Application

for

Certificates of Environmental Compatibility

APS Westwing 230kV Interconnection Project

Prepared for:

State of Arizona
Power Plant and Transmission Line Siting Committee

Submitted by:

Arizona Public Service Company

July 2021

Case No. _____

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INTRODUCTION

Pursuant to Arizona Revised Statutes (A.R.S.) 40-360 *et seq.*, Arizona Public Service Company (APS or Applicant) is seeking approval of two Certificates of Environmental Compatibility (CECs) granting authority to construct the Westwing 230 kilovolt (kV) Interconnection Project (Project). The Project consists of single-circuit 230kV transmission line, built on double-circuit-capable structures, that will be collocated with the existing 69kV Calderwood-Westwing sub-transmission line (the "Calderwood Line") that will extend from the Westwing Substation to The AES Corporation (AES) Energy Storage Project (the ESP). Two CECs are required to address ownership of specific portions of the Project. The Applicant will own the portion of the transmission line from the Westwing Substation to the Point of Demarcation (POD) on the last structure outside of the planned ESP (CEC-1), and AES will own the portion of the Project from the POD to the AES-owned substation located within the planned AES ESP (AES Substation) (CEC-2).

Project Overview

The Project consists of a new, approximately 0.52-mile, 230kV transmission line connecting the existing Westwing Substation northward to the planned AES ESP. The portion of the Project covered by CEC-1 will be constructed and operated by APS. The portion of the Project covered by CEC-2 will be constructed, owned, and operated by AES.

The Project, as proposed, entails a rebuild of the existing 69kV Calderwood Line to add a 230kV circuit with double-circuit 230kV capable structures, which would provide a direct connection between the planned AES ESP and the Westwing Substation. While the Project is proposed to include a single-circuit connection, the Applicant is proposing construction of double-circuit-capable structures to accommodate future anticipated customer interconnection needs in the area. The Calderwood Line and Westwing Substation are located in an established utility corridor with numerous existing transmission lines ranging from 69kV to 500kV. The Project is anticipated to be constructed with steel monopole structures. The exact size of the structures will depend on the final design of the Project.

The Project is needed to serve the planned AES ESP and will allow for the connection of the ESP to the regional electrical grid. The anticipated in-service date for the Project is 2022. The Project was included in APS's Supplemental Ten-Year Plan, which was filed on June 24, 2020, and in APS's Ten-Year Plan, which was filed with the Arizona Corporation Commission (Commission) on January 31, 2021.

Project Route

The proposed route for the Project (Proposed Route) represents a nearly direct connection from the ESP to the Westwing Substation and, except for the portion covered by CEC-2, is entirely collocated with the existing right-of-way for the Calderwood Line (Figure 1). Approximately 0.22 mile, or 42%, of the Proposed Route is located within the Westwing Substation.

After exiting the Westwing Substation, the Proposed Route for CEC-1 will be collocated with the APS Calderwood Line where it extends north for approximately 0.27 mile, then west 0.07 mile, north 0.04 mile, and then northwest 0.07 mile to the POD. From the POD, the Project Route covered by CEC-2 departs from the Calderwood Line alignment for the final 0.07 mile span and extends to the planned ESP Substation. The Proposed Route crosses under the existing 500kV Navajo-Westwing transmission lines. Other power lines in proximity to the Project include five single-circuit 500kV transmission lines, one double-circuit 230kV/345kV transmission line, one single-circuit 230kV transmission line, two double-circuit 230kV transmission lines, one double-circuit 69kV transmission line, and three single-circuit 69kV transmission lines. The entirety of the Proposed Route is within privately owned land and, except for the portion of the Project covered by CEC-2, is within the corridor of the Calderwood Line.

Requested Corridor

To provide appropriate and desired flexibility in the placement of specific transmission infrastructure, the Applicant is requesting authorization to place the transmission line structures within a variable-width corridor between 200 and 400 feet wide (Figure 2).

Purpose and Need

The Project is needed to interconnect the planned ESP to the regional transmission grid for the storage and delivery of electricity to customers.

Environmental and Public Siting Process

APS and AES analyzed various preliminary interconnection alternatives, and ultimately identified the Proposed Route as the most direct, feasible, and least impactful alternative. APS and AES initiated this process by examining the area between the Westwing Substation and the planned ESP to identify possible routes for the Project. Project siting considerations included using the existing transmission/sub-transmission facilities to the extent feasible through collocation or parallel alignment, avoiding environmentally sensitive areas, and minimizing impacts to landowners and existing and planned land uses. This approach was used to inform early project design considerations within a range of alternative routes or locations, followed by a detailed analysis of environmental and engineering considerations. The siting process was also designed to give stakeholders an opportunity to provide input on the Project.

Among the preliminary interconnection alternatives analyzed by AES and APS were three primary alternatives. Two of these alternatives were considered and eliminated based on the potential for interference with multiple existing 230kV and 500kV transmission lines as well as the need for multiple new easements from the landowners/substation owners. The Proposed Route was carried forward for detailed analysis because it minimizes impacts to existing transmission infrastructure, is collocated with an existing sub-transmission line, avoids environmentally sensitive areas, and is located within an easement held by APS.

APS has identified the Proposed Route as an optimal location based on the recognized need to supplement energy generation with electrical storage facilities, the existence of compatible adjacent and nearby land uses, and the proximity to the Westwing Substation. The Project location minimizes the need for a lengthy transmission interconnection line or costly system upgrades.

Following the identification of the Proposed Route, APS; AES; and an APS consultant, SWCA Environmental Consultants (SWCA), instituted various activities designed to engage public and agency stakeholders and to solicit input on the Proposed Route and Project design. These activities included a virtual open house meeting, jurisdictional and agency meetings/briefings, landowner contacts, newsletter mailings, newspaper advertisements, a telephone information line, social media information blasts, and a Project website. Through these activities, APS requested and received public and agency feedback on, and answered questions about, the Project and Proposed Route.

Further information about the public involvement process is included as Exhibit J.

Conclusion

This Application for CECs (Application) includes the environmental evaluation and documentation relevant to the Project as specified by Arizona Administrative Code Rule R14-3-219. The CECs requested in this Application balance the need for an adequate, economical, and reliable supply of electric power with the desire to minimize impacts on Arizona's environment and ecology and are consistent with the public interest. The Project will result in minimal adverse impacts on the statutory factors considered by the

Arizona Power Plant and Transmission Line Siting Committee (Siting Committee), including existing land use plans; fish, wildlife, and plant life; areas unique because of biological wealth; scenic areas, historic sites and structures, and archaeological sites; and the total environment of the area. APS is committed to avoiding and minimizing environmental impacts and believes the Project's Proposed Route is environmentally compatible. As such, APS respectfully requests that the Siting Committee grant, and the Commission approve, the requested CECs for the Project.

