocument/662/636437642600200000. Accessed February 2023.

[2] Buckeye defines a "secondary path," in relevant part, as: "Secondary paths generally serve a community-wide function by connecting neighborhoods to community parks, schools, commercial nodes and employment centers that are not necessarily on the regional system. These paths serve both the transportation and recreation needs of the public. Secondary paths differ from primary paths by not being as wide (10 feet vs. primary path's 12 feet) and do not require a 4-foot-wide parallel trail." (City of Buckeye 2016:82).

[3] Buckeye defines an "accessible trail," in relevant part, as: "Accessible trails have a surface of compacted and stabilized decomposed granite. These trails will allow for a more natural experience to users in developed areas of the city. These trails will predominately be constructed along powerline corridors. Utility companies often have limitations on the types of improvements that can be located below the powerlines, such as restrictions for landscaping and lighting due to maintenance concerns. Where feasible, the accessible trails should be located adjacent to the utility easement to allow for enhanced amenities, such as trees and lighting. (City of Buckeye 2016:82).

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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:

> *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 Transmission Line Tangent Structure, H-Frame

Exhibit G-2 – Typical 230kV Transmission Line Tangent Structure, Monopole

Exhibit G-3 – Typical 230kV Transmission Line Deadend/Turning 3-Pole Structure

Exhibit G-4 – Typical 230kV Transmission Line Single-Circuit Turning Structure

Exhibit G-5 – Project Substation Preliminary Layout

Exhibit G-6 – Photosimulation of Project from KOP 1

Exhibit G-7 – Photosimulation of Project from KOP 2

Exhibit G-8 – Photosimulation of Project from KOP 3

Exhibit G-9 – Photosimulation of Project from KOP 4

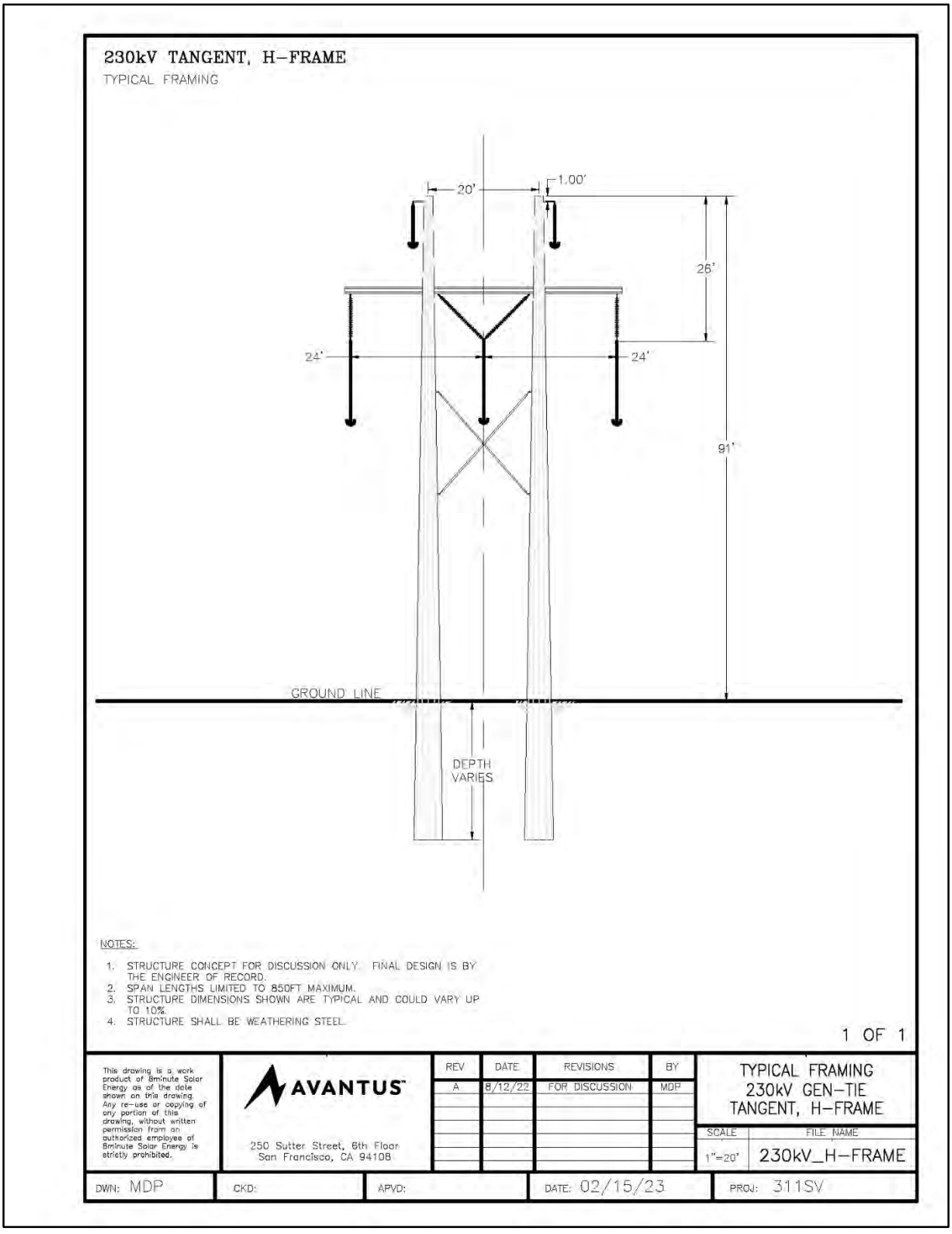


Exhibit G-1. Typical 230kV Transmission Line Tangent Structure, H-Frame.

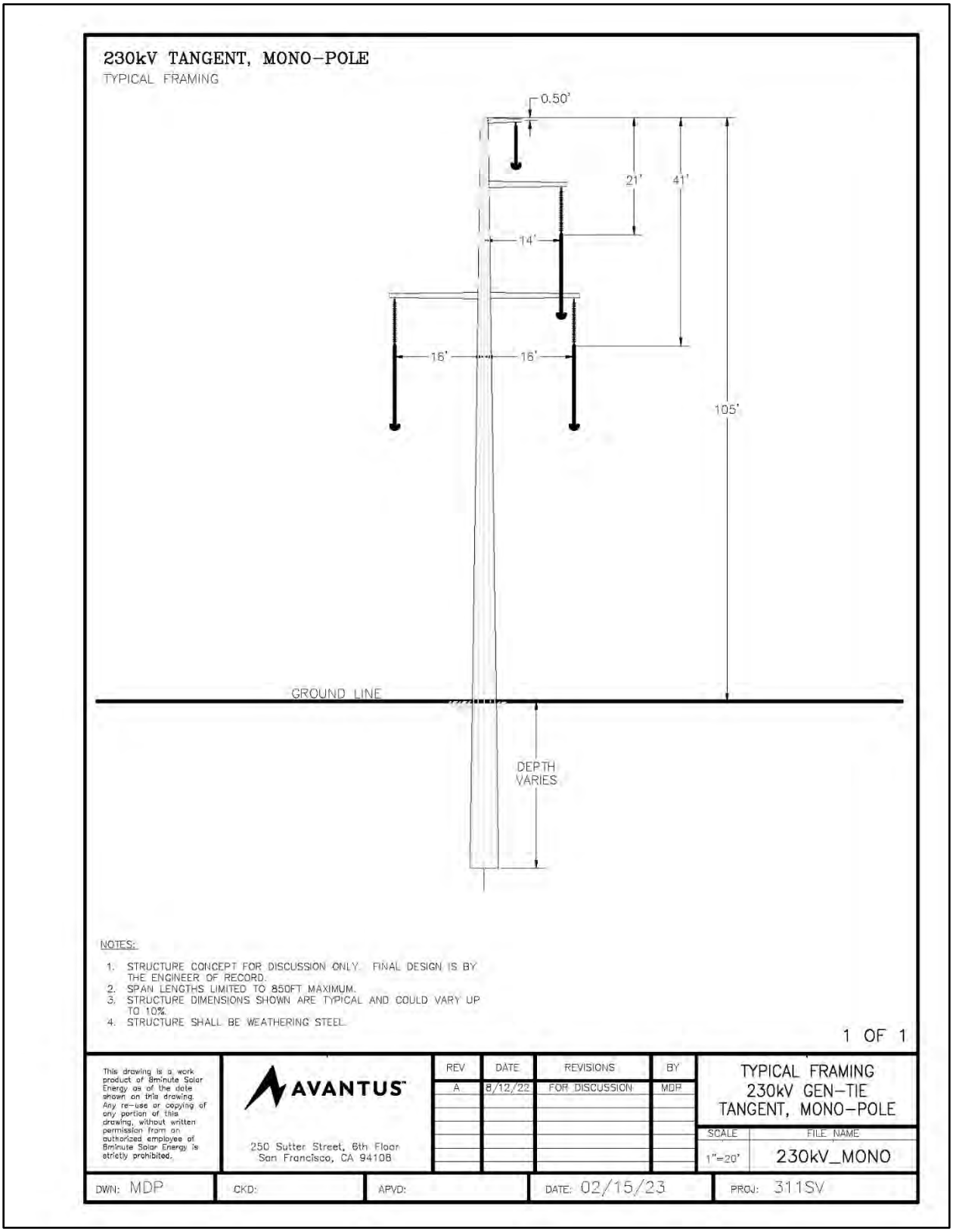


Exhibit G-2. Typical 230kV Transmission Line Tangent Structure, Monopole.

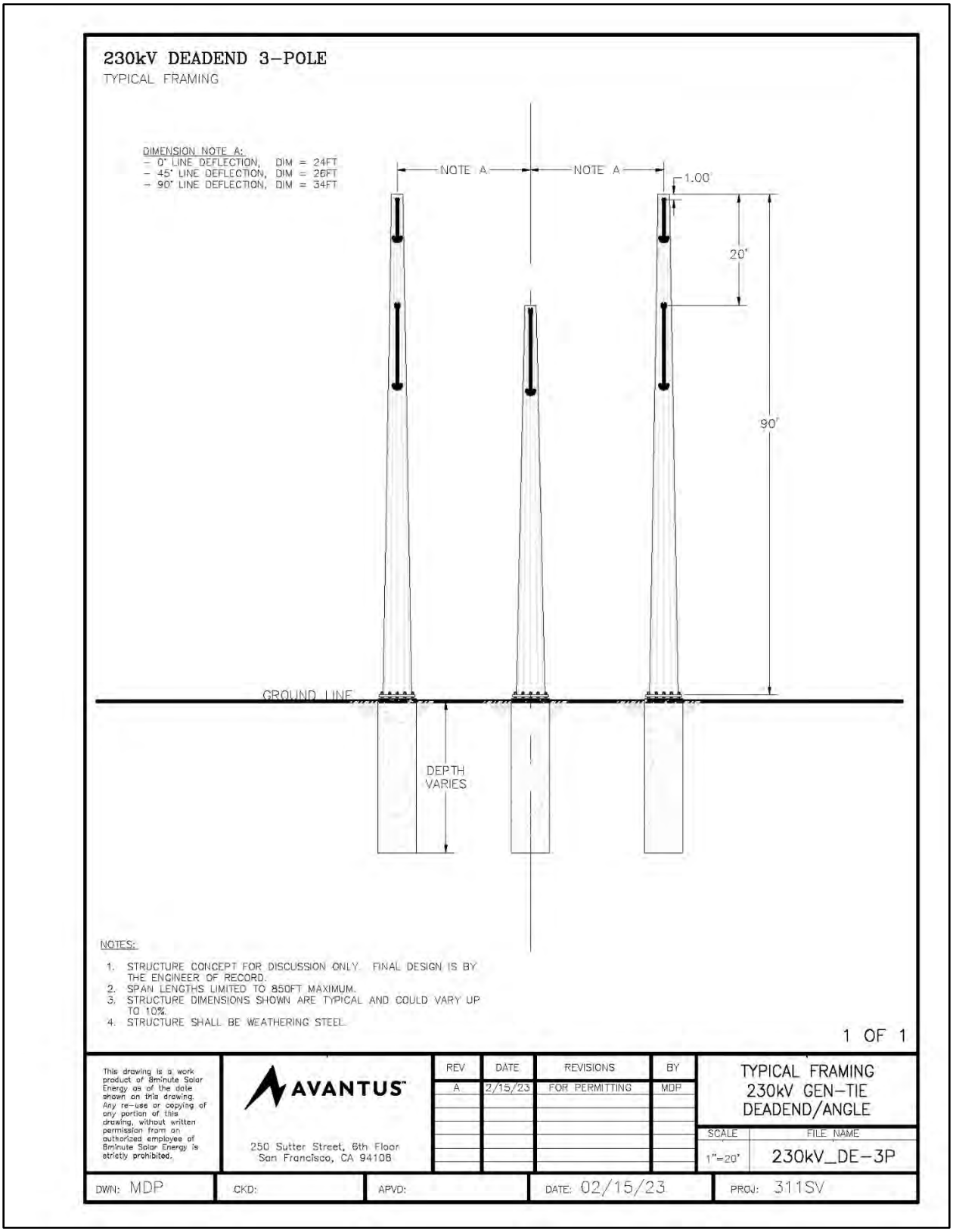


Exhibit G-3. Typical 230kV Transmission Line Deadend/Turning 3-Pole Structure.

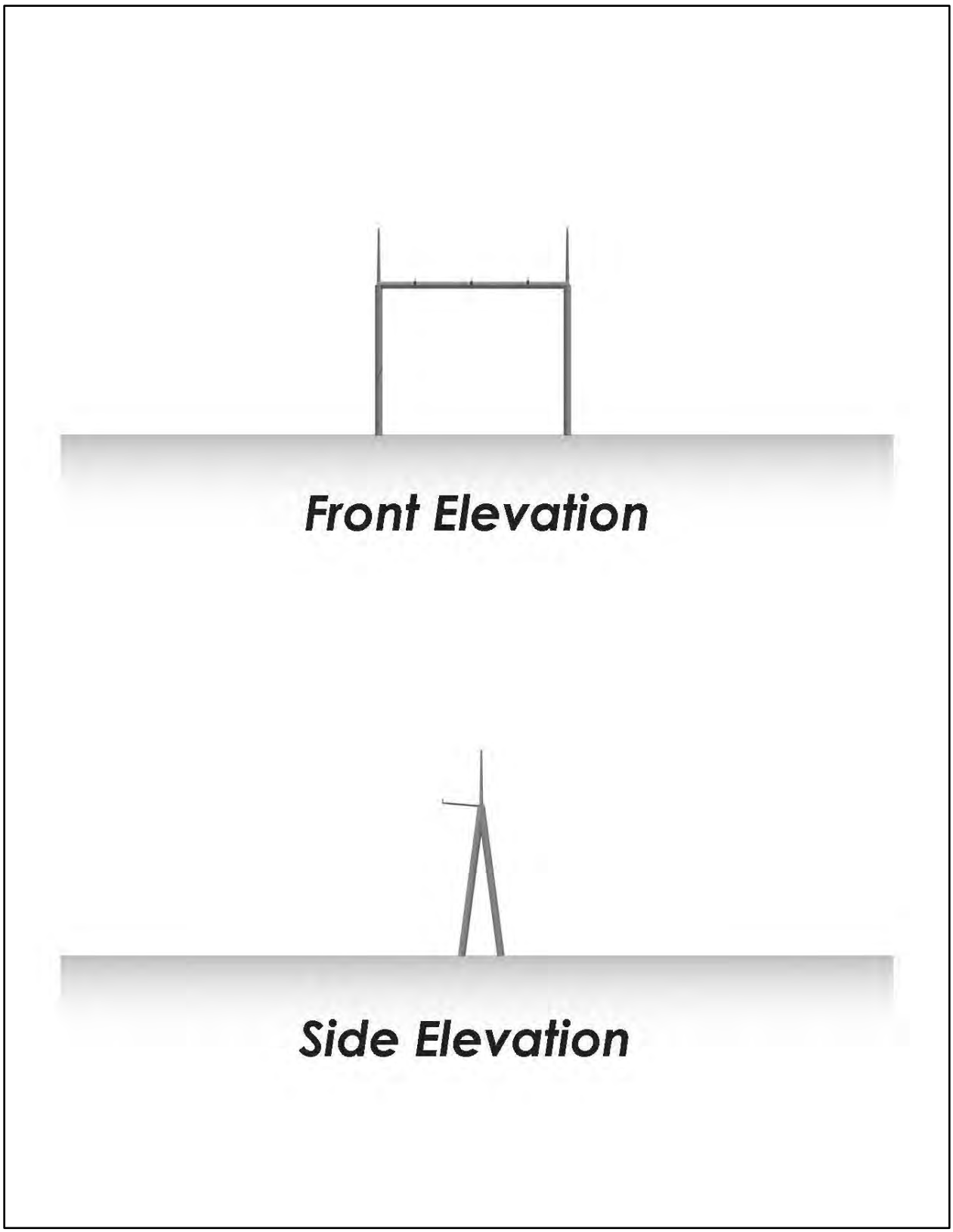


Exhibit G-4. 230kV Transmission Line Single-Circuit Turning Structure.

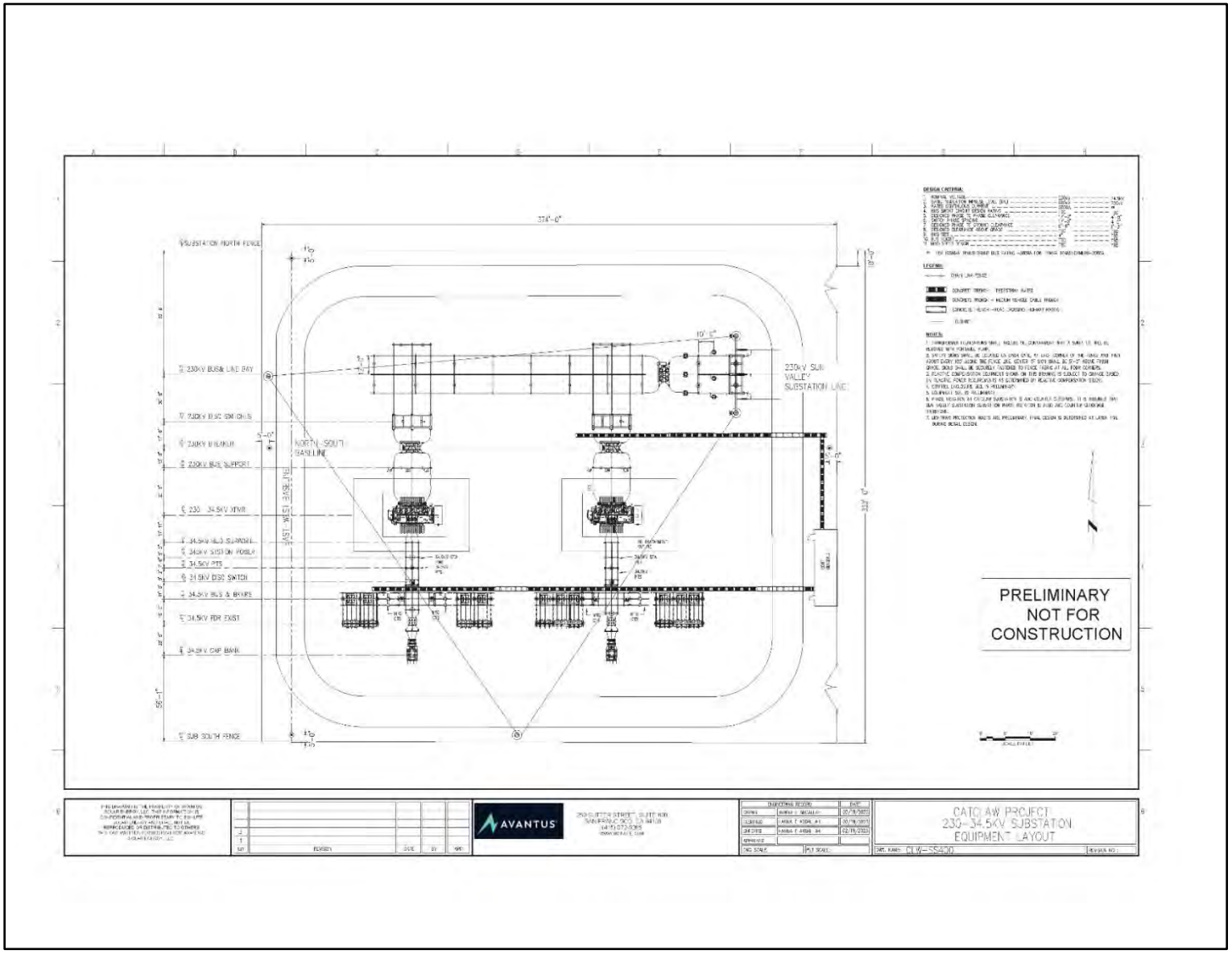
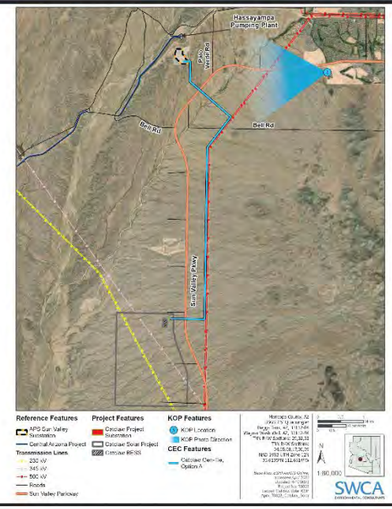


Exhibit G-5. Project Substation Preliminary Layout.

Existing Condition KOP 1: View from corner on North Desert Oasis Boulevard looking west

Simulated Condition KOP 1: View from corner on North Desert Oasis Boulevard looking west

Viewing Location



Typical 230kV Structures

Photo Date and Time: March 6, 2023, 10:20 am

View Location: Approximate distance to nearest new structure from photo location is 2.3 miles.

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

Catclaw Solar 230 kV Generation Intertie Project | March 2023
Simulation from KOP 1: View from corner on North Desert Oasis Boulevard

Catclaw SOLAR SWCA® ENVIRONMENTAL CONSULTANTS

Exhibit G-6. Photosimulation of Project from KOP 1.

Existing Condition KOP 2: View from intersection of Sun Valley Parkway and North 291st Avenue looking south

Simulated Condition KOP 2: View from intersection of Sun Valley Parkway and North 291st Avenue looking south

Viewing Location

Typical 230kV Structures

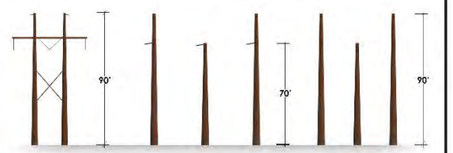


Photo Date and Time: March 6, 2023, 10:50 am

View Location: Approximate distance to nearest new structure from photo location is 0.5 miles.

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

Catclaw Solar 230 kV Generation Intertie Project | March 2023
Simulation from KOP 2: View from intersection of Sun Valley Parkway and North 291st Avenue

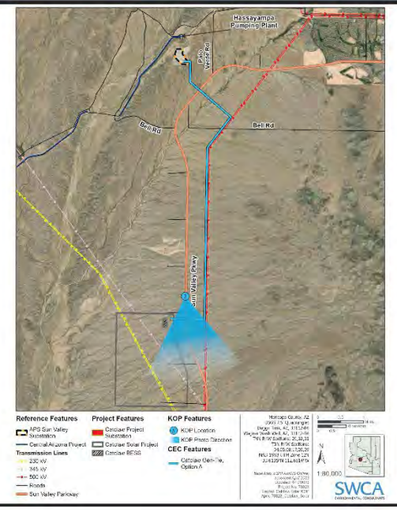
Catclaw SOLAR SWCA ENVIRONMENTAL CONSULTANTS

Exhibit G-7. Photo Simulation of Project from KOP 2.

Existing Condition KOP 3: View from Sun Valley Parkway Southbound looking south

Simulated Condition KOP 3: View from Sun Valley Parkway Southbound looking south

Viewing Location



Typical 230kV Structures

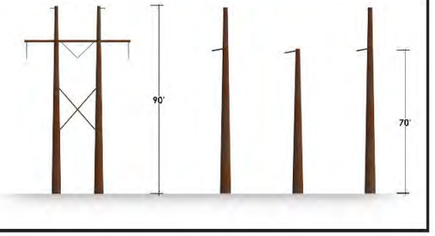


Photo Date and Time: March 6, 2023, 11:20 am

View Location: Approximate distance to nearest new structure from photo location is 0.5 miles.

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

Catclaw Solar 230 kV Generation Intertie Project | March 2023
Simulation from KOP 3: View from Sun Valley Parkway Southbound

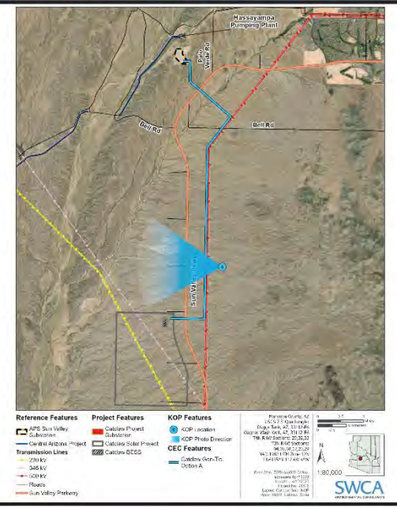
Catclaw SOLAR SWCA ENVIRONMENTAL CONSULTANTS

Exhibit G-8. Photo Simulation of Project from KOP 3.

Existing Condition KOP 4: View from OHV trail looking west

Simulated Condition KOP 4: View from OHV trail looking west

Viewing Location



Typical 230kV H-Frame Structure

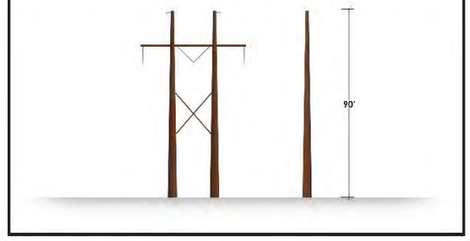


Photo Date and Time: March 6, 2023, 1:30 pm

View Location: Approximate distance to nearest new structure from photo location is 0.4 miles.

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

Catclaw Solar 230 kV Generation Intertie Project | March 2023
Simulation from KOP 4: View from OHV trail

Catclaw SOLAR SWCA ENVIRONMENTAL CONSULTANTS

Exhibit G-9. Photo Simulation of Project from KOP 4.

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EXHIBIT H. EXISTING PLANS

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

> *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 Maricopa County Comprehensive Plan, Vision 2030, and online web mapper were evaluated as part of the land use study, and development plans were reviewed and verified by the Maricopa County Planning and Development Department.

In March 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. Exhibit H-1 provides a copy of the letter and subsequent Exhibits H-1 through H-5 include written responses and other correspondence from relevant jurisdictions.

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

Contact Name	Title	Agency/Organization
U.S. Fish and Wildlife Service	Arizona Ecological Services Field Office - Phoenix	U.S. Fish and Wildlife Service
Alexander Smith	Phoenix Area Manager	U.S. Bureau of Reclamation
Brian Buzard	Director, Operations, Power, and Engineering	Central Arizona Project
Irina Ford	Hassayampa Field Manager	Bureau of Land Management
Bruce Fenske	District Administrator, Southwest District	Arizona Department of Transportation
Randy Everett	Senior Division Administrator	Arizona Department of Transportation
Ginger Ritter	Project Evaluation Supervisor	Arizona Game and Fish Department
Kathryn Leonard	State Historic Preservation Officer	Arizona State Historic Preservation Office
Ruben Ojeda	Section Manager, Rights-of-Way Section	Arizona State Land Department
Jim Perry	Acting Commissioner	Arizona State Land Department
Robyn Sahid	Future Commissioner	Arizona State Land Department
Thomas Buschatzke	Director	Arizona Department of Water Resources
Matt Holm	Planning and Development Manager	Maricopa County Planning and Development
Jessie Gutierrez	Acting Director	Maricopa County Department of Transportation
Eric Anderson	Executive Director	Maricopa County Association of Governments
Daniel Cotterman	City Manager	City of Buckeye
James Shano	Deputy City Manager	City of Buckeye
David Roderique	Deputy City Manager	City of Buckeye
Javier Setovich	Deputy City Manager	City of Buckeye
Eric Orsborn	Mayor	City of Buckeye
Maria Riebs	Assistant to the City Council	City of Buckeye
Brian Craig	Development Services Department, Director	City of Buckeye
Adam Copeland	Deputy Director of Planning	City of Buckeye
Jason Spitzkoff	Manager, Transmission Engineering	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
Josh Robertson	Director of Regulatory Policy	Salt River Project

SWCA
ENVIRONMENTAL CONSULTANTS
Sound Science. Creative Solutions.®

20 East Thomas Road, Suite 1700
Phoenix, Arizona 85012
Tel 602.274.3831 Fax 602.274.3958
www.swca.com

March 14, 2023

NAME
TITLE/ROLE
AGENCY/ORGANIZATION
ADDRESS LINE 1
CITY, STATE XXXXX

Re: Catclaw Solar Generation Intertie Transmission Line Project

Dear NAME:

Avantus, a clean energy technology firm, plans to file an application for a Certificate of Environmental Compatibility (CEC) with the Arizona Power Plant and Transmission Line Siting Committee (Siting Committee) for a new generation inter-tie (gen-tie) transmission line in Buckeye, Arizona, referred to as the Catclaw Solar Generation Intertie Project (Project). The Project involves a new, approximately 7-mile-long, 230 kV gen-tie that would connect a planned 250 megawatt (MW) solar energy generating facility and 250 MW battery energy storage system to the regional power grid at the existing Arizona Public Service Company Sun Valley Substation. The proposed route for the Project is shown on the enclosed map. Additional information about the Project is available on the Project website: http://catclawsolar.com and on the Project's virtual open house at: http://catclawsolaropenhouse.com.

Avantus and its environmental consultant, SWCA Environmental Consultants (SWCA), are preparing a CEC application for the Project. The CEC application will include comprehensive environmental studies to evaluate the proposed route for the Project. Our planning studies support that the Project follows a direct route to the Sun Valley Substation that will minimize the potential for environmental and community impacts. Avantus plans to submit its CEC application in April 2023.

Arizona Administrative Code Rule R14-3-219 requires that CEC applications include an exhibit that identifies "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."

This letter is an opportunity for your organization to provide information or comments regarding development plans 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 in the vicinity of the proposed Project.

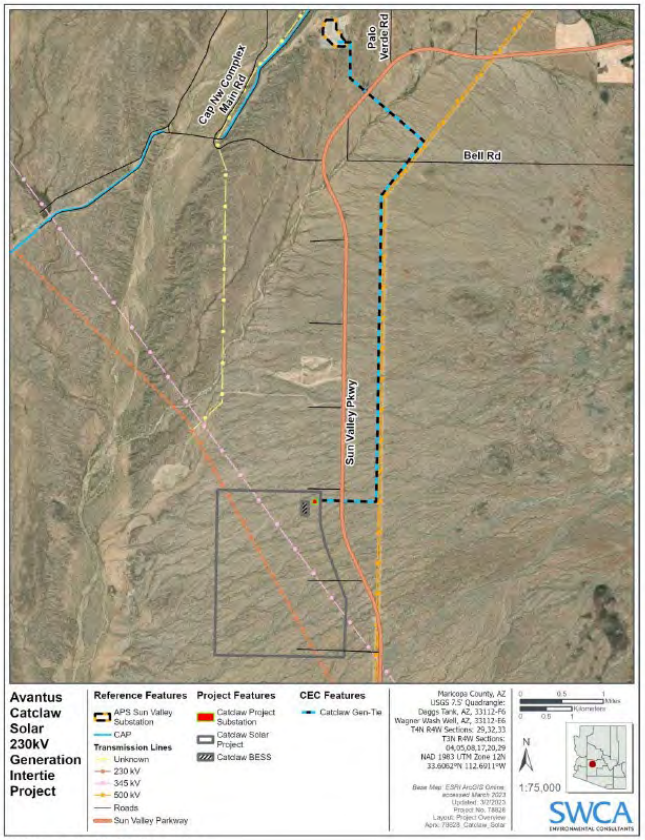
For Avantus to include your information with its CEC application, please forward your written comments to SWCA by March 31, 2023, via email at dean.hazle@swca.com, or by physical mail: Attn: Dean Hazle, SWCA Environmental Consultants, 1645 S Plaza Way, Flagstaff, Arizona 86001. Additionally, you may reach me directly by phone at (413) 658-2062.

Thank you for your cooperation.

Sincerely,

Dean G. Hazle

Dean Hazle, Environmental Planner
SWCA Environmental Consultants



Catclaw Solar Project Overview

Exhibit H-1. Example March 2023 Exhibit H Letter.

Colin Agner

From: Jon Fell <jfell@azdot.gov>
Sent: Tuesday, March 28, 2023 2:36 PM
To: Dean Hazle
Subject: Inclusion for CEC Application for: CATCLAW Solar Generation Project

EXTERNAL: This email originated from outside SWCA. Please use caution when replying.

Dean,

Our department has received your letter notifying stakeholders of your upcoming project. My office also sits on the review panel with the City of Buckeye for the Pre-Application Conferences which also shows this development as an upcoming meeting April 6th.

ADOT's comments at this time is to evaluate the interchange of I-10 and Sun Valley Parkway for construction traffic generated by your site. This study will take place in the form of a Traffic Impact Analysis (T.I.A.) and can be piggy-backed reports generated for other agencies including City of Buckeye.

Please include me on future filings and impacts to our roadway infrastructure and ROW. If any development is required within our ROW then an Encroachment Permit will be required which will also take place through this office.

Jonathan Fell, PE, PTOE

Assistant District Engineer

ADOT Southwest District

GOOGLE GURU

2243 E Gila Ridge Road

Yuma, AZ 85365

928-317-2160

jfell@azdot.gov

azdot.gov

1

Exhibit H-2. Written Response from the Arizona Department of Transportation.

BUCKEYE, AZ

CITY OF BUCKEYE
Development Services

March 27, 2023

Dean Hazle
Environmental Planner
SWCA Environmental Consultants
20 East Thomas Road, Suite 1700
Phoenix, Arizona 85012
Dean.hazle@swca.com
P: 602-274-3831

Re: Catclaw Solar Generation Intertie Transmission Line Project

Thank you for the attached notice regarding the Catclaw Solar Generation Intertie Transmission Line project. Tracy Hamilton, Director, permitting with Avantus has recently submitted for a Pre-Application Conference (PAC) to the city associated with this project. At the PAC meeting representatives from each reviewing City Department will attend and have the opportunity to speak with the applicant and provide feedback i.e. land use compatibility, access, infrastructure/utilities. Following the PAC meeting, our Project Coordinators will gather all staff comments along with next steps and send to the applicant.

Per your request to provide feedback by March 31st, staff reviewed the proposal and have some reservations about a solar field land use adjacent to the prime Sun Valley Parkway corridor. It appears the site will also require a new Community Master Plan and/or rezone in order to establish an allowable land use on-site as communicated to Tracy Hamilton from our Senior Planner Randy Proch. We will continue to research and analyze the project and will have a more thorough response to share at the PAC meeting.

Sincerely,

Adam Copeland
Development Services, Deputy Director of Planning
City of Buckeye
acopeland@buckeyeaz.gov
623-349-6210

530 East Monroe Avenue • Buckeye, Arizona 85326
Phone 623-349-6200 • www.buckeyeaz.gov

Exhibit H-3 Letter Reply from the City of Buckeye, March 27, 2023.

April 3, 2023

Mr. Dean Hazle
SWCA Environmental Consultants
1645 South Plaza Way
Flagstaff, Arizona 86001

Electronically submitted to dean.hazle@swca.com and catclaw@avantus.com

RE: Catclaw Solar and Generation Intertie Transmission Line Projects

Dear Mr. Hazle:

The Arizona Game and Fish Department (Department) appreciates the opportunity to review the Catclaw Solar and Generation Intertie Transmission Line projects. The Department understands that Avantus proposes to develop this 250 MW photovoltaic (PV) solar facility with a 250 MW battery energy storage system (BESS) on approximately 1,280 acres of private land in Buckeye, Arizona. The solar facility would be constructed west of Sun Valley Parkway between the White Tank and Belmont mountains in desertscrub habitat. An approximately 7-mile 230kV generation intertie (gen-tie) transmission line would run north along Sun Valley Parkway to connect the facility to the Arizona Public Service Company Sun Valley Substation.