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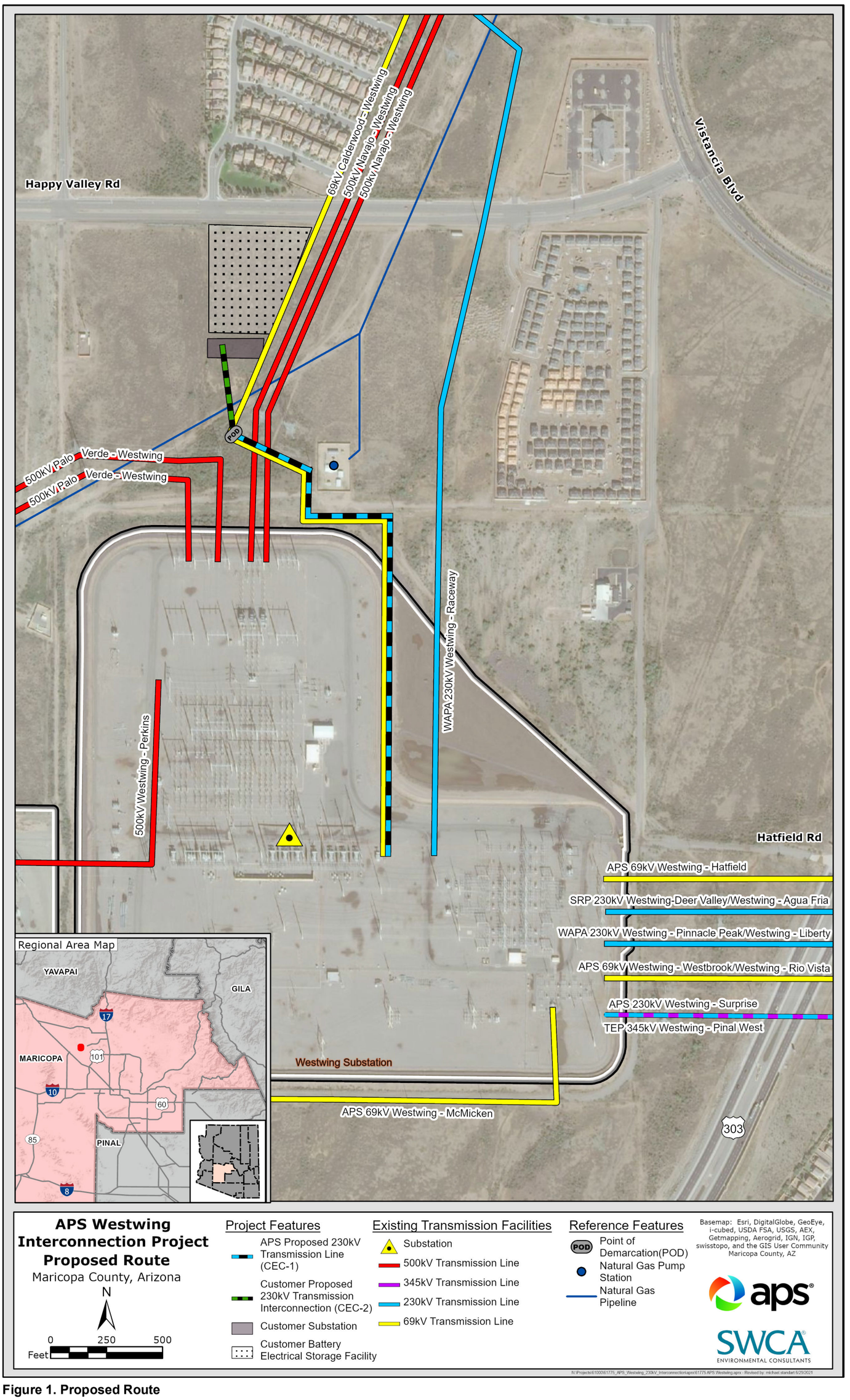