Under Title 17 of the Arizona Revised Statutes, the Department, by and through the Arizona Game and Fish Commission (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 Avantus and SWCA Environmental Consultants (SWCA) during the planning and development of this 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 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.

azgfd.gov | 602.942.3000
5000 W. CAREFREE HIGHWAY, PHOENIX AZ 85086

Maintaining habitat connectivity is a priority for the Department, and wildlife movement corridors are important for wildlife to respond to changing environmental conditions. The Department has been engaged in a connectivity initiative with stakeholder groups, including the City of Buckeye and White Tank Mountains Conservancy, to maintain habitat connectivity in the area west of Phoenix where this solar project is proposed. Several wildlife movement areas have been identified within the vicinity of the project aligned with major riparian corridors and the Hayden-Rhodes Aqueduct of the Central Arizona Project. The broader landscape between the White Tank and Belmont mountains in which this project occurs provides movement pathways for a variety of species. The Department would like to meet with Avantus and SWCA to provide further information about wildlife connectivity in the area, and to discuss opportunities to incorporate connectivity into the project design, including the following:

- The Department appreciates that the gen-tie would largely be co-located with an existing transmission line. To maintain wildlife connectivity within the project area, the Department recommends establishing set-backs within the solar project area from the Wagner Wash and maintaining additional open corridors across the project area to facilitate wildlife movement. The Department also recommends maintaining the ephemeral washes that occur in the project area in their natural state without fencing or other barriers to wildlife movement. These washes serve multiple functions in the ecosystem. Not only do they provide for hydrologic flow, which is especially important in areas that receive infrequent and isolated precipitation events, but these washes also contain crucial riparian habitat and serve as important landscape-level conveyance corridors for wildlife movement.
- To the extent possible, the Department recommends retaining habitat features underneath the panels, including vegetation and soils, instead of grading the entire site. The topography in the majority of the site is flat and would require minimal trimming of shrubs and 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 (Grodsky and Hernandez 2020[1]).
- The Department's *Wildlife Compatible Fencing Guidelines*[2] 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 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 and adjacent lands to determine species presence. 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. Department staff are available to assist Avantus and SWCA 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

[1] https://www.nature.com/articles/s41893-020-0574-x
[2] https://s3.amazonaws.com/azgfd-portal-wordpress/PortalImages/files/wildlife/planning/orWildlifeFriendlyGuidelines/110125_AGFD_fencing_guidelines.pdf

Exhibit H-4a. Letter Reply from the Arizona Game and Fish Department, April 3, 2023.

impacts to wildlife and habitat; additional information can be found in *Guidelines for Solar Development in Arizona*[3]:

- The Sonoran desert tortoise, which is a federal and state species of special concern, could occur in the project area. The Department recommends conducting surveys, in accordance with the *Desert Tortoise Survey Guidelines for Environmental Consultants*[4], to determine the presence of this species or its habitat. If tortoises are identified, please refer to and implement the *Recommended Standard Mitigation Measures for Projects in Sonoran Desert Tortoise Habitat*[5] and *Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects*[6].
- The Department recommends conducting avian surveys in order to better understand species presence and to inform potential conservation measures. Additional surveys are recommended for LeConte's and Bendire's thrashers. Department staff remain available to assist with identifying appropriate conservation measures based on species presence at the site.
- 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). Breeding season for birds in this area is generally January through June. If it is anticipated the project will not be in compliance with MBTA, the Department recommends contacting the USFWS for technical assistance.
- Burrowing species such as kit foxes could occur within the project area and could be influenced by loss of habitat. Surveys for these species are recommended to determine presence and to inform pre-construction activities. Department staff are available to assist in identifying suitable conservation measures, such as one-way exclosures on burrows that allow wildlife to exit the burrows and disperse to adjacent lands.
- A variety of other Arizona Species of Greatest Conservation Need (SGCN) have the potential to occur within the project area. If wildlife are encountered during construction activities, the Department recommends moving them outside of the construction area, no more than 0.25 mile outside the project boundary within similar habitat. Please note that the Arizona State Wildlife Action Plan was recently updated, and the Department has an interactive website, Arizona Wildlife Conservation Strategy[7], that includes the most recent list of SGCN and to help navigate and identify conservation opportunities.

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 (both temporary and permanent) will exceed 0.25 acre in areas with native vegetation, please ensure the project complies with Arizona

[3] https://s3.amazonaws.com/azgfd-portal-wordpress/PortalImages/files/wildlife/planningFor/wildlifeFriendlyGuidelines/FinalSolarGuidelines03122010.pdf
[4] https://s3.amazonaws.com/azgfd-portal-wordpress/PortalImages/files/wildlife/2010SurveyguidelinesForConsultants.pdf
[5] https://s3.amazonaws.com/azgfd-portal-wordpress/PortalImages/files/wildlife/MitigationMeasures.pdf
[6] https://s3.amazonaws.com/azgfd-portal-wordpress/PortalImages/files/wildlife/2014%20Tortoise%20handling%20guidelines.pdf
[7] https://awcs.azgfd.com

Native Plant Law regulations[8]. 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[9] for a list of prohibited and restricted noxious weeds and the Arizona Native Plant Society[10] for recommendations on how to control them. To view a list of documented invasive species or to report invasive species in or near your project area, visit iMapInvasives[11], which is a national cloud-based application for tracking and managing invasive species.
- If trenching will occur for the proposed project, the Department recommends that trenching and backfilling crews be close together to minimize the amount of open trenches at any given time. Where trenches cannot be back-filled immediately, the Department recommends escape ramps be constructed at least every 90 meters. 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 that have been left open overnight be inspected to remove animals prior to backfilling.
- The Department recommends following standards established by the Avian Power Line Interaction Committee (APLIC) for new powerlines, which can be found in *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006*[12] and *Reduced Avian Collisions with Power Lines: The State of the Art in 2012*[13]. Birds of prey, such as raptors, owls, vultures, and eagles, are vulnerable to powerline strikes and electrocution during construction and operation of transmission lines; power poles can also serve as perches for birds of prey. 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. Landscaping with native plants can help support wildlife and pollinator species in the area while reducing dust and erosion. In addition, the applicable land management agencies should be consulted regarding guidelines for revegetation efforts.
- 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[14]). 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

[8] https://agriculture.az.gov/plantsproduce/native-plants
[9] https://agriculture.az.gov/pestspest-control/agriculture-pests/noxious-weeds
[10] https://aznps.com/invas
[11] https://imap.naturereserve.org/imap/services/page/map.html
[12] https://www.aplic.org/uploads/files/2643/SuggestedPractices2006(LR-2).pdf
[13] https://www.aplic.org/uploads/files/15518/Reducing_Avian_Collisions_2012watermarkLR.pdf
[14] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3657119

Exhibit H-4b. Letter Reply from the Arizona Game and Fish Department, April 3, 2023.

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 Catclaw Solar and Generation Intertie Transmission Line projects. For further coordination, please contact Tiffany Sprague at tsprague@azgfd.gov or 623-236-7222.

Sincerely,

Luke Thompson
Habitat, Evaluation, and Lands Branch Chief

cc: Joshua Hurst - Regional Supervisor, Region VI
Kelly Wolff - Region VI Habitat, Evaluation, and Lands Program Supervisor
Michael Sumner - Regional Supervisor, Region IV
Tyler Williford - Region IV Habitat, Evaluation, and Lands Program Supervisor
Ginger Ritter - Project Evaluation Program Supervisor

AZGFD #M23-03220106

Exhibit H-4c. Letter Reply from the Arizona Game and Fish Department, April 3, 2023.

From: Engelmann, Nichole
To: Dean Hazle
Cc: Moulton, Colleen E; Fugate, Mary; Incoming Arizona, FW2
Subject: Catclaw Solar Generation Intertie Transmission Line Project
Date: Friday, April 14, 2023 10:19:49 AM

Good morning,

Thank you for your letter, dated March 14, 2023 and received by our office on March 31, 2023. In response to your request for comments, we offer the following technical assistance in relation to the Catclaw Solar Generation Intertie Transmission Line Project. Based on the information we have, we don't know of any other solar or development projects within the area. Because of this we advise that the project follow the Arizona Game and Fish Department's Planning for Wildlife Best Management Practices, specifically in regards to the Sonoran desert tortoise. And, if possible, please consider doing post construction monitoring under the transmission line for possible avian mortalities. New information has been coming forward regarding impacts of transmission lines and solar arrays to migratory birds.

Please let me know if you have any questions regarding these comments.

Thank you,

Nichole Engelmann
(she/her)
Wildlife Biologist
U.S. Fish and Wildlife Service
Arizona Ecological Services

Office (M/T): 602-889-5943
Telework (W-F): 480-734-6958

Exhibit H-5. Email Comment from the U.S. Fish and Wildlife Service, April 14, 2023

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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 describes typical high-voltage transmission electrical and noise discharges, including corona discharge, audible noise, and electromagnetic fields (EMF). This exhibit also discusses acceptable noise discharges and expected impacts from the proposed Project.

Corona

Corona is a type of electrical discharge caused by the ionization of fluid, such as air, surrounding a conductor carrying high voltage (e.g., a 230 kilovolt [kV] transmission line); certain levels of corona are associated with all energized transmission lines. The corona associated with an energized conductor can be sufficiently concentrated to produce a tiny electric discharge, resulting in audible noise, radio noise, heat, and chemical reactions of the air components. Several factors, including conductor voltage, shape, diameter, and surface irregularities (e.g., scratches, nicks, and dust) can affect a conductor's electrical surface gradient and its corona performance (Electric Power Research Institute 1982). Audible noise from corona discharge tends to be a faint crackling or humming noise. Corona discharge also varies based on the height of the conductors above ground and meteorological conditions. Consequently, during periods of rain and foul weather, corona discharges increase. Because corona effects are very localized and minor, corona effects are expected to be negligible outside of the Project right-of-way (ROW).

Audible Noise

A typical measurement of audible sounds ranges between 0 A-weighted decibels (dBA) and 120 dBA, with noises over 120 dB having the potential to harm the human eardrum. In general, the total noise level from individual sources is derived logarithmically rather than arithmetically (decibels are logarithmic units). For example, if the two sound levels were equal (e.g., 30 dBA) at a given point, the resulting sound level would increase by just 3 dB (i.e., equal to 33 dBA rather than 60 dBA). If the two sound levels were not equal, the louder sound would increasingly mask the softer sound until the difference reached 10 dBA. At that point, the louder sound would completely mask the softer sound, and there would be no increase in the perceived sound level. Table I-1 shows reference noise sources and the sound levels in dBA associated with each (U.S. Department of Health and Human Services 2021).

Table I-1. Approximate Amount of dBA from Typical Events

Event	A-weighted Decibels (dBA)
Fireworks show	140–160
A jet taking off	140
Emergency vehicle sirens	110–129
Headphones, sporting events, and concerts	94–110
Motorcycle or lawnmower	80–110
Normal conversation	60–70
Whisper	20–30

*This table assumes a typical distance of the listener from each scenario. For example, a whisper or starting a lawn mower would occur within 3 feet of the listener. A listener watching a fireworks show or a jet take off would be within approximately 200 feet.

Existing Sound Levels

The Project is in a rural, undeveloped area of open desert in the city of Buckeye. The surrounding land uses include high-voltage transmission lines and the Arizona Public Service Company (APS) Sun Valley Substation. Outside of the one-mile Study Area, planned residential developments are located approximately 2.25 miles north of Option A and 6 miles south from the Project Substation.

The American National Standards Institute (ANSI) estimates typical background noise levels for varying types of land uses (ANSI 2013). For "very quiet suburban and rural residential" the ANSI estimates the daytime and nighttime background noise levels to be 40 dBA and 34 dBA, respectively (ANSI 2013). Based on the land uses present near the Project, these estimates are reasonable approximations of existing conditions.

The soundscape in the vicinity of the Project contains several noise sources, with the most obvious noise coming from intermittent traffic on Sun Valley Parkway. Additional sources of noise in the vicinity include the existing electrical infrastructure (i.e., the APS Sun Valley Substation, existing high-voltage transmission lines).

The existing transmission lines can also produce noise from corona discharge. Under dry weather conditions, the audible noise from corona is minor and rarely noticed. During wet and humid conditions, which are typical during monsoon season experienced in the Phoenix metropolitan area, water drops can collect on the conductors and increase corona activity. Under these conditions, a crackling or humming sound may be heard in the immediate vicinity of the lines.

Noise-Sensitive Receptors

Noise is evaluated in terms of its potential impact on noise-sensitive receptors. Noise-sensitive receptors are locations where people reside or where the presence of unwanted sound may adversely affect the use of the land. Noise-sensitive receptors typically include residences, schools, libraries, churches, hospitals, nursing homes, auditoriums, parks, and outdoor recreation areas.

There are no noise-sensitive receptors in the Project Area or the one-mile Study Area. The nearest noise-sensitive receptors are the residences approximately 2.25 miles north of Option A.

Anticipated Noise During Project Construction

Ground-based equipment needed to construct a transmission line usually includes heavy earthmoving vehicles, cranes, compressors, generators, and trucks. The maximum instantaneous construction noise levels from these sources typically range from 80 to 90 dBA at 50 feet from any work site (Crocker and

Kessler 1982). Construction noise will comply with relevant requirements from the City of Buckeye, and in general, will occur during daylight hours. Given that audible noise dissipates with distance from the noise source, noise generated during Project construction would have a negligible impact on the nearest residences, 2.25 miles north or 6 miles south.

Anticipated Noise During Project Operation

The Project involves a 230kV transmission line, which can be expected to have audible characteristics similar to the existing nearby electrical infrastructure (i.e., the two 500kV transmission lines and APS Sun Valley Substation).

The cumulative effect of two similar noise sources tends to result in a total noise level perceived by a receptor that is only slightly louder than either source individually. Where two sound levels are not equal, the louder sound tends to mask the lesser source. Where audible sounds generated by the Project would overlap those from existing electrical facilities, the resultant sound levels would increase by only small amounts. The majority of the Project would be immediately parallel to two existing 500kV transmission lines; therefore, the Project is unlikely to significantly increase existing noise levels. Given that audible noise dissipates with distance from the noise source, noise generated by the Project would likely be undetectable at the nearest residences, which are 2.25 miles north of Option A and 6 miles south of the Project Substation, or from Sun Valley Parkway.

Communication Signal Interference

Continuous radio frequency emissions can be generated during normal operations of transmission lines. These emissions can cause interference to AM radio and television signal reception on nearby properties. Objectionable radio frequency noise is generally a product of unintended sparking but can also be produced by corona (McDonald 2012). Such interference is commonly caused by loose hardware on the transmission line or its structures and may be remedied by maintenance activities (California Public Utilities 2005).

Transmission lines do not interfere with cellular phone tower operations or microwave communication paths. This is demonstrated by the fact that cellular phone antennas and microwave receivers are commonly mounted on transmission structures to take advantage of the added height afforded by the structures.

Existing Sources of Signal Interference

Radio frequency emissions from the existing transmission facilities (i.e., APS Sun Valley Substation, existing high-voltage transmission lines) have the potential to interfere with radio reception in the vicinity of the Project.

Potential Project Effects

Given the Project's proximity to existing transmission facilities, the Project is not expected to cause signal interference where none currently exists. The nearest residential receptors, 2.25 miles north of Option A, are closer to the existing 500kV transmissions, which pass directly through that residential development.

Electric Fields

According to the National Institute of Environmental Health Sciences (NIEHS), EMF are naturally occurring when any substance has an electrical current running through it, including power lines, electrical wiring, and other electrical equipment. Electric and electromagnetic fields are found naturally occurring in the world in the range of 12 to 150 kV/meter. Electric fields created by televisions and other video display units typically occur in the range of 20 kV/meter (NIEHS 2002).

As shown in Exhibit I-1, electric fields and magnetic fields dissipate rapidly as distance increases away from a transmission line. For example, Exhibit I-1 indicates that, for a typical 230kV transmission line, electric fields occur in the range of 2.0 kV/meter directly beneath the line, 1.5 kV/meter at 50 feet (the approximate edge of the transmission line right-of-way/easement), 0.3 kV/meter at 100 feet, and 0.01 kV/meter at 300 feet. As previously noted, the nearest residential development is approximately 2.25 miles north of Option A. Per Exhibit I-1, levels of electric fields and magnetic fields at these distances would be *de minimis*.

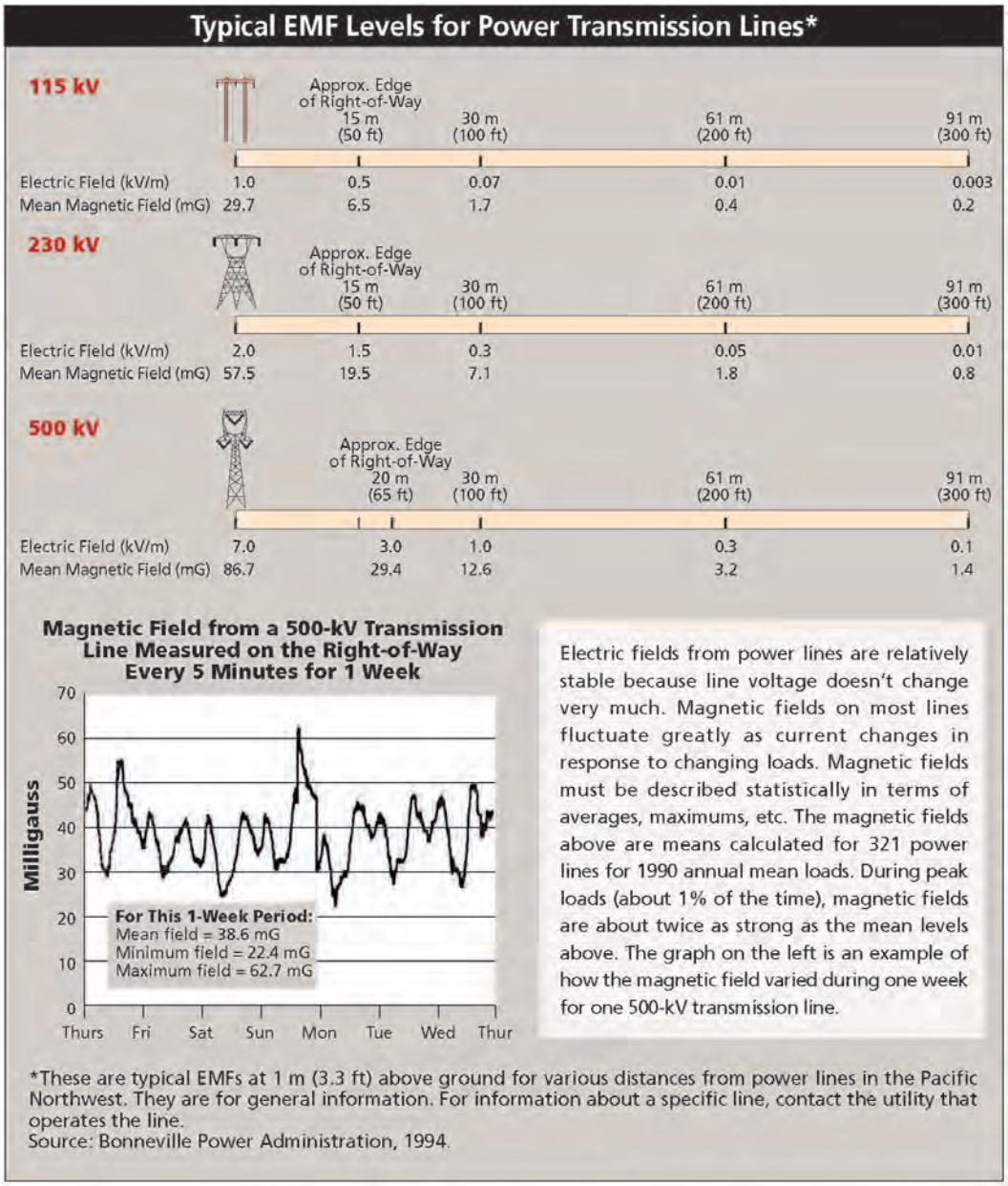

Exhibit I-1. Typical EMF levels for power transmission lines.

Literature Cited

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U.S. Department of Health and Human Services. 2021. National Institutes of Health. National Institute of Deafness and Other Communication Disorders. *How is sound measured?* Available at: https://www.noisyplanet.nidcd.nih.gov/have-you-heard/how-is-sound-measured. Accessed September 2022.

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EXHIBIT J. SPECIAL FACTORS

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

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

Public Involvement

Project Email Address and Telephone Line

The Project team created a dedicated Project phone number (480-680-2173) and email address (Catclaw@avantus.com). The voicemail recording included basic Project information, including a website address for the virtual open house, and invited interested parties to leave comments or questions. The telephone number was provided in the newsletter mailings, in the newspaper advertisements, on the Project website, and on display boards at the open house. The Project team continuously monitored the Project voicemail and email account and endeavored to reply to inquiries within two business days.

Informational Letters

The Applicant sent an informational newsletter to landowners within the one-mile Study Area around Option A and Option B, totaling about 20 addresses. Additionally, the Applicant sent the newsletter to approximately 20 public stakeholders. The informational letter was mailed on March 13, 2023 (Exhibit J-1). This letter introduced the Project and announced opportunities for comment, including a virtual open house (launched March 23, 2023), and an in-person open house at Bales Elementary School on March 29, 2023. The 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.

Newspaper Advertisements

The Applicant placed advertisements in the *West Valley View* on March 15, and March 22 (Exhibits J-2a and J-2b). These advertisements provided general information regarding the Project and associated solar facilities while announcing the open house and additional opportunities for comment through the telephone information line, postal mail, the Project website, and the virtual open house.

Website and Social Media

A Project website hosted at https://www.catclawsolar.com serves as a central location to provide stakeholders and interested parties with Project information and opportunities for public comment. The website included general information about the solar facilities and the Project. The website address was included with all public-facing communications (e.g., newsletter, newspaper advertisement, social media advertisement). Prior to CEC hearings, the Project website will be updated with event details, including dial-in numbers and virtual participation links. Screenshots of the Project website are in Exhibits J-3a through J-3o.

Social media advertisements were purchased through Facebook to advertise the Project and the in-person open house. The ad ran from March 23, 2023, to March 29, 2023. A screenshot of the social media advertisement is included in Exhibit J-4. During this period, there were 26 link clicks, 2,876 accounts reached, and zero likes, comments, or shares on the social media advertisement.

Virtual Open House

An online virtual open house was hosted at http://catclawsolaropenhouse.com to provide general information on the Project. The virtual open house was announced in the informational letter and paid newspaper advertisements, the Project website, at the in-person open house, and through the telephone information line. The virtual open house was live starting on March 23, 2023.

The virtual open house is 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 information about the Project, Project Substation, and Solar Project. The virtual open house included the scaled visual simulations included in Exhibit G of this application. Screenshots of the virtual open house website are included in Exhibits J-5a through J-5e.

In-Person Open House Meeting

An in-person public open house meeting was held for the Project on March 29, 2023, from 4:30 p.m. to 6:30 p.m. at Bales Elementary School (25400 W Maricopa Road, Buckeye, AZ 85326). The format of the meeting was an informal open house, intended to allow community members to attend at their convenience, review informational displays, and communicate with members of the Project team. A sign-in sheet, comment form, and comment box were available at the open house. Information relayed at the meeting can be found in Exhibits J-6a through J-6j. Comment forms and sign-in sheets from the meeting are included in Exhibits J-7 and J-8, respectively. Two individuals attended the open house; one of which was a representative of the Arizona Game and Fish Department. No attendees provided a formal comment.

Public Comment

Table J-1. Comments Received

#	Comment	Response
1	The tools you need to reach customers Catclawsolar.com, get helpful tips and updates from HomeAdvisor Angi Leads. GET THE INFORMATION YOU NEED TO SUCCEED • Get up-to-date information on leading home projects • See what projects are the most popular in your area • Learn how to reach more customers near you	No response provided. This email is a solicitation of information not relevant to the Project or Applicant.
2	Hi Catclawsolar.com, We have quite a few homeowners looking for a quality pro in your area. After reviewing your business, I think you'd be a great match for these projects. Can you take on new customers this week? You can see local demand by entering your zip code here. Do you have 5 minutes this week so that I can put some pricing together for you? Thanks, Richard Ramos HomeAdvisor Online Marketing Consultant XXX-XXX-XXXX XXXXXX.XXXXX@XXXX.com	No response provided. This email is a solicitation of information not relevant to the Project or Applicant.
3	Just wanted to ask if you would be interested in getting external help with graphic design? We do all design work like banners, advertisements, brochures, logos, flyers, etc. for a fixed monthly fee. We don't charge for each task. What kind of work do you need on a regular basis? Let me know and I'll share my portfolio with you.	No response provided. This email is a solicitation of information not relevant to the Project or Applicant

AVANTUS

March 10, 2023

Dear Community Member:

The purpose of this letter is to introduce you to Avantus' proposed **Catclaw Solar 230 kilovolt (kV) Generation Intertie Transmission Line Project** (Project), in incorporated Buckeye, Arizona. The Project involves a new, approximately 7-mile-long, 230 kV generation intertie (gen-tie) transmission line that would connect a planned 200 megawatt solar energy generating facility to the regional electric grid at the existing Arizona Public Service Company Sun Valley Substation. The proposed route for the Project is shown on the enclosed map.

The Arizona Corporation Commission (ACC) and Arizona Power Plant and Transmission Line Siting Committee (Line Siting Committee) are the state permitting authorities for new transmission lines. Avantus plans to apply for a Certificate of Environmental Compatibility from the ACC and Line Siting Committee for the proposed 230 kV gen-tie.

Avantus is hosting an in-person open house for the Catclaw Solar Project, where the community can learn more about the proposed infrastructure. Members of the Project Team, including representatives from Avantus and SWCA Environmental Consultants, will be present to explain the Project and answer questions. If you're interested in learning more, or have questions regarding the proposal, we welcome your attendance at the following location, date, and time:

Bales Elementary School
25400 W Maricopa Rd, Buckeye, AZ 85326
March 29, 2023
4:30 PM – 6:30 PM

In the meantime, please visit our Project website at: http://catclawsolar.com or visit the Project's virtual open house website at: http://catclawsolaropenhouse.com.

We welcome your input and questions. Please do not hesitate to reach the Project Team at the contact information below:

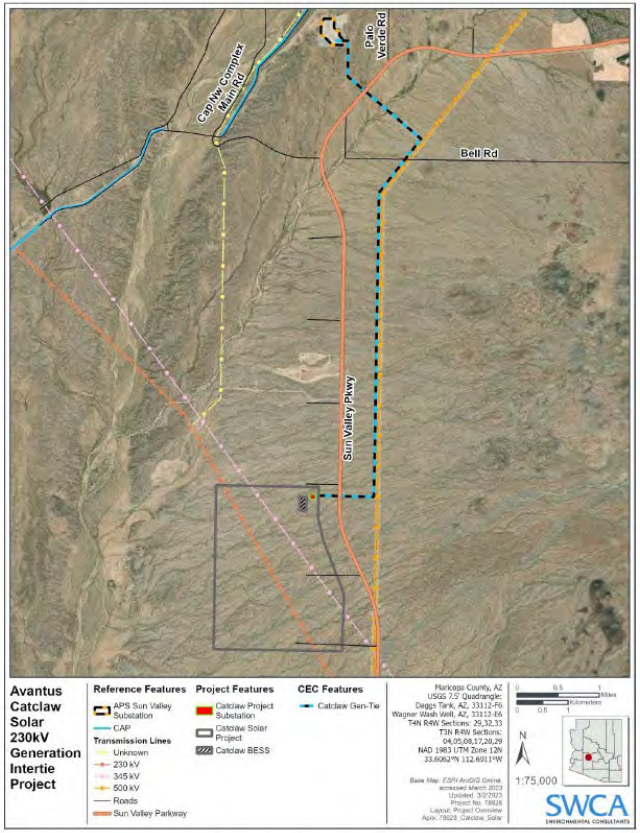
Catclaw 230 kV Gen-Tie Project
c/o SWCA Environmental Consultants
1645 S Plaza Way, Flagstaff, AZ 86001
Project Phone Number: (480) 680-2173
Project Email: Catclaw@avantus.com

Sincerely,

Dean G. Hazle

Dean Hazle, Environmental Planner
SWCA Environmental Consultants

AVANTUS



Catclaw Solar Project Overview Map

Exhibit J-1. Project informational letter.

West Valley View

AFFIDAVIT OF PUBLICATION

See Proof on Next Page

West Valley View
250 N. Litchfield Road, #100
(480) 898-7926

I, ___, of lawful age, being duly sworn upon oath, deposes and says that I am the _____ of West Valley View, a publication that is a "legal newspaper" as that phrase is defined for the city of Goodyear, for the County of Maricopa, in the state of Arizona, that this affidavit is Page 1 of 2 with the full text of the sworn-to notice set forth on the pages that follow, and that the attachment hereto contains the correct copy of what was published in said legal newspaper in consecutive issues on the following dates:

PUBLICATION DATES:
15 Mar 2023

22 Mar 2023

Notice ID: PcgK2CvHEocGBF0wRk2O
Notice Name: Catclaw Solar

PUBLICATION FEE: $694.62

VERIFICATION

STATE OF ARIZONA
COUNTY OF MARICOPA

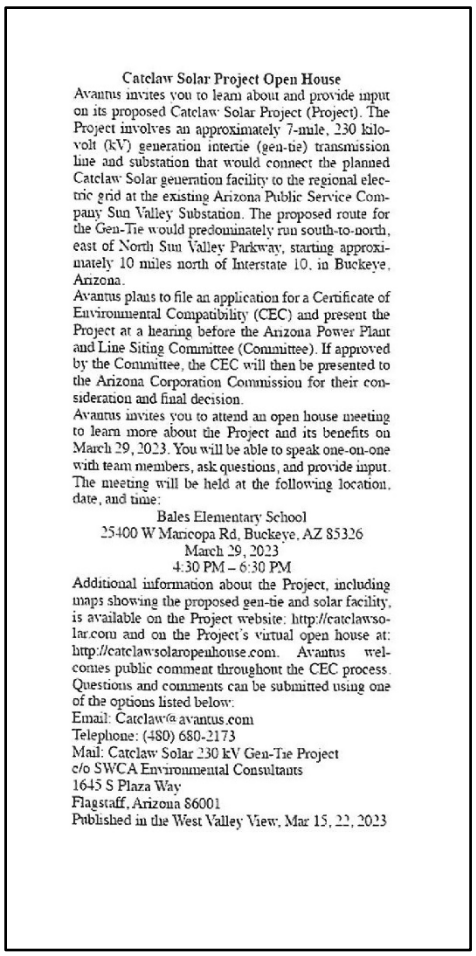
Signed or attested before me on this

24 day of March, A.D. 2023

Tricia Simpson
Notary Public

TRICIA L SIMPSON
Notary Public Arizona
Maricopa County
Commission # 618095
My Comm. Expires Oct 14, 2025

Exhibit J-2a. West Valley View Project open house legal advertisement (March 15 and 22, 2023).



Catclaw Solar Project Open House

Avantus invites you to learn about and provide input on its proposed Catclaw Solar Project (Project). The Project involves an approximately 7-mile, 230 kilovolt (kV) generation intertie (gen-tie) transmission line and substation that would connect the planned Catclaw Solar generation facility to the regional electric grid at the existing Arizona Public Service Company Sun Valley Substation. The proposed route for the Gen-Tie would predominately run south-to-north, east of North Sun Valley Parkway, starting approximately 10 miles north of Interstate 10, in Buckeye, Arizona.

Avantus plans to file an application for a Certificate of Environmental Compatibility (CEC) and present the Project at a hearing before the Arizona Power Plant and Line Siting Committee (Committee). If approved by the Committee, the CEC will then be presented to the Arizona Corporation Commission for their consideration and final decision.

Avantus invites you to attend an open house meeting to learn more about the Project and its benefits on March 29, 2023. You will be able to speak one-on-one with team members, ask questions, and provide input. The meeting will be held at the following location, date, and time:

Bales Elementary School
25400 W Maricopa Rd, Buckeye, AZ 85326
March 29, 2023
4:30 PM – 6:30 PM

Additional information about the Project, including maps showing the proposed gen-tie and solar facility, is available on the Project website: http://catclawsolar.com and on the Project's virtual open house at: http://catclawsolaropenhouse.com. Avantus welcomes public comment throughout the CEC process. Questions and comments can be submitted using one of the options listed below:

Email: Catclaw@avantus.com
Telephone: (480) 680-2173
Mail: Catclaw Solar 230 kV Gen-Tie Project
c/o SWCA Environmental Consultants
1645 S Plaza Way
Flagstaff, Arizona 86001

Published in the West Valley View, Mar 15, 22, 2023

Exhibit J-2b. West Valley View Project open house legal advertisement (March 15 and 22, 2023).

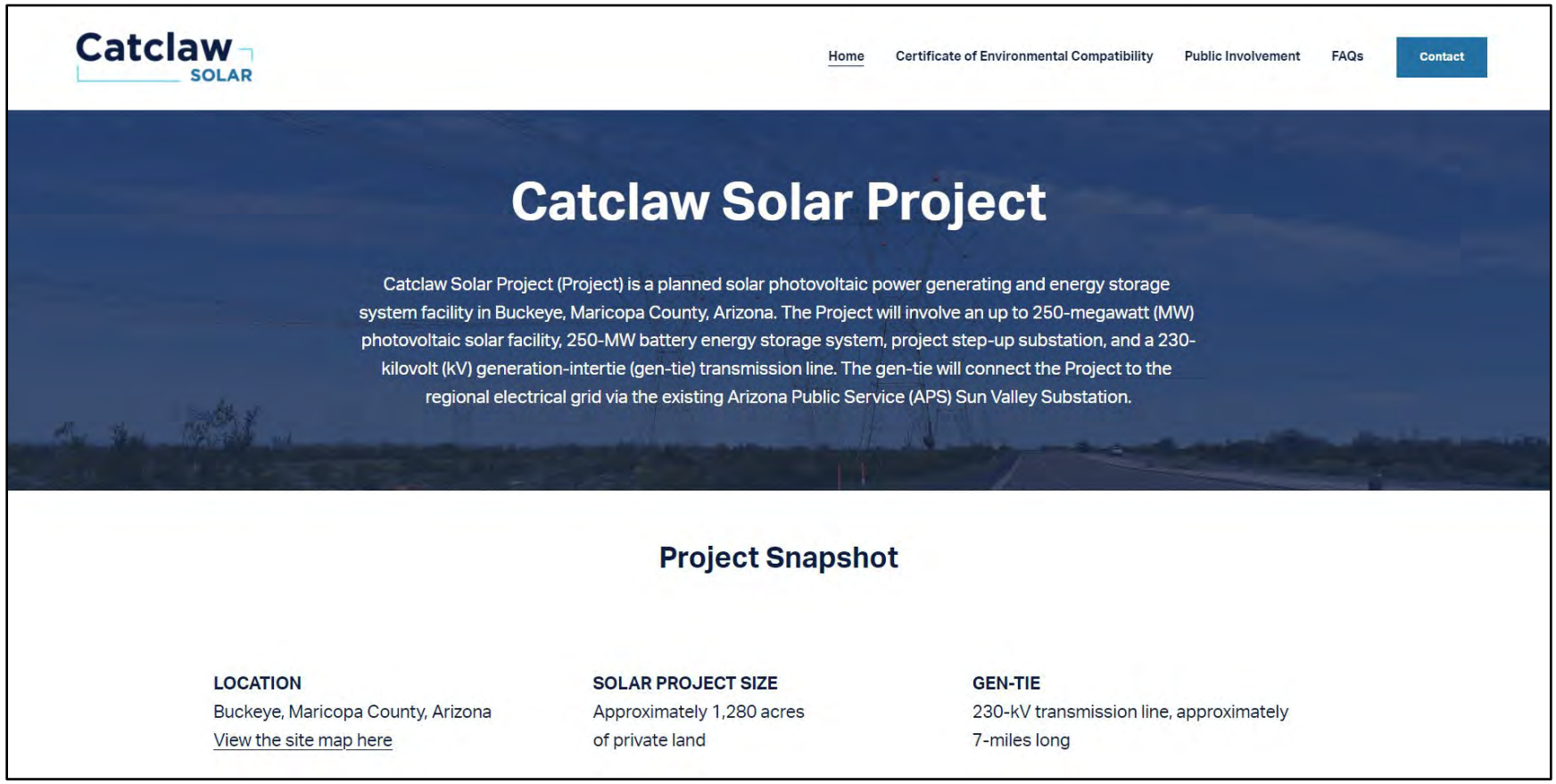


Exhibit J-3a. Project website.