Figure 1. Proposed Route

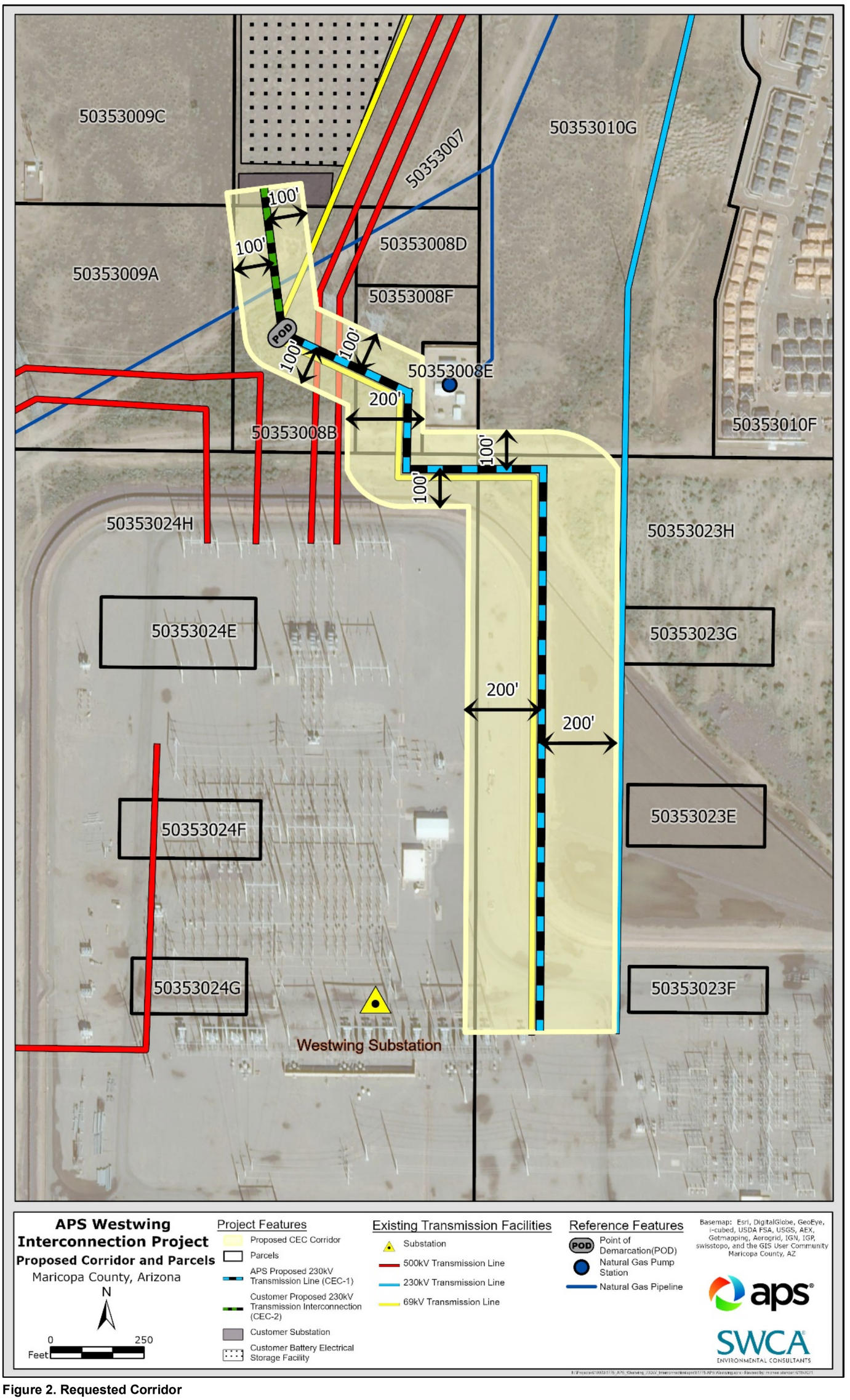

Figure 2. Requested Corridor

APPLICATION FOR
CERTIFICATE OF ENVIRONMENTAL COMPATABILITY

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1. **Name and address of the Applicant**

   Arizona Public Service Company
   PO Box 53933
   Phoenix, Arizona 85072-3933

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**

   Kevin Duncan
   Senior Siting Consultant
   Transmission and Facility Siting
   Arizona Public Service Company
   PO Box 53933, MS 3293
   Phoenix, Arizona 85072-3933
   (602) 493-4200

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

   The Project was included in APS's Supplemental Ten-Year Plan, which was filed on June 24, 2020, and in APS's Ten-Year Plan, which was filed with the Commission on January 31, 2021.

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

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

      There are no electrical generating plants included as part of the Project.

   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's transmission line is 230kV.

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

            The transmission lines are anticipated to be constructed using steel double-circuit-capable monopole structures. The structures would be approximately 150 feet in height on average but could be as high as 195 feet to maintain necessary clearances. The average span length between structures will range between approximately 200 and 400 feet, depending on final design. The structures will have a dulled gray or weatherized finish, and conductors will have a non-specular finish in order to reduce

visibility. Variations may be required to achieve site-specific mitigation objectives or meet site-specific engineering requirements.

Conceptual drawings showing the typical structures that may be used are provided in Exhibit G.

(3) Description of proposed switchyards and substations:

The Project connects the existing 230kV transmission infrastructure at the Westwing Substation to a point of interconnection at the planned ESP. The Westwing Substation is located approximately 0.6 mile southwest of the State Route Loop 303 (Loop 303) and Happy Valley Road interchange, on land jointly owned by APS, Salt River Project (SRP), and Tucson Electric Power (TEP). The ESP, which is not the subject of this Application, consists of both a battery storage facility and an incorporated substation (ESP Substation) and is located approximately 0.38 mile west of the intersection of Vistancia Boulevard and Happy Valley Road.

The existing Westwing Substation contains typical substation equipment including dead-end structures, buss work, switches, transformers, breakers, communication equipment, and a control structure.

(4) Purpose for constructing said transmission line:

The Project is needed to connect the planned ESP to the regional transmission grid for the storage and delivery of electricity to customers.

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 transmission line will originate at the existing Westwing Substation within portions of parcels 503-53-023H and 503-53-024H in Section 12, Township 4 North, Range 1 West, Gila & Salt River Baseline & Meridian (G&SRB&M) (CEC-1). The Project will connect the Westwing Substation to the planned ESP Substation at a point within parcel 503-53-007 in Section 1, Township 4 North, Range 1 West G&SRB&M (CEC-2).

(2) Straight-line distance between such points:

The straight-line distance between the points of connection for the Westwing Substation and the planned ESP Substation is approximately 2,320 feet (0.44 mile).

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

The length of the Proposed Route is approximately 2,745 feet (0.52 mile).

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

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

The right-of-way (ROW) will be up to 120 feet wide within a requested variable-width corridor between 200 and 400 feet wide. The corridor is being requested to allow minor

adjustments to the location of structures to achieve site-specific mitigation objectives or meet site-specific engineering requirements.

(2) Nominal length of spans:

The typical span length between structures will be approximately 200 to 400 feet, with variations made to achieve site-specific mitigation objectives or meet site-specific engineering requirements.

(3) Maximum height of supporting structures:

The maximum height of the supporting structures is anticipated to be approximately 150 feet above ground but could be as high as 195 feet to maintain necessary clearances.

(4) Minimum height of conductor above ground:

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

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

The estimated cost for the proposed transmission line is $2.6 million. This includes the costs for construction of the transmission line, including the conductor and the supporting structures.

The estimated cost associated with access to the land required for the proposed transmission line route is approximately $80,000.

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 Proposed Route location is described generally in (ii) above and is depicted in Figures 1 and 2.

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

The entirety of the Proposed Route is located on privately owned land, and totals approximately 0.52 mile (2,745 feet). Approximately 90% (2,482 feet) of the land is jointly owned by APS and other utilities, with the remaining portion to be owned or held in easement by the ESP developer (AES).

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 is located on private land within unincorporated Maricopa County. The Proposed Route is not contrary to the Maricopa County zoning ordinance or the Maricopa County Vision 2030 Comprehensive Plan.

The Proposed Route crosses areas zoned in the Maricopa County zoning code as Rural-43 (R-43) and Intermediate Commercial (C-2). The Maricopa County zoning ordinance stipulates that electrical lines are allowable uses within these zones.

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 biological resources, visual resources, cultural resources, recreational resources, land use, noise levels, and communications signals in order 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 to this Application.

ARIZONA PUBLIC SERVICE COMPANY

/s/ Kevin Duncan

By Kevin Duncan, APS Senior Siting Consultant

I HEREBY CERTIFY that on this 13th day of July 2021, I have delivered to the Arizona Corporation Commission twenty-five (25) copies of this Application for a Certificate of Environmental Compatibility.