SOLAR PHOTOVOLTAIC (PV) CAPACITY
Up to 250-megawatts (MW)

DEVELOPER
Avantus
311SV 8me LLC, a subsidiary of Avantus, will be the applicant for the CEC

Exhibit J-3b. Project website (continued).

Community Involvement

Avantus is committed to being a good neighbor, which means taking the time to understand Buckeye's values and needs and identifying opportunities to contribute in meaningful ways. We'd love to hear from you. We want to learn about local projects, events, and programs that will enhance your community and leave a lasting impact. As a renewable energy company, we are especially interested in educational endeavors that will inspire and support the next generation of scientists, engineers, and tradespeople to take the industry to new heights. Please share your thoughts here.

Permitting

Avantus is preparing an application for a Certificate of Environmental Compatibility (CEC) to allow for the construction and operation of the proposed 230 kV gen-tie transmission line. CEC applications are reviewed by the Arizona Power Plant and Transmission Line Siting Committee and decided on by the Arizona Corporation Commission. Further information about the CEC process is available on the "Certificate of Environmental Compatibility" tab, above.

About Avantus

Avantus is shaping the future by making reliable, low-cost clean energy a reality. Founded in 2009, our legacy of leadership in next generation solar energy includes developing the nation's largest solar cluster in 2011 and delivering the first power plant to beat fossil fuel prices in 2016.

Exhibit J-3c. Project website (continued).

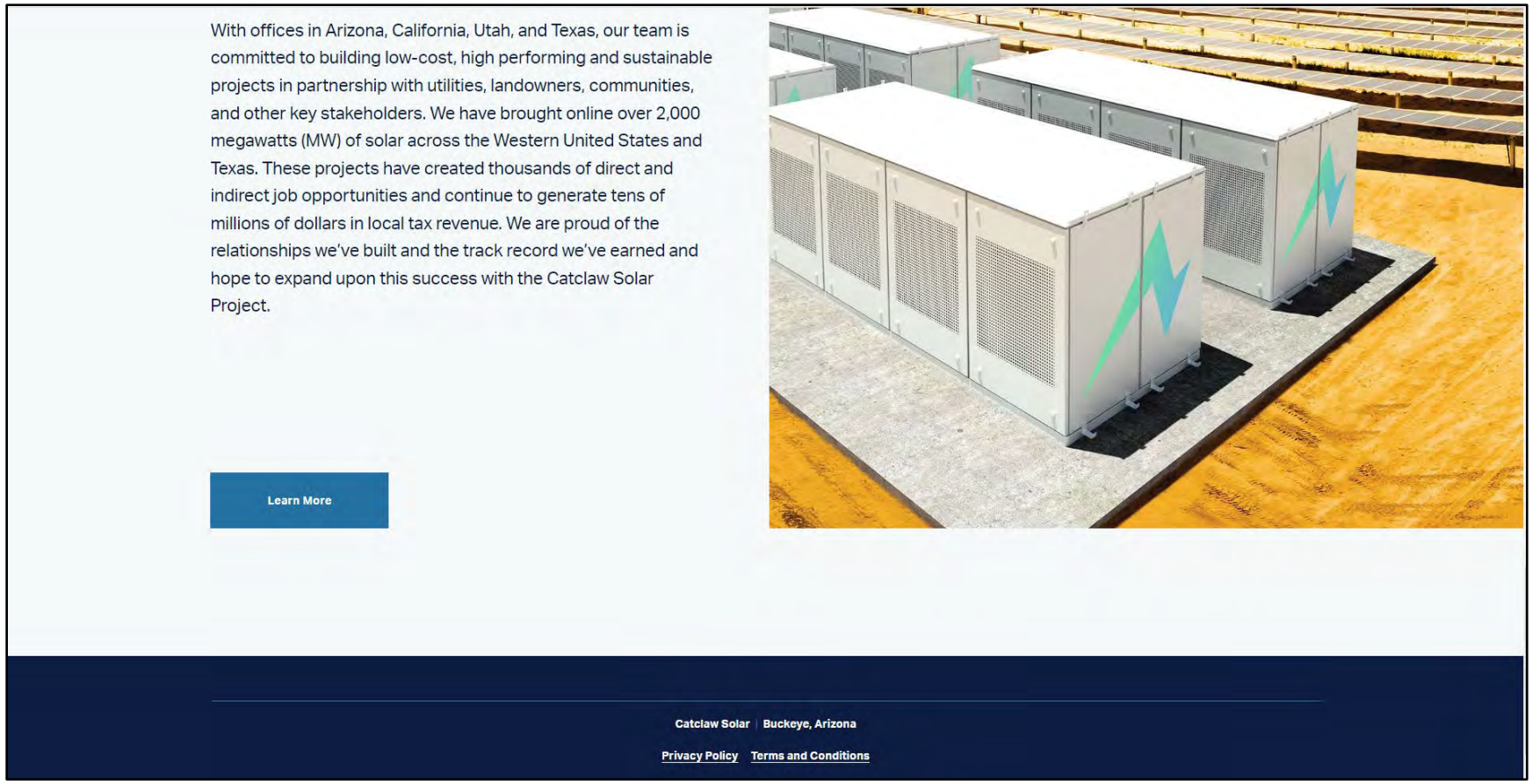


Exhibit J-3d. Project website (continued).

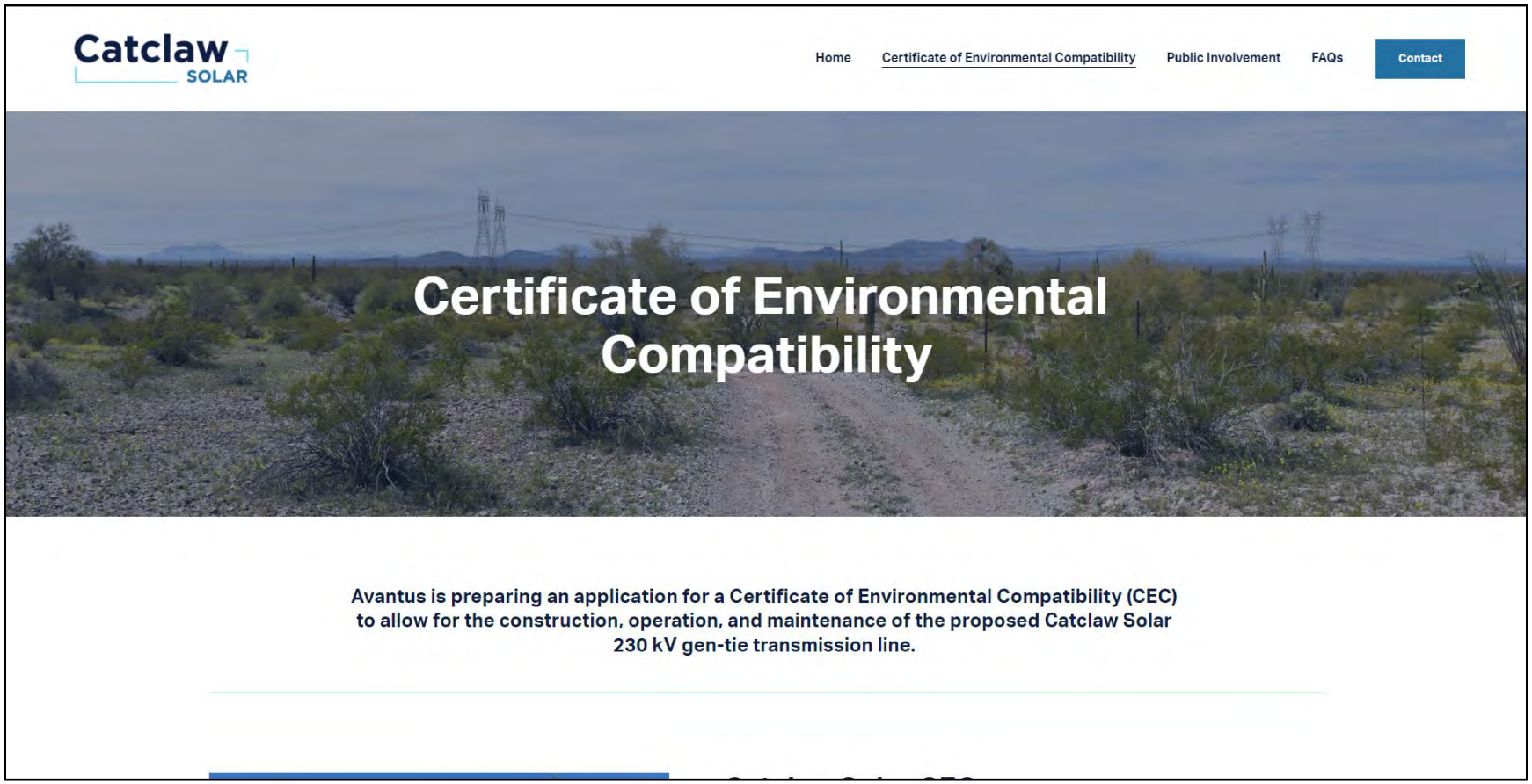


Exhibit J-3e. Project website (continued).

Catclaw Solar CEC

The Catclaw Solar Project involves a new approximately 7-mile long, 230 kV gen-tie transmission line and associated substation facilities to connect the Catclaw Solar Project to the regional electrical grid via the existing APS Sun Valley Substation.

A Certificate of Environmental Compatibility (CEC) from the Arizona Corporation Commission and the Arizona Power Plant and Transmission Line Siting Committee (Line Siting Committee) is required to allow for the construction, operation, and maintenance of the project gen-tie. The CEC application will include comprehensive environmental studies to evaluate the proposed Project. Avantus plans to submit the CEC application in late April 2023.

As part of the CEC process, Avantus is soliciting public input. Please visit our public involvement and contact page for more information on how to submit a question or comment.

CEC Requirements and Permitting Authority

A CEC is required for new transmission lines that operate at or above 115 kV and have "a series structures." The Arizona Corporation Commission and Line Siting Committee are the state permitting authorities for CECs.

As part of the CEC process, a public hearing will be held for the Application

Exhibit J-3f. Project website (continued).

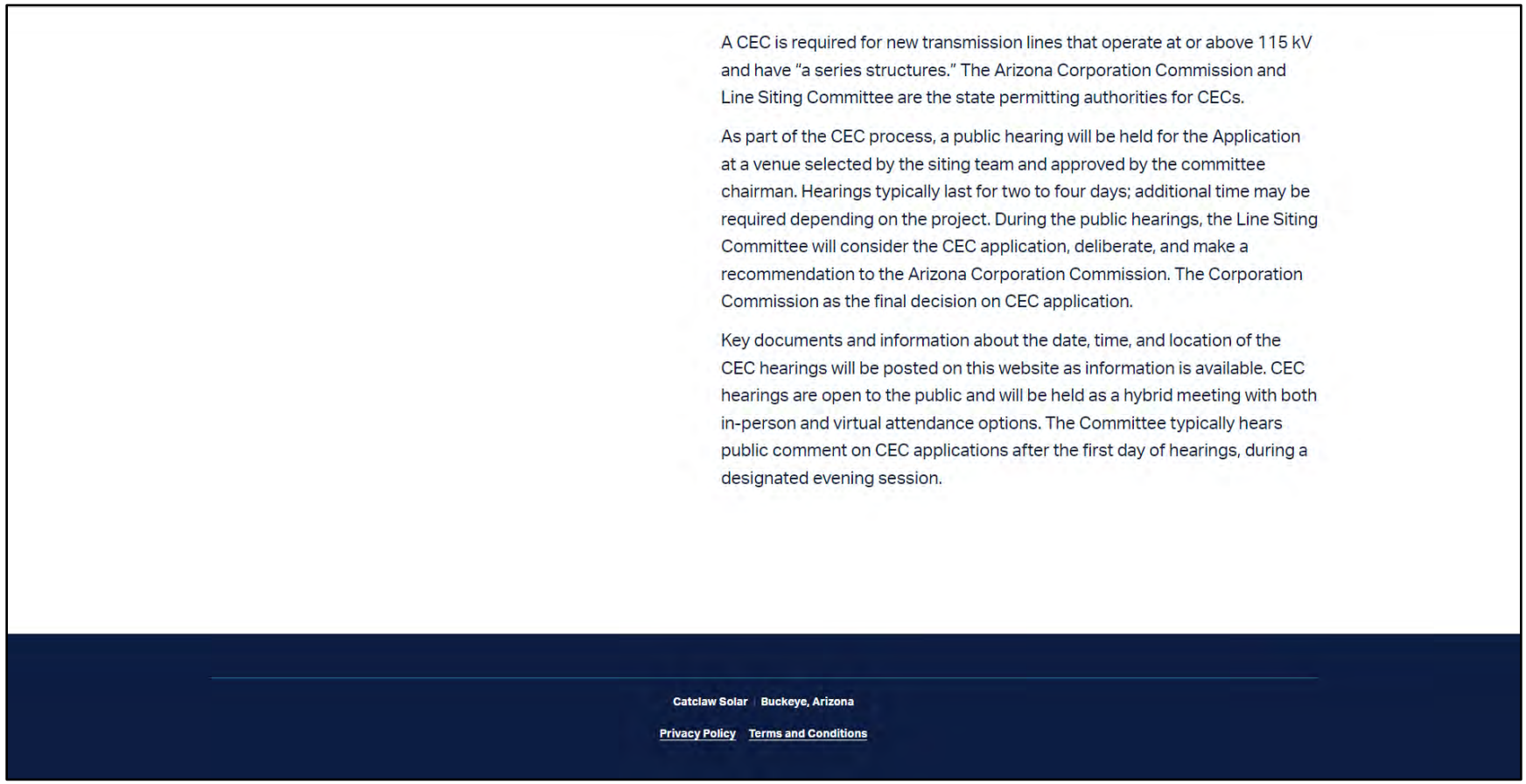


Exhibit J-3g. Project website (continued).

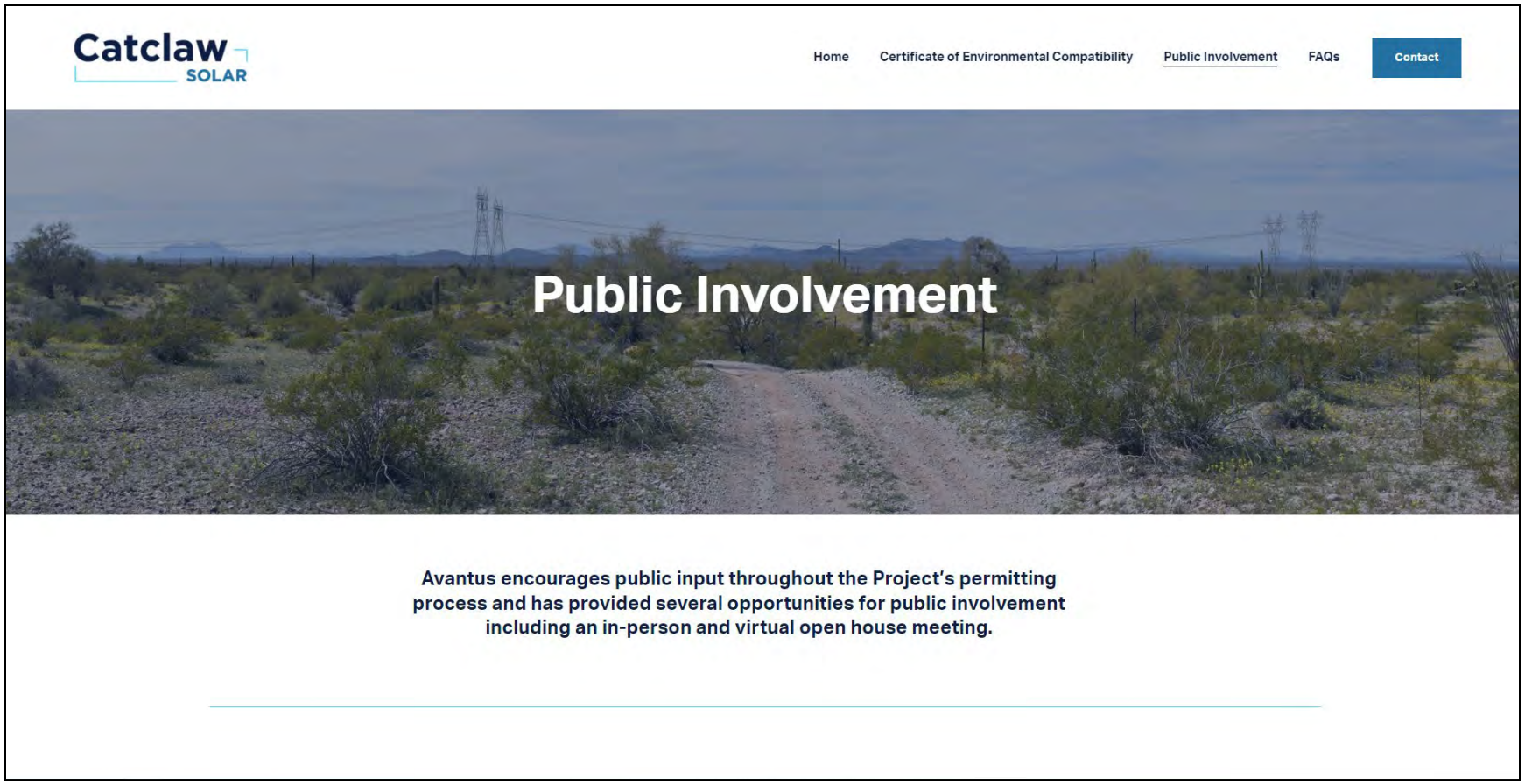


Exhibit J-3h. Project website (continued).

Public Open House

Avantus is hosting an in-person open house meeting for the Catclaw Project so the community can learn more about, and provide input on, the proposed Project. Members from the project team, including representatives from Avantus and SWCA Environmental Consultants, will be present to provide information and answer questions.

The public meeting will be held at the following date and time:

Bales Elementary School

25400 W Maricopa Rd. Buckeye, AZ 85326

March 29, 2023, 4:30pm – 6:30pm

BUCKEYE
Elementary School District #33
Est. 1889

Exhibit J-3i. Project website (continued).

Virtual Open House

Avantus is also hosting a virtual open house to provide project information and opportunity for public comment. The formal comment period will run from March 13, 2023 to April 15, 2023.

Visit the Virtual Open House

Exhibit J-3j. Project website (continued).

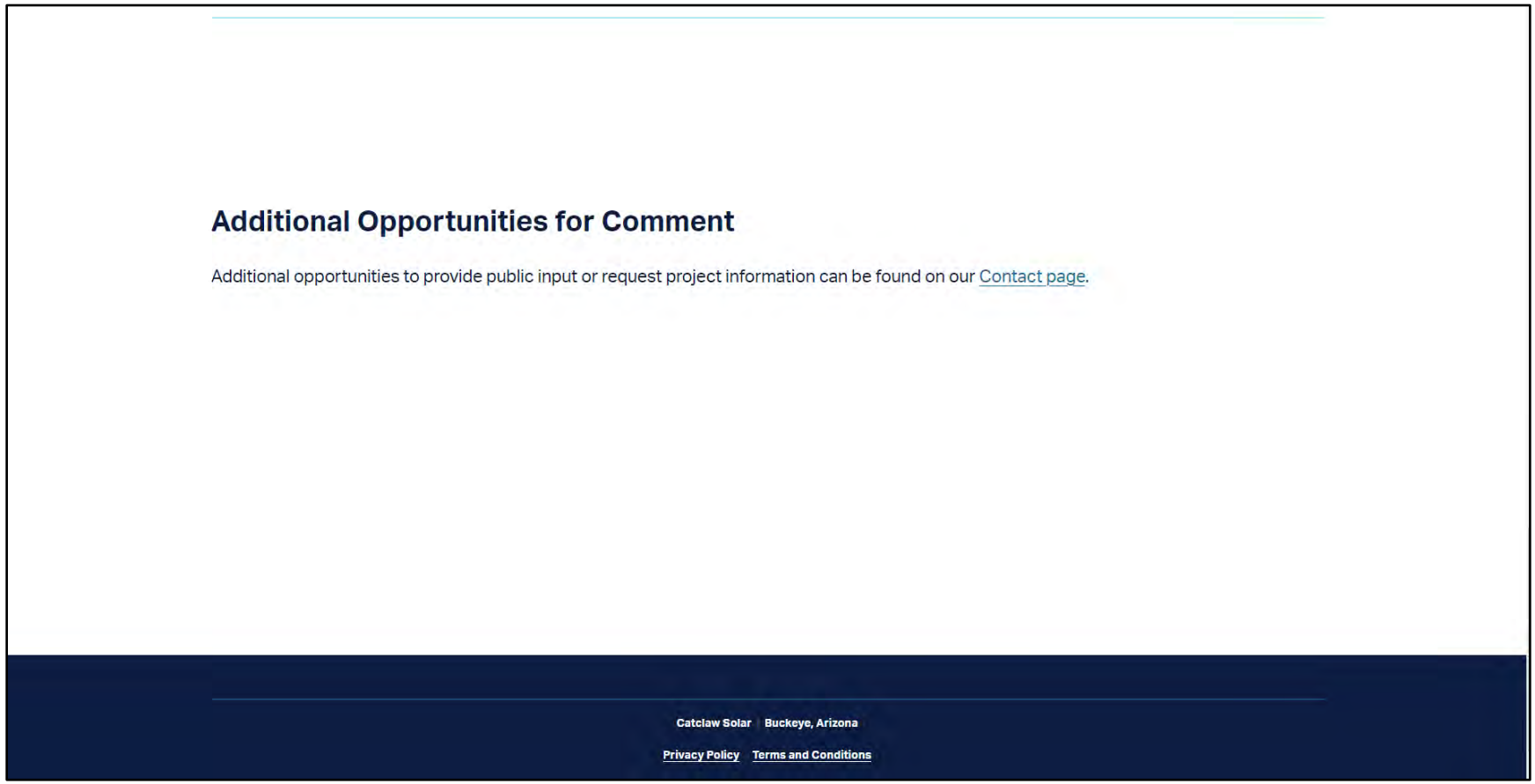


Exhibit J-3k. Project website (continued).

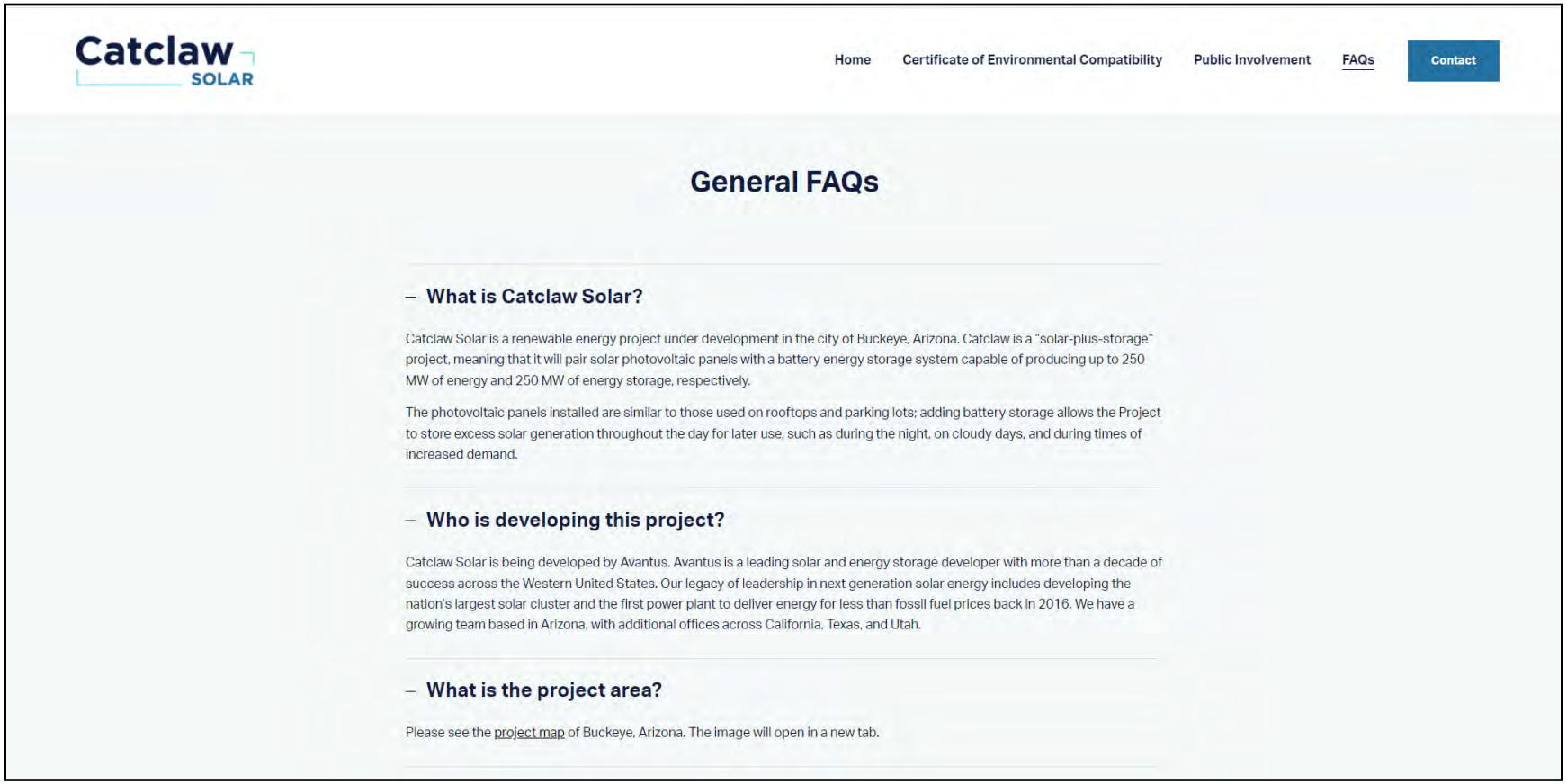


Exhibit J-3l. Project website (continued).

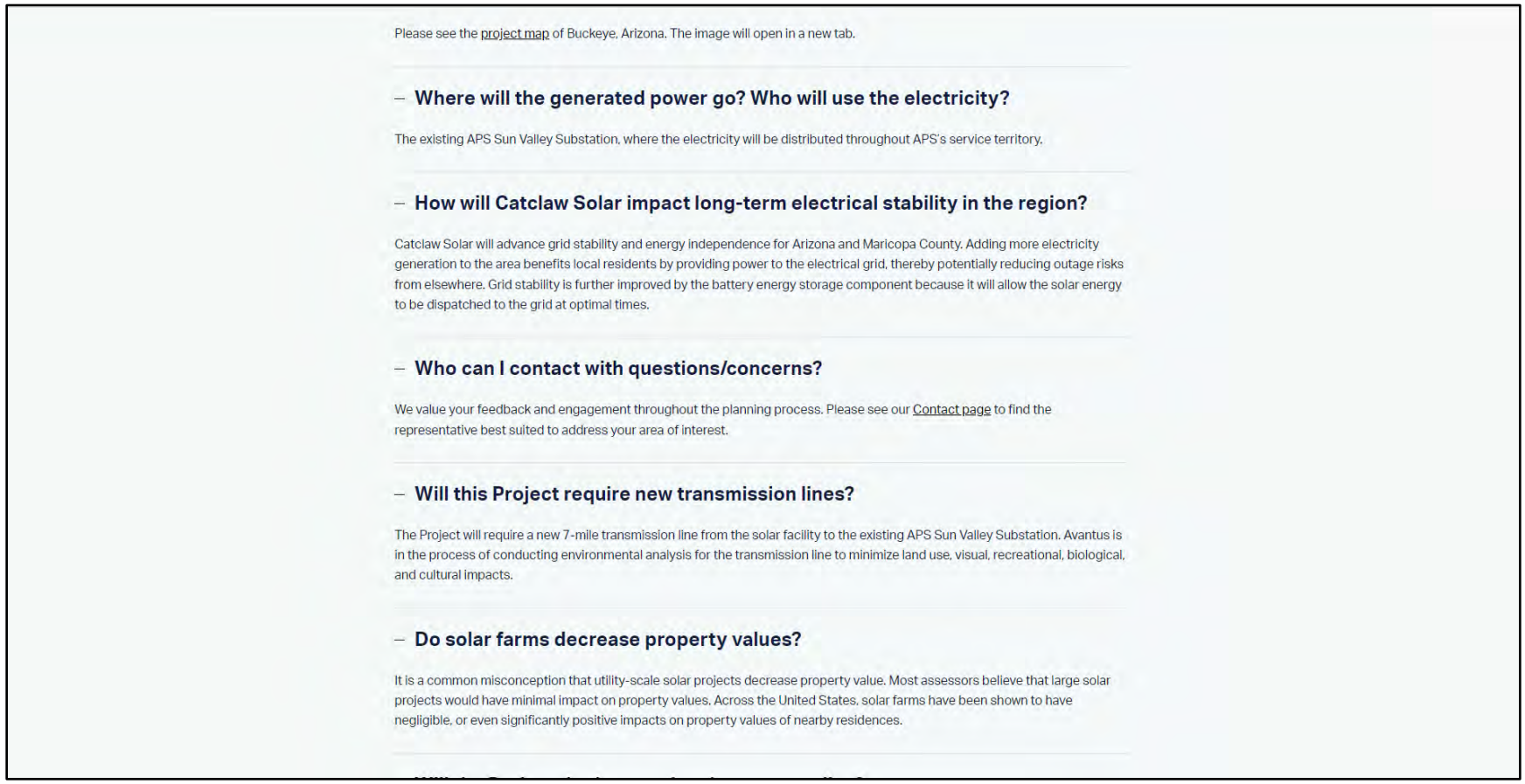


Exhibit J-3m. Project website (continued).

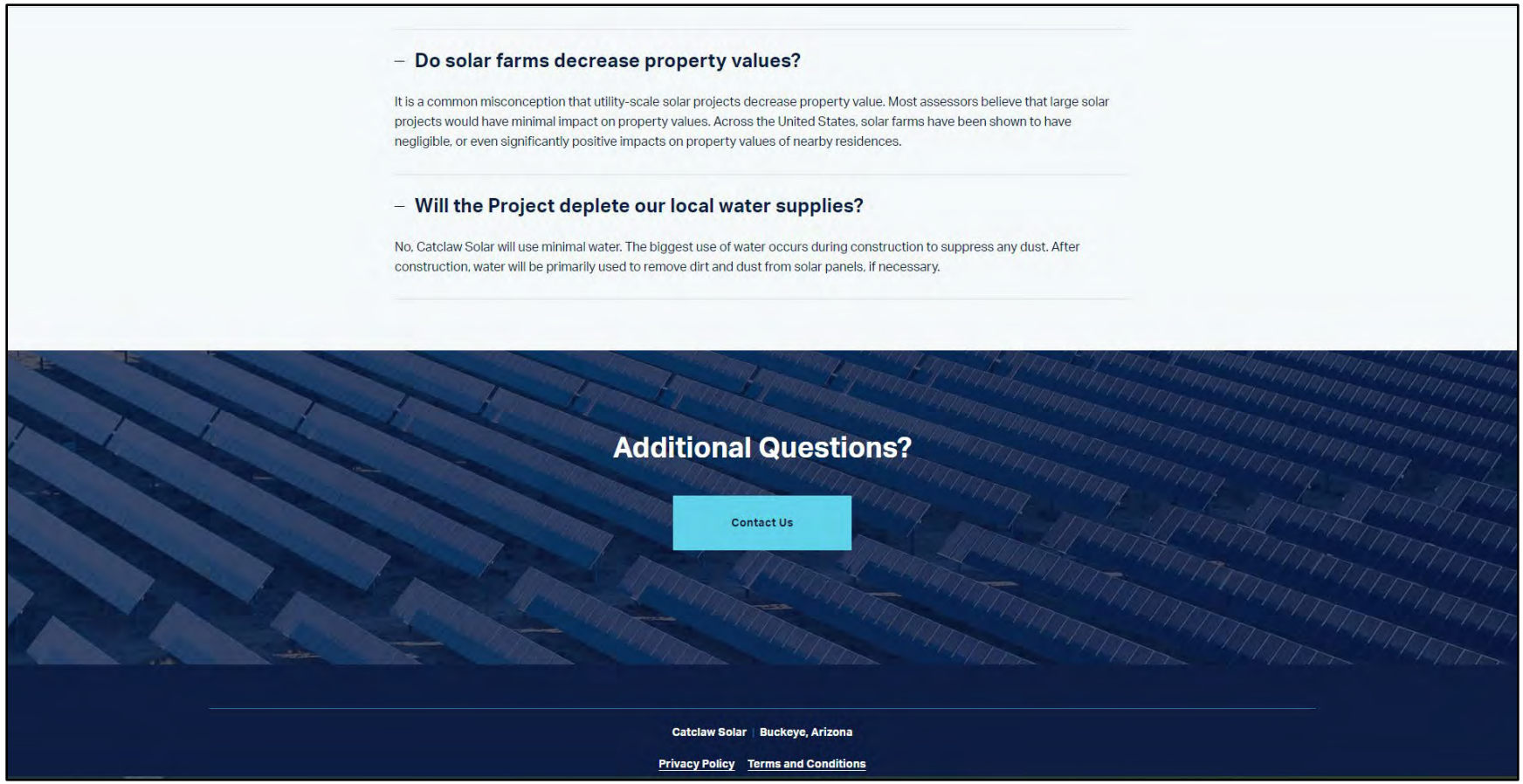


Exhibit J-3n. Project website (continued).