EXHIBIT A. LOCATION MAP AND LAND USE MAPS

In accordance with Arizona Corporation Commission Rules of Practice and Procedure R14-3-220, Ex. A, 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:

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

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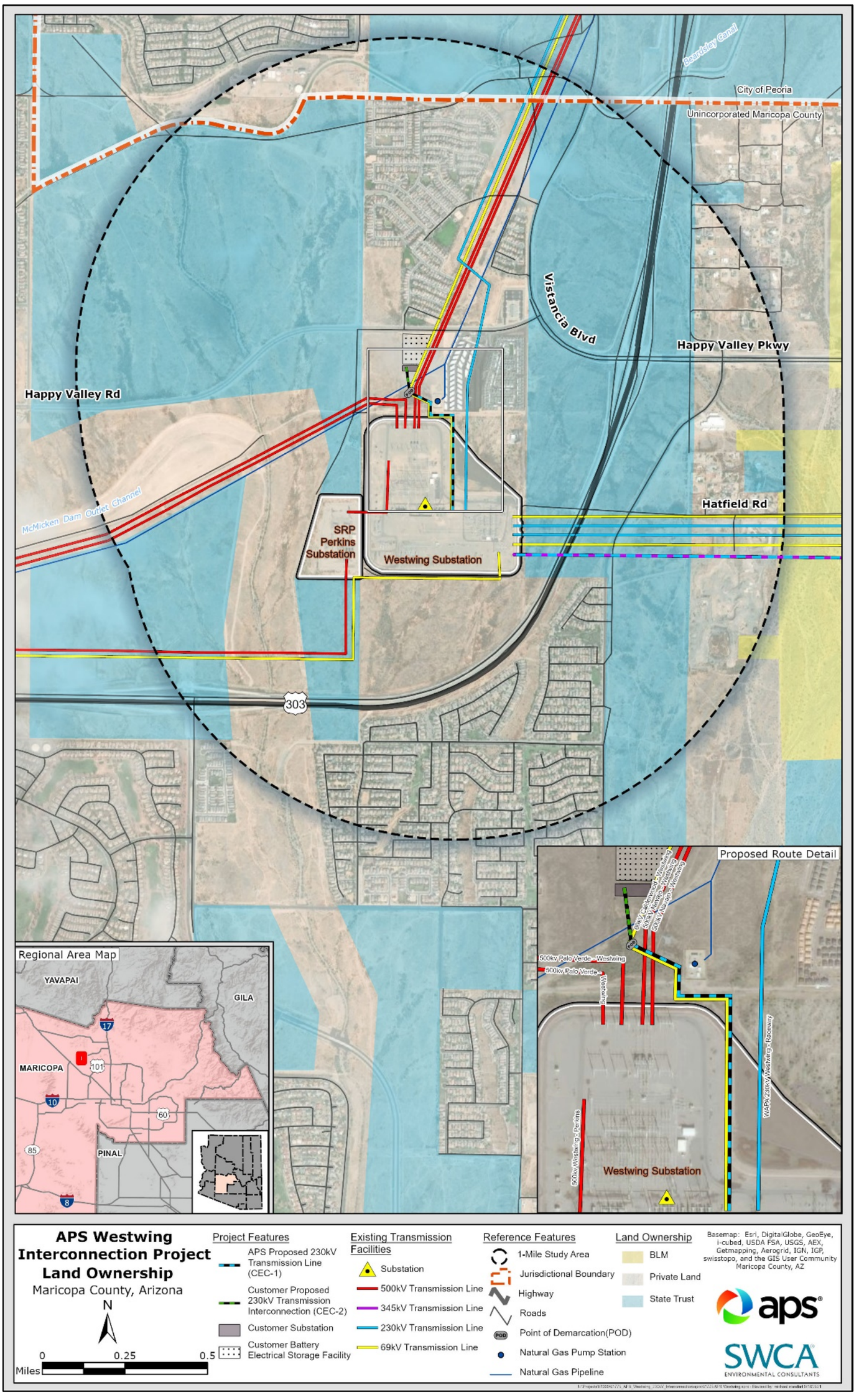