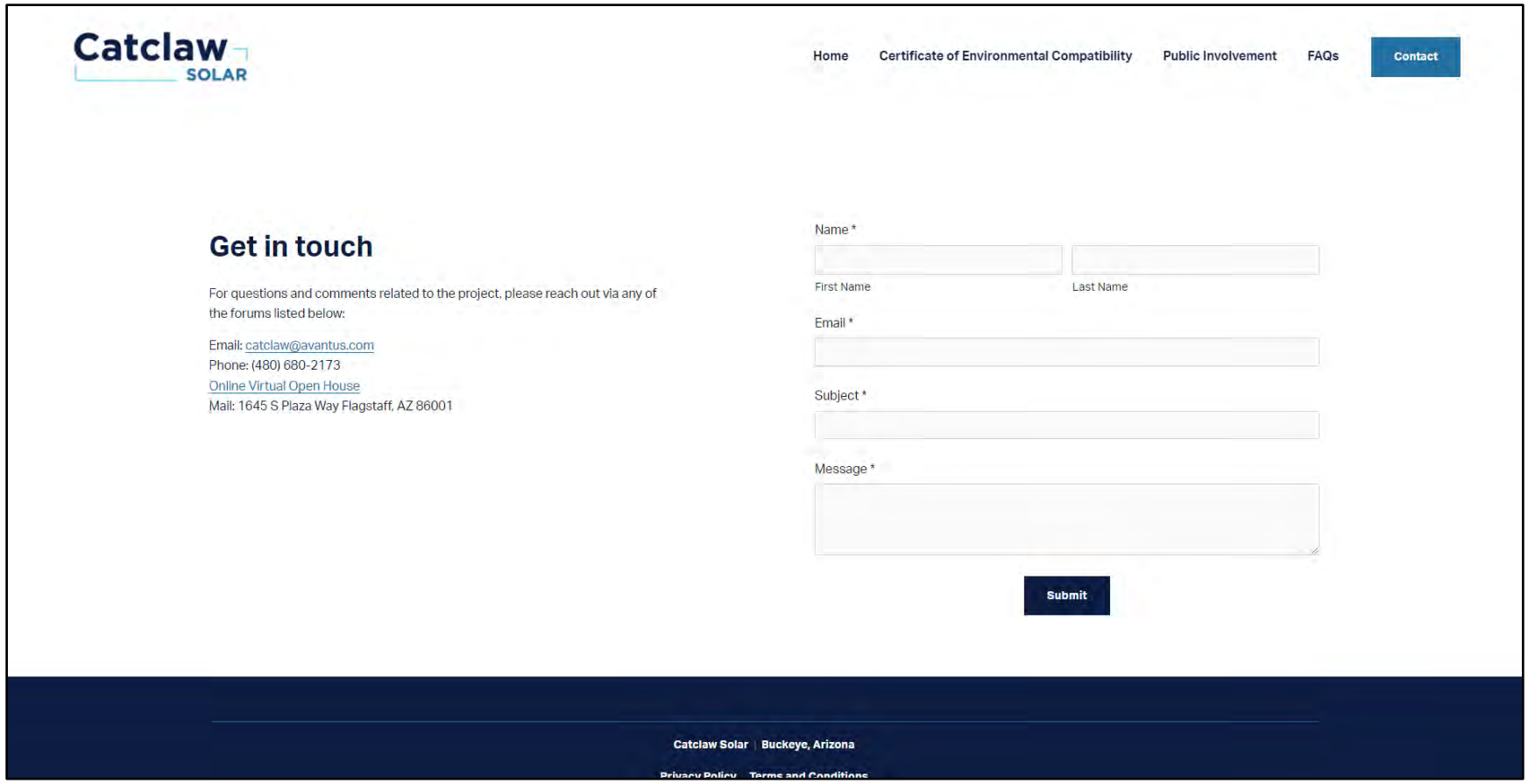


Exhibit J-3o. Project website (continued).

Exhibit J-4. Project social media advertisement.

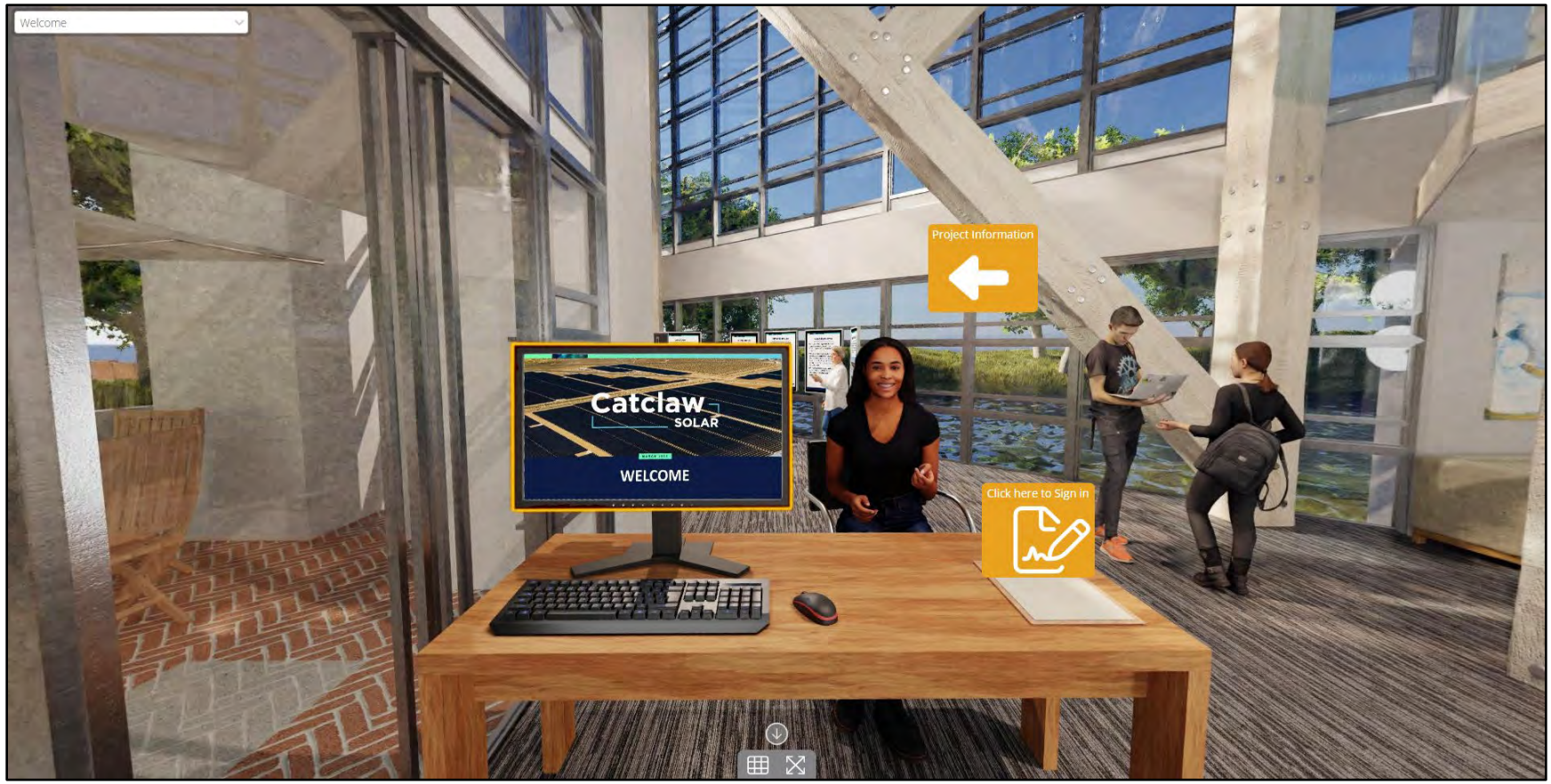


Exhibit J-5a. Project virtual open house.

Exhibit J-5b. Project virtual open house.

Exhibit J-5c. Project virtual open house.

Exhibit J-5d. Project virtual open house.

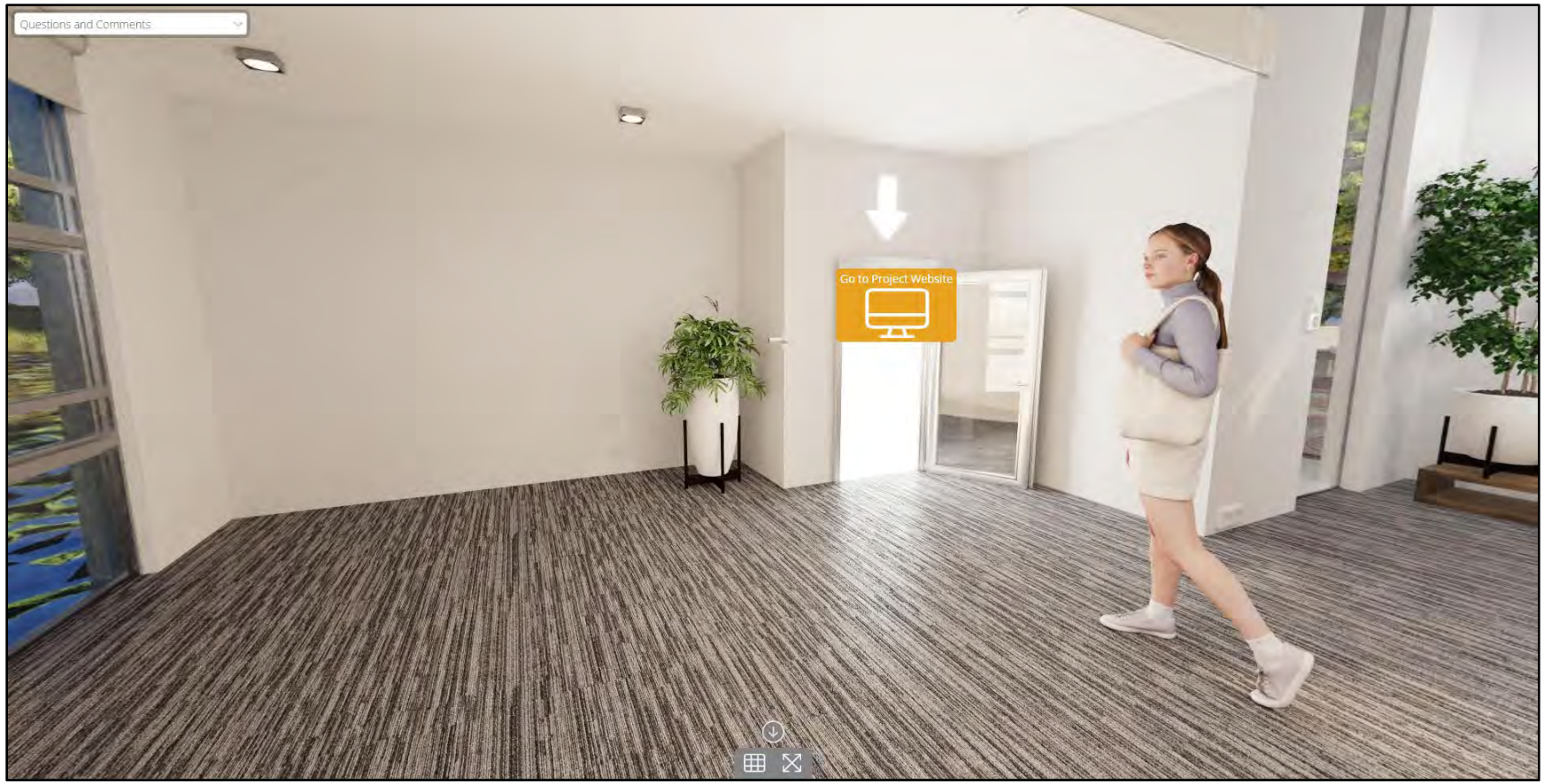


Exhibit J-5e. Project virtual open house.

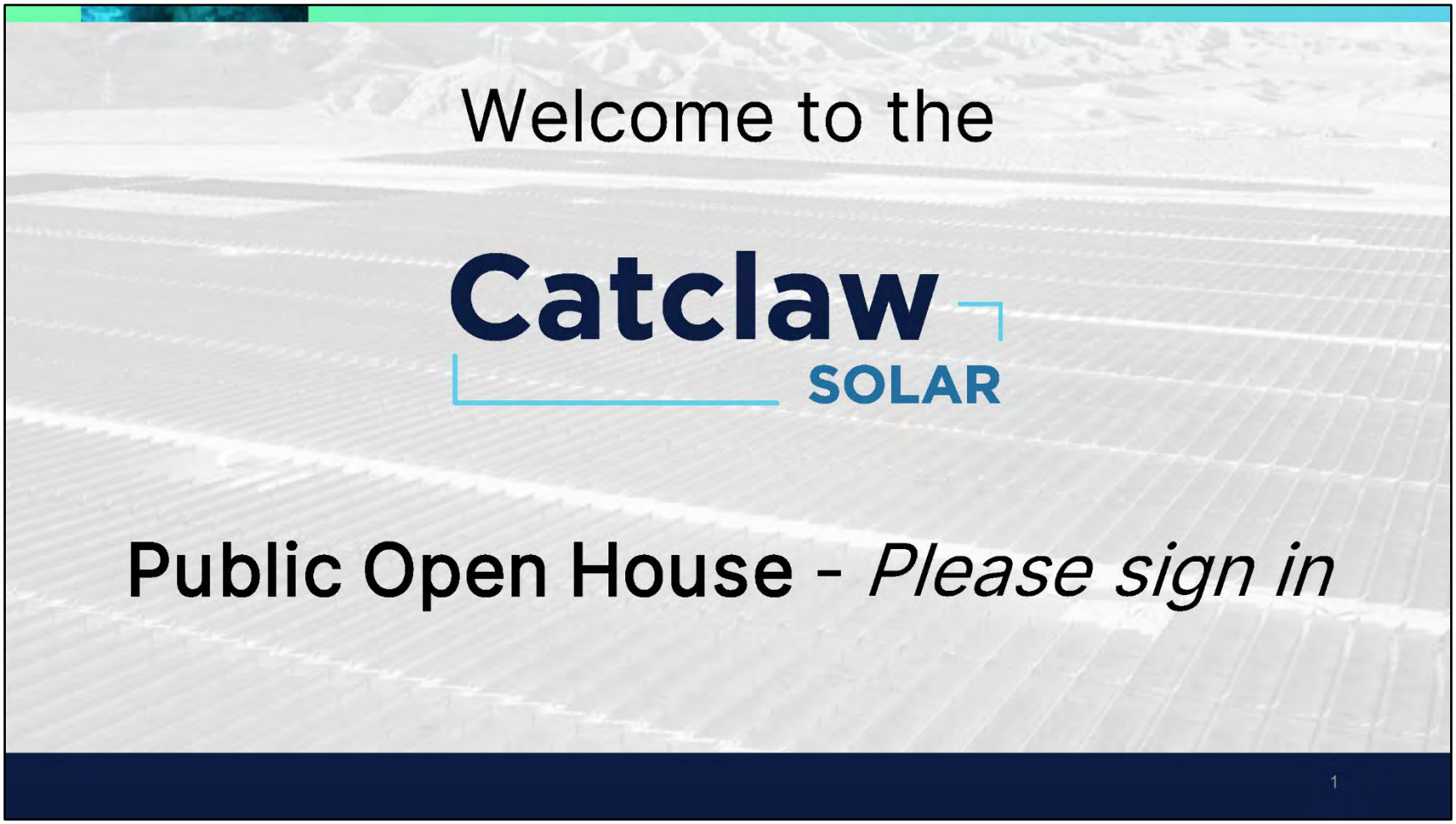


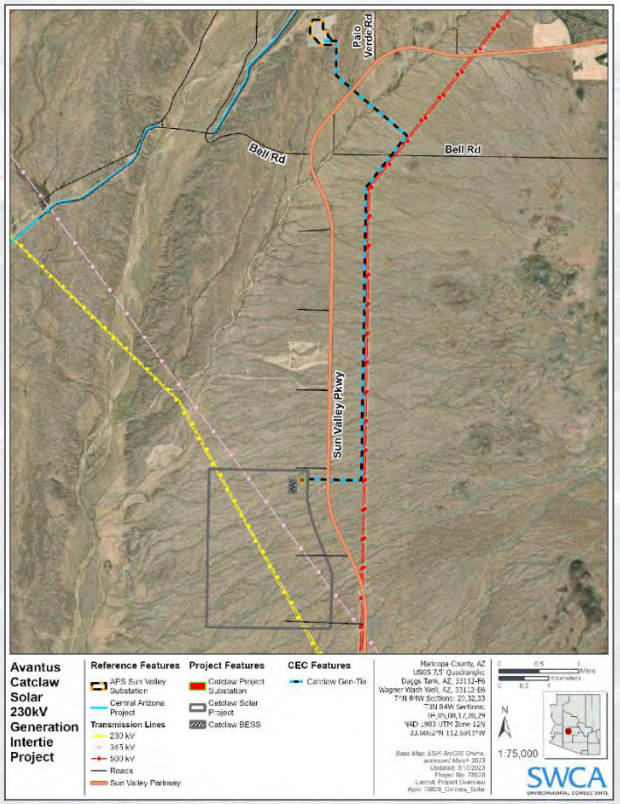
Exhibit J-6a. In-person open house posters.

Catclaw Solar Project

- Catclaw Solar Project (Project) is a planned solar energy generating facility in Buckeye, Maricopa County, Arizona. The Project will involve a 250-megawatt (MW) photovoltaic solar facility, a 250-MW battery energy storage system, project step-up substation, and a 230-kilovolt (kV) generation intertie (gen-tie) transmission line. The gen-tie will connect the Project to the regional electrical grid via the existing Arizona Public Service (APS) Sun Valley Substation.
- The Project is being developed by Avantus, a top clean energy developer with more than a decade of success across the Western United States. Our legacy of leadership in next generation solar energy includes developing the nation's largest solar cluster and the first power plant to deliver energy for less than fossil fuel prices back in 2016. We have a growing presence in Arizona, with offices across California and Texas.

Catclaw SOLAR

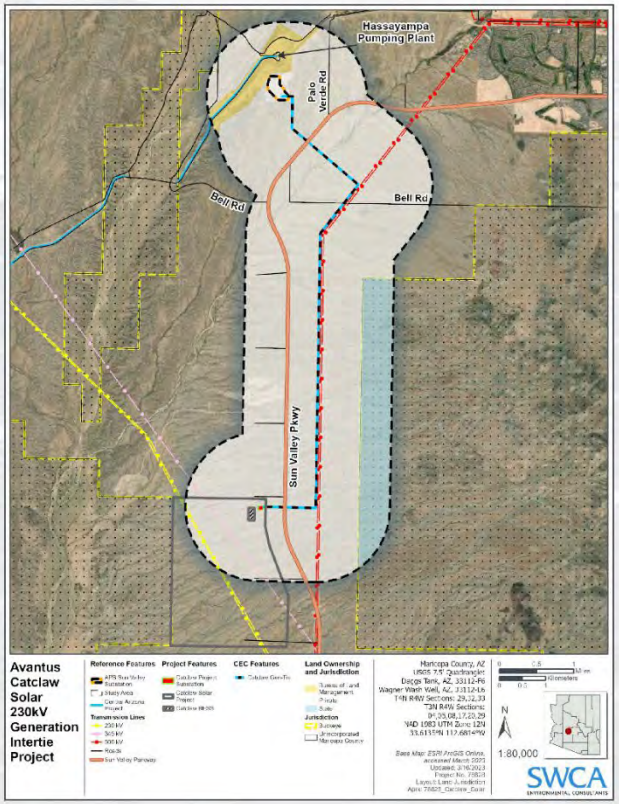
Project Area



Catclaw SOLAR

Exhibit J-6b. In-person open house posters.

Land Jurisdiction



Catclaw SOLAR

Certificate of Environmental Compatibility

- The Catclaw Solar Project involves a new approximately 7-mile long 230-kV gen-tie transmission line, which requires a Certificate of Environmental Compatibility (CEC) from the Arizona Corporation Commission and the Arizona Power Plant and Transmission Line Siting Committee.
- Avantus is currently developing a CEC Application to allow for the construction, operation, and maintenance of the project gen-tie.

Catclaw SOLAR

Exhibit J-6c. In-person open house posters.

Land Use

Existing and planned land uses were analyzed within one-mile of the proposed gen-tie (Study Area). Maps depicting land use can be found on subsequent slides.

Existing Land Use

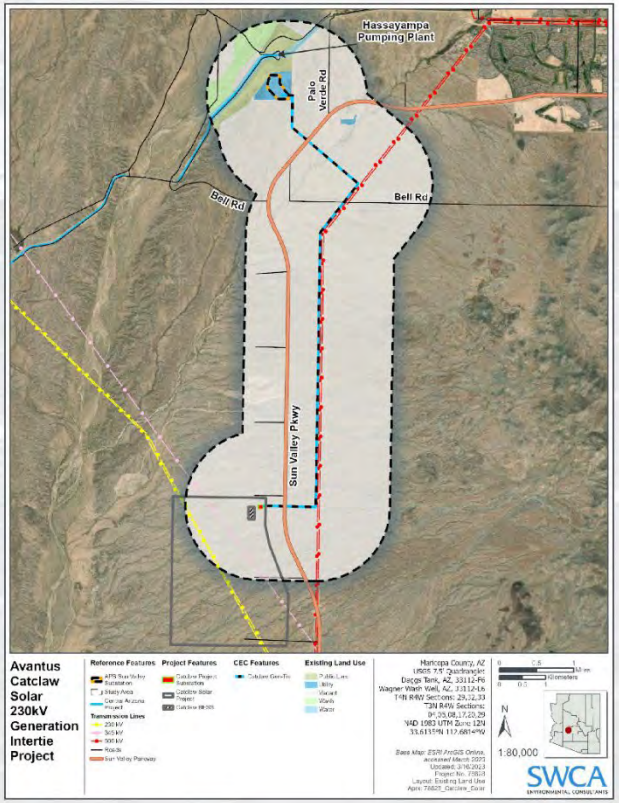
- Existing land use within the Study Area primarily consist of vacant/undeveloped open desert and utility uses.
- Several high voltage transmission lines traverse the Study Area

Planned Land Use

- The City of Buckeye's General Plan outlines the City's policies for development. The General Plan includes various planned land use designations intended to guide the location and intensity of development.
- Planned land use designations within the Study Area include master planned community, neighborhood, and rural.

Catclaw SOLAR

Existing Land Use



Catclaw SOLAR

Exhibit J-6d. In-person open house posters.

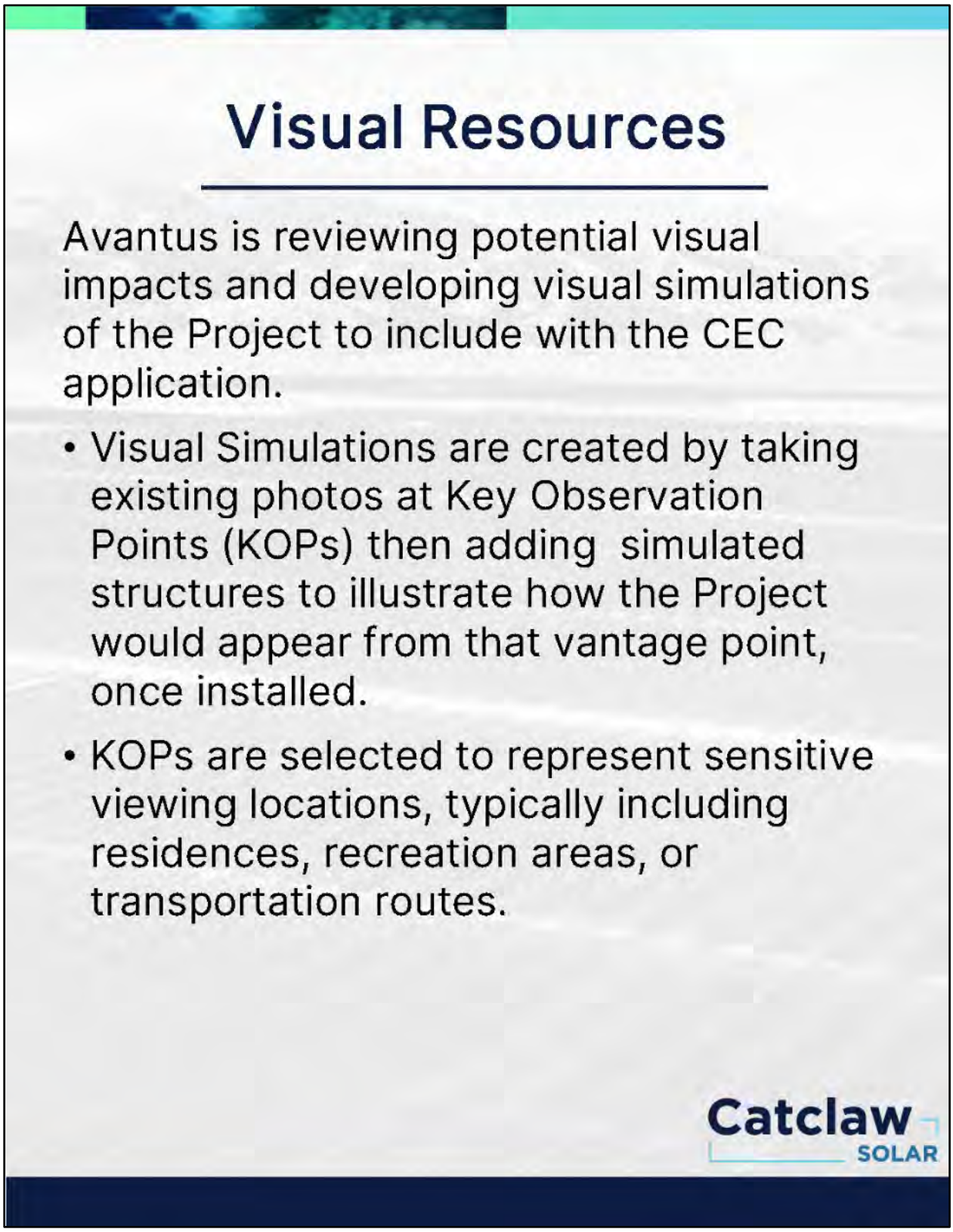
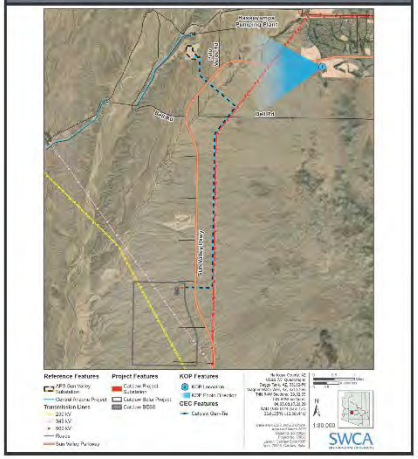


Exhibit J-6e. In-person open house posters.

Existing Condition KOP 1: View from corner on North Desert Oasis Boulevard looking west

Simulated Condition KOP 1: View from corner on North Desert Oasis Boulevard looking west

Viewing Location



Typical 230kV Structures

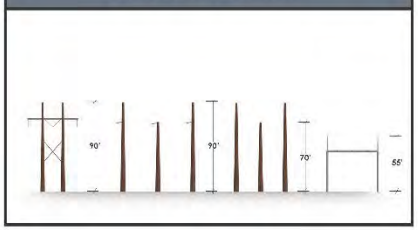


Photo Date and Time: March 6, 2023, 10:20 am

View Location: Approximate distance to nearest new structure from photo location is 2.3 miles.

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

Catclaw Solar 230 kV Generation Intertie Project | March 2023
Simulation from KOP 1: View from corner on North Desert Oasis Boulevard

Catclaw SOLAR SWCA ENVIRONMENTAL CONSULTANTS

Exhibit J-6f. In-person open house posters.

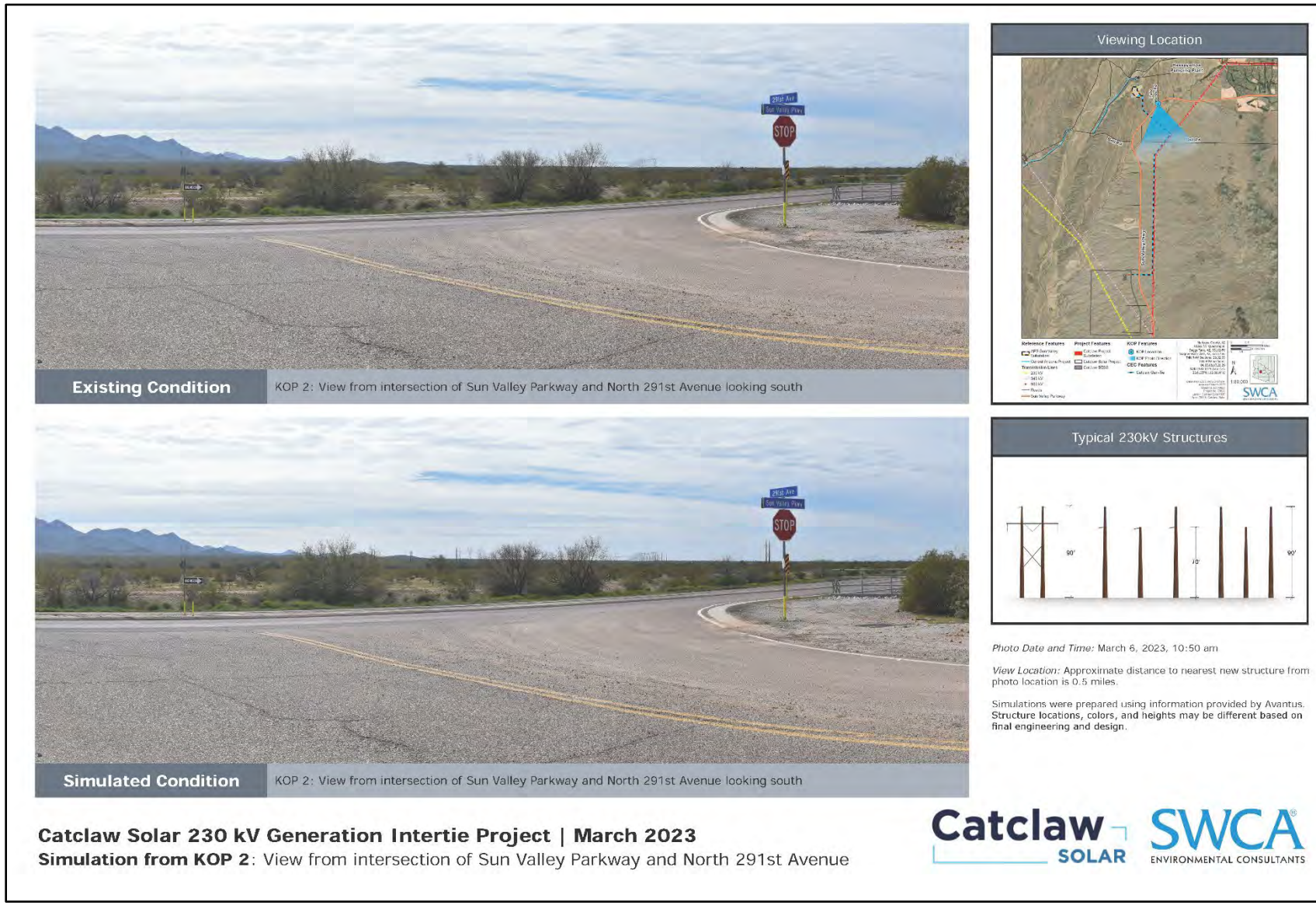


Exhibit J-6g. In-person open house posters.

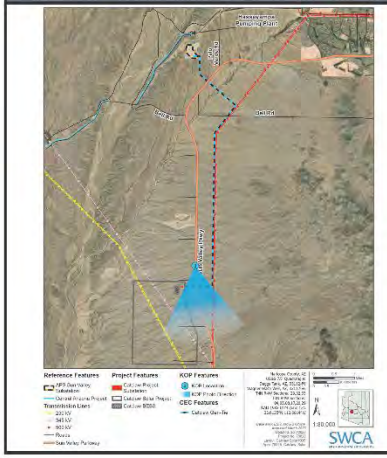
Existing Condition

KOP 3: View from Sun Valley Parkway Southbound looking south

Simulated Condition

KOP 3: View from Sun Valley Parkway Southbound looking south

Viewing Location



Typical 230kV Structures

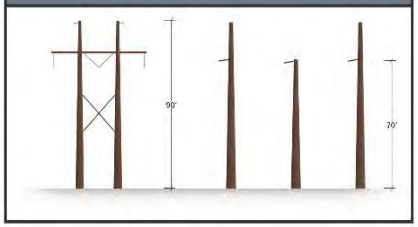


Photo Date and Time: March 6, 2023, 11:20 am

View Location: Approximate distance to nearest new structure from photo location is 0.5 miles.

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

Catclaw Solar 230 kV Generation Intertie Project | March 2023

Simulation from KOP 3: View from Sun Valley Parkway Southbound

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SWCA ENVIRONMENTAL CONSULTANTS

Exhibit J-6h. In-person open house posters.

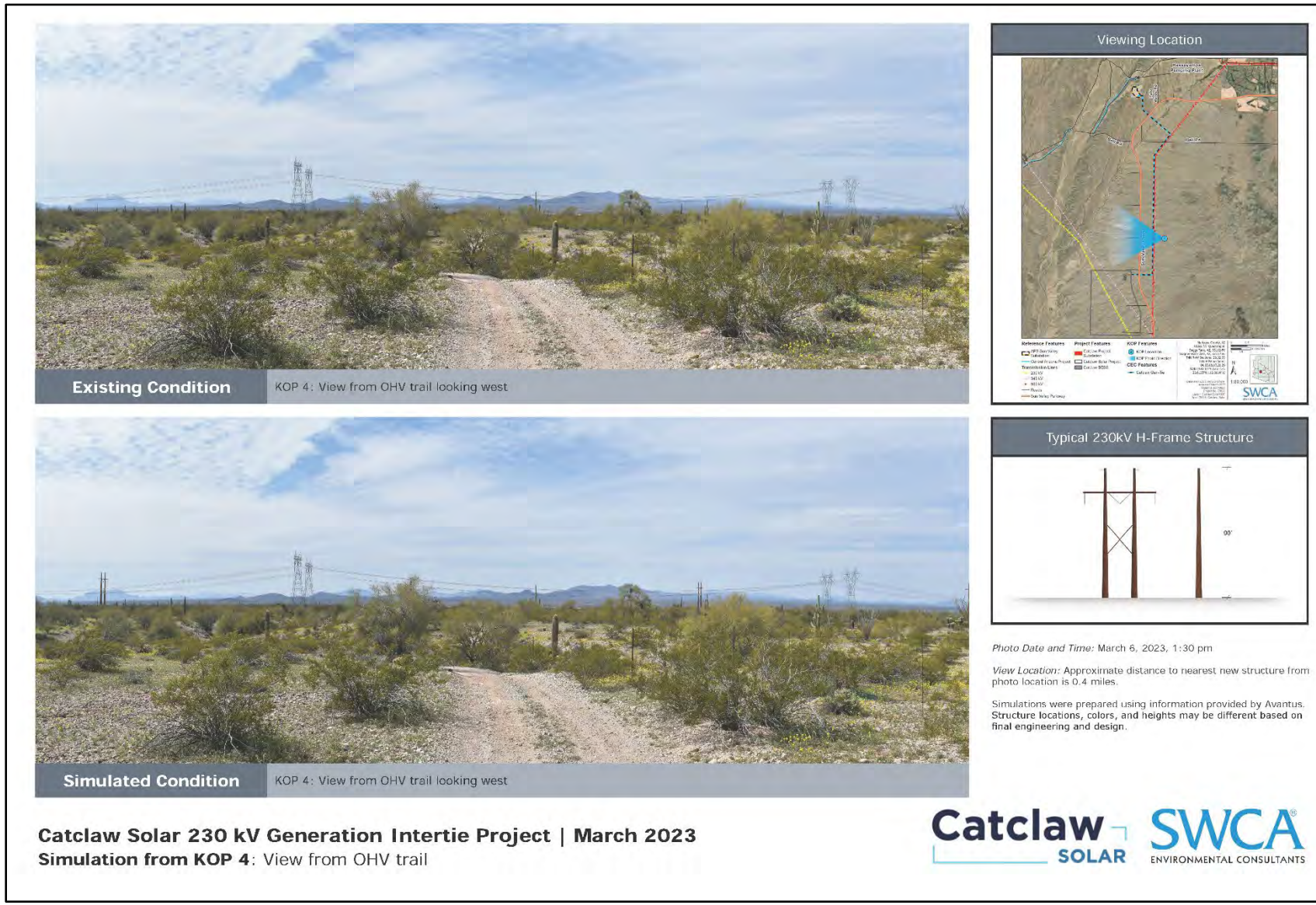

Exhibit J-6i. In-person open house posters.

Exhibit J-6j. In-person open house posters.

Comment Form

Avantus Catclaw Solar Project
Public Open House Meeting
Wednesday, March 29th, 2023
4:30-6:30 PM

Name: _____

Affiliation: _____

Email: _____

Phone: _____

Address: _____

City _____ State _____ Zip _____

Comment: _____

Catclaw SOLAR

Exhibit J-7. In-person open house comment card.

March 29th, 2023

Avantus Catclaw Solar Project
Open House Sign-In Sheet
Please write legibly

Catclaw SOLAR

Full Name	Email Address	Telephone	Want to receive project updates?*
Tiffany Sprague	tsprague@azgfd.gov	6232367222	Y

*By providing your information, you agree Avantus may contact you at the number you provided above with information about the project in the future. We will not share your information with any 3rd party sources.

Exhibit J-8. In-person open house sign-in sheet.

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