Exhibit A-1. Land Ownership and Surface Jurisdiction

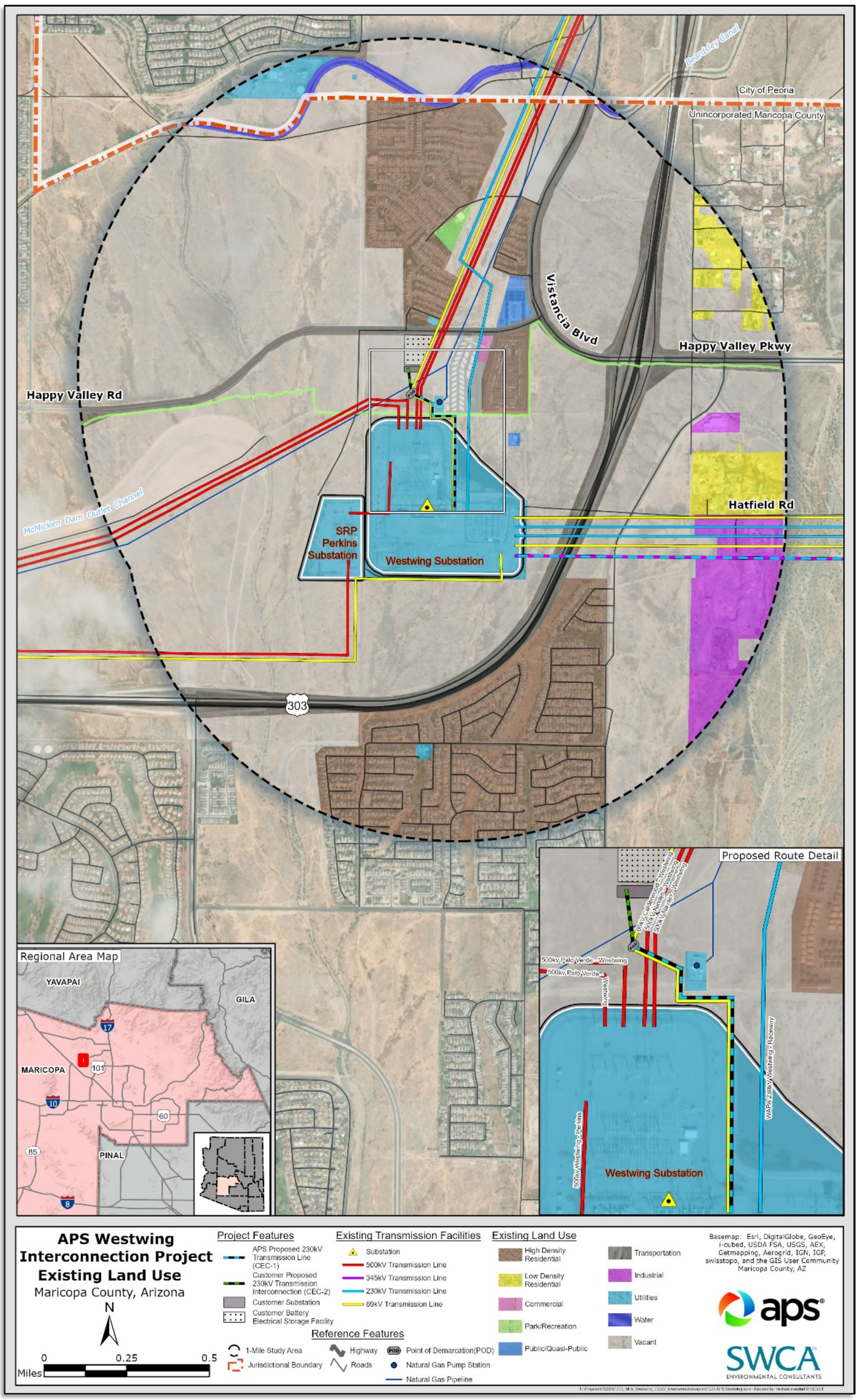

Exhibit A-2. Existing Land Use

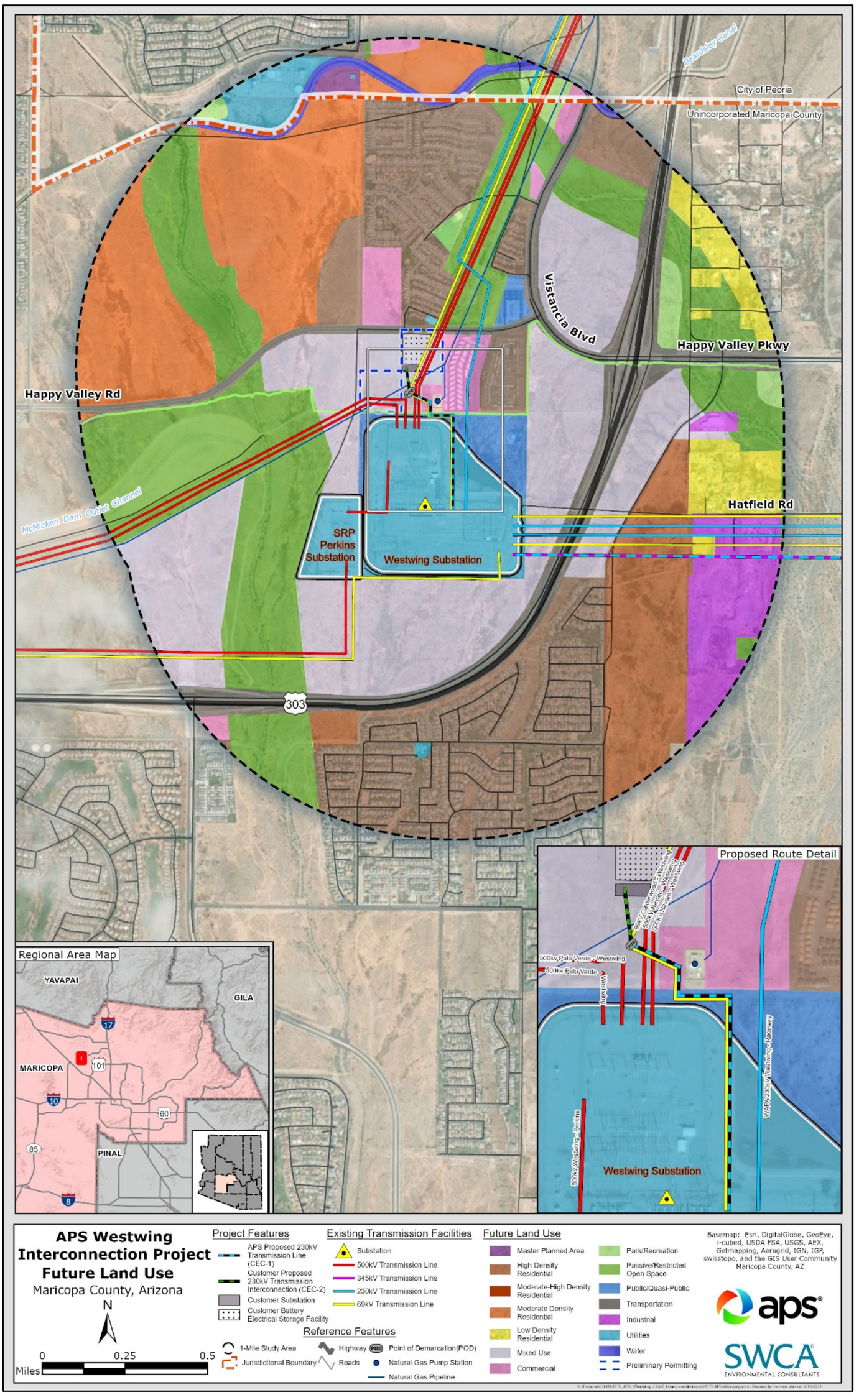

Exhibit A-3. Planned Land Use

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EXHIBIT B. ENVIRONMENTAL STUDIES

As stated in the Arizona Corporation Commission Rules of Practice and Procedure R14-3-220, Ex. B:

> *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

The Applicant's consultant, SWCA Environmental Consultants (SWCA), completed environmental studies for the APS Westwing 230kV Interconnection Project (Project), which include an evaluation of land use, biological, visual, cultural, and recreation resources within the Study Area. The Study Area for the inventory of environmental resources was defined as a 1-mile buffer around the Project facilities. Below is a detailed inventory of the existing and future land uses, as well as potential impacts to those uses associated with the Project. The biological, visual, recreation, and cultural resource evaluations are discussed in detail in the subsequent Exhibits C, D, E, and F.

Currently, the ESP developer (AES) is working with the Western Area Power Administration (WAPA) and the U.S. Bureau of Reclamation through the National Environmental Policy Act process to develop an Environmental Assessment for the ESP. The interconnection of the ESP to the Westwing Substation would require a Large Generator Interconnection Agreement signed by the U.S. Bureau of Reclamation. The Draft Environmental Assessment, developed by WAPA, is included as an attachment to Exhibit J.

Land Use

Inventory

SWCA completed a land use inventory to identify and map existing and future land uses within the Study Area. Existing and future land use data were compiled from the *Maricopa County Vision 2030 Comprehensive Plan* (Maricopa County 2016), the *White Tanks Grande Ave Area Plan* (Maricopa County 2000), the Maricopa Association of Governments (MAG) Land Use Explorer (MAG 2021), and the Maricopa County Planning and Development Department's interactive mapping service (Maricopa County 2020). The relatively small northern portion of the Study Area is within the City of Peoria, and land use data for this area were obtained from the *Peoria General Plan 2040*. These data were compiled for the Study Area and displayed over aerial imagery for preliminary mapping inventory of land use resources. A field investigation of the Study Area was conducted in February 2021 to verify and refine the preliminary land use inventory mapping. In addition, SWCA contacted Maricopa County to request information regarding development plans and known planned projects. This information was then compiled to complete the inventory of existing and future land uses (see Exhibit A). The following is a summary of the results.

Jurisdiction and Land Ownership

The Study Area primarily includes land under the jurisdiction of Maricopa County and the Arizona State Land Department (ASLD), with a relatively small portion of public land managed by the United States Bureau of Land Management (BLM) and the City of Peoria.

Land ownership within the Study Area is a mixture of private, ASLD-owned, and BLM-managed parcels.

The Project is located on privately owned land under the jurisdiction of Maricopa County. Numerous existing rights-of-way (ROWs) and easements issued by Maricopa County the ASLD, primarily for transportation, electrical and gas transmission, and communication facilities, are located within the Study Area, some of which are adjacent to or near the Project, as identified below.

Existing Land Use

Existing land uses within the Study Area are mapped on Exhibit A-2 and primarily include vacant land, single-family high-density and low-density residential, and utilities. Other existing land uses in the Study Area include commercial, mixed use, park/recreation, public/quasi-public, transportation, industrial, and water (canal) uses. Overall, the Study Area is a moderately developed but developing urban/suburban area with a notable amount of utility infrastructure. Land uses in the immediate vicinity of the Project include 16 existing sub-transmission/transmission line alignments, two existing electrical substations, surface streets and a freeway, a fire station, a church, and residential developments. These existing land uses, which are identified within the Study Area and shown in Exhibit A-2, are described below.

Residential – Multiple residential developments are within the Study Area including low-density single-family dwellings east of Loop 303 along Happy Valley Road and Hatfield Road. High-density single-family dwellings exist in the residential developments of Dos Rios south of Loop 303 (0.61 mile southeast of the Project), Coldwater Ranch west of Loop 303 (0.14 mile northeast of the Project), and the Christopher Todd Communities development south of Happy Valley Road (0.11 mile northeast of the Project).

Recreation – The Maricopa Trail runs east to west through the Study Area adjacent to the north of the Westwing Substation. Within the Study Area the trail parallels Happy Valley Road and 116th Avenue, and is located below several existing 500kV power lines. Local neighborhood or "pocket parks" are located within the residential developments previously noted and provide playground and sports field–based recreation opportunities to the residents.

Industrial – Vulcan Materials operates a sand and gravel facility east of the Loop 303 and south of Hatfield Road approximately 0.71 mile east of the Project. Happy Valley Storage, a self-storage facility, is located east of the Loop 303 and south of Happy Valley Road approximately 0.75 mile east of the Project.

Utilities – Utility land uses in the Study Area include a portion of the City of Peoria's Jomax Water Reclamation Facility, just north of the Beardsley Canal and slightly less than 1.0 mile northwest of the Project; the Westwing Substation; the SRP Perkins Substation, located adjacent to the west of the Westwing Substation; and the Transwestern gas facility, located adjacent to the east and north of the Project.

Numerous electric industrial/utility facilities, such as electrical sub-transmission/transmission lines, traverse the Study Area. These transmission lines are identified in Table B-1 and are shown in Figure 1.

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

Owner	Name	Voltage
Multiple Parties	Westwing-Perkins	500 kV
Multiple Parties	Palo Verde-Westwing #1	500 kV
Multiple Parties	Palo Verde-Westwing #2	500 kV
APS	Calderwood-Westwing	69 kV
Multiple Parties	Navajo-Westwing #1	500 kV
Multiple Parties	Navajo-Westwing #2	500 kV
CAWCD*	Westwing-Raceway	230 kV
APS	Westwing-Hatfield	69 kV
SRP	Westwing-Deer Valley	230 kV

Owner	Name	Voltage
SRP	Westwing-Agua Fria	230 kV
WAPA	Westwing-Liberty	230 kV
WAPA	Westwing-Pinnacle Peak	230 kV
APS	Westwing-Westbrook	69 kV
APS	Westwing-Rio Vista	69 kV
APS	Westwing-Surprise	230 kV
TEP	Westwing-Pinal West	345 kV
APS	Westwing-McMicken	69 kV

*This line is owned by the Central Arizona Water Conservation District (CAWCD) but managed by WAPA, as depicted on Figure 1.

Public/Quasi-Public – Public/quasi-public uses identified within the Study Area include a church located along the north side of Happy Valley Road approximately 0.37 mile northeast of the Project, as well as a fire station located 0.17 mile east of the Project along 119th Avenue.

Transportation – Transportation facilities in the Study Area include a mix of local, state, and private roadways. Primary roadways in proximity to the Project Area include Loop 303, Happy Valley Road, Vistancia Boulevard, and 119th Avenue. No bus stations or public transportation facilities, including airports, were identified within the Study Area.

Vacant – A majority of the land within the Study Area is vacant undeveloped land, including most of the western portion of the Study Area, and the land flanking Loop 303 east of the Project. Most of the vacant land within the Study Area is owned by the ASLD, and there are some privately owned vacant parcels.

Future Land Use

Planned land uses within the Study Area are mapped on Exhibit A-3 and can generally be described as existing vacant land that is zoned or planned to be developed. These planned land uses are documented in the *Maricopa County Vision 2030 Comprehensive Plan* (Comprehensive Plan) (Maricopa County 2016), the *White Tanks Grande Ave Area Plan* (Maricopa County 2000), and the *Peoria General Plan 2040* (City of Peoria 2020). SWCA staff verified the planned land uses presented in this document with Maricopa County Planning and Development and City of Peoria Planning and Zoning Department staff.

The planned land uses immediately adjacent to the Project include public/quasi-public, mixed use, and utility land uses. Other land uses within the study area include single-family low-, moderate-, and high-density residential developments, commercial, and industrial development planned on currently vacant land. The Project would cross areas designated as public/quasi-public and commercial planned land uses, all within an existing utility corridor.

In addition to the planned land uses prescribed by the Comprehensive Plan, a few specific planned developments are proposed within the Study Area. These planned developments, or projects, include areas identified in Exhibit A-3 with a "Preliminary Permitting" development status, meaning that the development is currently in a permitting/entitlement process and/or awaiting jurisdictional review or approval.

Planned land uses within the Study Area with an identified "Preliminary Permitting" development status include the site of the planned AES ESP located south of Happy Valley Road approximately 0.15 mile north of the Westwing Substation, as well as an additional planned energy storage facility 0.05 mile west of the planned AES ESP.

Impact Assessment and Results

Land use impacts may be defined primarily as restrictions on a land use, such as limitations on allowed uses within the ROW that would result from the construction or operation of the Project. Typically, restrictions on a land use would result from ROW or easement acquisition across a property.

The Project is proposed to be collocated with an existing APS-owned and operated sub-transmission line within an existing utility easement on private land entirely under the jurisdiction of Maricopa County. APS has requested a variable-width corridor between 200 and 400 feet wide for the placement of an up to 120-foot-wide ROW within the corridor.

Because the Project has been sited to minimize the required distance of the transmission line and is collocated with and adjacent to existing utility infrastructure, including the Westwing Substation, SRP Perkins Substation, and within an existing transmission line corridor, land use impacts are minimized.

The Project is within land already used for electric transmission (APS 69kV Calderwood – Westwing transmission line) immediately adjacent to existing industrial/utility uses, where no specific future plans for conflicting development exist. Impacts to existing land uses resulting from the Project are expected to be negligible. In addition, the Project would cross land with future land use designated by the Comprehensive Plan as public/quasi-public and commercial; impacts to these and adjacent/nearby future land uses resulting from the Project are expected to be negligible.

References

City of Peoria. 2020. *Peoria General Plan 2040*. Available at: https://www.peoriaaz.gov/home/showdocument?id=23952. Accessed March 2021.

Maricopa Association of Governments. 2021. Maricopa Association of Governments Land Use Explorer. Available at: https://geo.azmag.gov/maps/landuse/. Accessed March 2021.

Maricopa County. 2016. *Maricopa County Vision 2030 Comprehensive Plan*. Available at: https://www.maricopa.gov/DocumentCenter/View/3786/Vision-2030-Maricopa-County-Comprehensive-Plan-PDF. Accessed March 2021.

———. 2000. *White Tanks Grande Ave Area Plan 2020*. Available at: https://www.maricopa.gov/DocumentCenter/View/6624/White-Tanks-Grand-Avenue-Area-Plan-PDF. Accessed March 2021.

———. 2021. PlanNet interactive mapping service. Available at: https://gis.maricopa.gov/PND/PlanNet/index.html. Accessed March 2021.

EXHIBIT C. AREAS OF BIOLOGICAL WEALTH

As stated in the Arizona Corporation Commission Rules of Practice and Procedure R14-3-220, Ex. C:

> *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

Areas of biological wealth and the rare and endangered species that may occur at or in the vicinity of the Project were identified through a biotic resource review conducted by SWCA. The data sources consulted for the review include:

- Topographical and aerial maps and land use, land cover, and elevation data.
- The U.S. Fish and Wildlife Service (USFWS) official species list for the proposed APS Westwing 230kV Interconnection Project obtained from the USFWS online Information for Planning and Consultation (IPaC) system.
- Species information obtained from the USFWS Environmental Conservation Online System, the USFWS Arizona Ecological Services document library, and the Arizona Game and Fish Department (AGFD) Online Environmental Online Review Tool.

In addition, an SWCA biologist with expertise in the biology of flora and fauna of the region has completed a survey of the Project Area. All plant and wildlife species observed in the Project Area during surveys on October 15, 2019, and May 29, 2020, were recorded (see Exhibit D for a complete list), and the site was assessed to determine if habitat features for species protected under the federal, state, or local regulations were present in the Project Area and vicinity.

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. The ESA protects species listed as threatened or endangered from "take" (generally, directly or indirectly harming or disturbing listed species). 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 Indian 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. Nearly all take of wildlife is regulated in some manner through the hunting and fishing license system. Arizona does not have a counterpart to the federal ESA but a list of rare species (Wildlife Species of Concern [WSC]) was created in 1996 without creating any specific statutory protections for those species (AGFD 1996). However, hunting regulations are used to provide some protection. While this is no longer a valid category, AGFD continues to track these species due to an existing Memorandum of Understanding (MOU) between the USFWS and AGFD. Generally, no hunting or capture of those species is allowed, with some exceptions for managed recreational fisheries of native fish (AGFD 2017), and recreational capture of certain reptiles (AGFD 2015).

Arizona prepared a Comprehensive Wildlife Conservation Strategy (CWCS) in 2006 (AGFD 2006), later renamed State Wildlife Action Plan (SWAP), through a state–federal partnership and grant program. The SWAP was updated in 2012 (AGFD 2012a). The SWAP identifies Species of Greatest Conservation Need (SGCN), ordered in several tiers. Tier 1A includes ESA-listed species and other rare species. Tier 1B includes 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. Tier 1C includes species with substantial data gaps and unknown conservation status, but where conservation concern may be warranted. Other tiers include species that are common, widespread, or in stable populations. Exhibit C addresses Tier 1A,1B, and 1C SGCNs. 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 Exhibit C.

Native plants in Arizona are managed by the Arizona Department of Agriculture (ADA), 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 only be taken or salvaged for scientific or conservation purposes. No Highly Safeguarded plant species, or any other rare plant species, are present in the Project Area.

The ADA administers the state noxious weed law under Arizona Administrative Code R3-4-245. A revised list of noxious weed species was approved in January 2020 (ADA 2020).

Inventory

Biologists from SWCA visited the Project Area on October 15, 2019, and May 29, 2020. 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 vicinity.

On March 19, 2021, the USFWS Information for Planning and Conservation (IPaC) database was queried to generate a list of ESA-listed species that have the potential to occur in the Project vicinity (USFWS 2021; Consultation Code: 02EAAZ00-2021-SLI-0600). In addition, the AGFD Online Environmental Review Tool was queried to generate a list of special-status species with records within 3 miles of the Project and a list of SGCN with modeled suitable habitat within 3 miles of the Project (AGFD 2021a).

Results

The USFWS and AGFD identified several rare, endangered, threatened, and other special-status species that are known to occur or could occur in the region (i.e., within the Project plus a 3-mile buffer). These protected areas and special-status species and the likelihood of their being present in the vicinity of the proposed Project are addressed below in four sections: 1) Areas of Biological Wealth, 2) Federally Listed Threatened and Endangered Species, 3) Other Special-Status Species, and 4) State-Protected Native Plant Species (AGFD 2021a; USFWS 2021).

Areas of Biological Wealth

One area of biological wealth was identified within 3 miles of the proposed Project and outside of the Study Area: the White Tank Flood Retainment Structures located about 2.75 miles south of the Project Area. The structures are listed as Maricopa County Wildlife Movement Area – Landscape (AGFD 2021a). This Landscape Movement Area links the canal right-of-way (ROW) with land adjacent to the canal, drainage basins, and surface drainage crossings from McMicken Dam south to Buckeye Flood Retardant Structure 1 and the Hassayampa River (AGFD 2012b).

No Important Bird Areas or proposed or designated critical habitat are located within the Project vicinity.

Federally Listed Threatened and Endangered Species

Three species listed under the ESA and two candidate species were identified in the USFWS official species list for the Project (USFWS 2021). The listed species are the California least tern (*Sterna antillarum browni*), Gila topminnow (*Poeciliopsis occidentalis*), and yellow-billed cuckoo (*Coccyzus americanus*). The candidate species are the Sonoran desert tortoise (*Gopherus morafkai*) and monarch butterfly (*Danaus plexippu*s). 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			
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 amsl. Found in Maricopa, Mohave, and Pima Counties.	Unlikely to occur, suitable habitat is not present in the Project Area and vicinity; this area is about 15 miles north of the location where this species has occurred in the County; there are no records of the species within 3 miles of the Project Area
Yellow-billed cuckoo (*Coccyzus americanus*)	T	Typically found in riparian woodland vegetation (cottonwood [*Populus* spp.], willow [*Salix* spp.], or saltcedar [*Tamarix* spp.]) 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 riparian habitat is not present in the Project Area and vicinity; no records within 3 miles of the Project Area
Reptiles			
Sonoran desert tortoise (*Gopherus morafka*i)	C	Occurs on primarily rocky, and often steep, hillsides and bajadas of Mohave and Sonoran desertscrub, typically at elevations below 7,800 feet amsl. May occur, but is less likely to occur, in desert grassland, juniper woodland, and interior chaparral habitats and even pine communities.	May occur. The project area and surrounding areas are suitable habitat for this species. The project area is isolated from large habitat blocks to the north that would reduce the potential for this species to occur. No sign or tortoises were observed during the site visit. If a Sonoran desert tortoise is encountered on this project, see the AGFD *Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects* (Appendix C) for more information.

Common Name (Scientific Name)	Status*	Range or Habitat Requirements	Occurrence Status
Fish			
Gila topminnow (incl. Yaqui) (*Poeciliopsis occidentalis*)	E	Occurs in small streams, springs, and cienegas at elevations below 4,500 feet amsl, primarily in shallow areas with aquatic vegetation and debris for cover. In Arizona, most of the remaining native populations are in the Santa Cruz River system.	Unlikely to occur. There are no permanent water sources suitable for this species in or adjacent to the project area.
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. The project area could be potentially used as a migratory stopover as flowering plants are present. Breeding is unlikely given that there is no milkweed present.

Note: Table lists the species named in USFWS official species list (USFWS 2021) and in the Arizona Online Environmental Review Tool (AGFD 2021a).

*Status abbreviations: E = Endangered. T = Threatened. C = Candidate.

Other Special-Status Species

Other special-status species include:

- Eagles protected by the BGEPA.
- 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 (2008) as occurring in Bird Conservation Region 33.
- SGCN in Arizona, which are species identified by the AGFD as warranting heightened attention because of low and declining populations. SGCN are prioritized into tiers. Tier 1A species are those for which the AGFD has entered into an agreement or has legal or other contractual obligations or warrants the protection of a closed season. This tier includes all federally threatened and endangered species. Tier 1B represents the remainder of the species meeting the AGFD's vulnerability criteria. Tier 1C species are those for which existing data were insufficient to score one or more vulnerability criteria.

The species in these categories (other than those also designated as federally threatened or endangered, which are addressed above) have predicted habitat modeled within 3 miles of the Project Area as identified by a query of the AGFD Online Environmental Review Tool (AGFD 2021a) and are discussed and listed below in Table C-2, where they are evaluated for potential occurrence based on habitat conditions present in the project area and vicinity; species' habitat requirements and known ranges; records of species in the project vicinity; and the results of Project surveys.

Bald and Golden Eagles

The Project is within the year-round range for the golden eagle and the non-breeding/limited breeding range for the bald eagle. However, the Project vicinity includes a mixture of areas with open desert surrounded by housing and other development. As the areas of open desert are relatively small and isolated, and provide no nesting habitat for either species, it is unlikely that the golden eagle or the bald eagle would utilize these areas for foraging or other activities. These species were not documented by SWCA during Project surveys (see Table C-2).

Table C-2. Other Special-Status Species that May or are Known to Occur in the Vicinity of the Project Area

Common Name (Scientific Name)	Habitat and Notes	Status*		Occurrence Status
		Federal	State	
Amphibians				
Lowland leopard frog (*Lithobates yavapaiensis*)	Permanent or near permanent water sources at low to moderate elevations.	–	SGCN (1A)	Unlikely to occur, no suitable habitat is present.
Sonoran Desert toad (*Incilius alvarius*)	Ranges from arid lowlands and arid grasslands into riparian mountain canyons, often found near permanent water. Widespread throughout the Sonoran Desert valleys and Mountains.	–	SGCN (1B)	May occur.
Birds		**MBTA**		
Abert's towhee (*Pipilo aberti*)	Dense, brushy vegetation.	MBTA	SGCN (1B)	May occur, not documented during surveys.
Arizona Bell's vireo (*Vireo bellii arizonae*)	Riparian habitat	MBTA	SGCN (1B)	Unlikely to occur, no habitat present in Project Area or vicinity.
Bald eagle (*Haliaeetus leucocephalus*)	Prefers large bodies of water with fish for prey. Nesting sites in the Sonoran Desert are primarily in large trees in riparian areas.	MBTA BGEPA, BCC	SGCN (1A)	Unlikely to occur, no habitat present in Project Area or vicinity.
Bendire's thrasher (*Toxostoma bendirei*)	Desertscrub, semi-desert grasslands, and agricultural habitats.	MBTA BCC		May occur.
Black-chinned sparrow (*Spizella atrogularis*)	Wintering habitat in desertscrub.	MBTA BCC		May occur, overwinters in the vicinity.
Brewer's sparrow (*Spizella breweri*)	Wintering habitat in the desert southwest and Mexico.	MBTA	SGCN (1C)	May occur, overwinters in the vicinity.
Burrowing owl (*Athene cunicularia*)	Open areas with low brush cover, including grasslands, agricultural margins, and desertscrub.	MBTA BCC	SGCN (1B)	May occur, no suitable burrows documented during surveys, but the Project Area could be utilized for foraging.
Costa's hummingbird (*Calypte costae*)	Sonoran and Mojave desertscrub.	MBTA BCC	SGCN (1C)	May occur, suitable habitat present. Not documented during surveys.
Elf owl (*Micrathene whitneyi*)	Wooded canyons in Sonoran desertscrub with saguaros.	MBTA BCC	SGCN (1B)	May occur, saguaros present in Project Area.
Gila woodpecker (*Melanerpes uropygialis*)	Sonoran desertscrub with saguaros present, or riparian woodlands with mature trees.	MBTA BCC	SGCN (1B)	May occur, not documented during surveys.
Gilded flicker (*Colaptes chrysoides*)	Sonoran desertscrub with saguaros present, or riparian woodlands with mature trees.	MBTA BCC	SGCN (1B)	May occur, suitable habitat present. Not documented during surveys.
Golden eagle (*Aquila chrysaetos*)	May forage widely, but often in open areas. Nest sites are on rocky cliffs or large trees.	MBTA BGEPA, BCC	SGCN (1B)	Unlikely to occur. The Project vicinity has been developed and habitat for the species is limited to small patches.
Gray vireo (*Vireo vicinior*)	Sonoran, Mojave, and Chihuahuan desertscrub.	MBTA BCC		May occur. Non-breeding only.
LeConte's thrasher (*Toxostoma lecontei*)	Sonoran desertscrub dominated by creosote bush (*Larrea tridentata*), with scattered trees used for nesting.	MBTA	SGCN (1B)	Unlikely to occur, the Project Area is outside the known species' range and there are no records within 3 miles of the Project Area.

Common Name (Scientific Name)	Habitat and Notes	Status*		Occurrence Status
		Federal	State	
Lincoln's sparrow (*Melospiza lincolnii*)	Winters in central Arizona, prefers dense, brushy areas, often near water.	MBTA	SGCN (1B)	May occur, overwinters in the vicinity.
Lucy's warbler (*Oreothlypis luciae*)	Mesquite bosques and xeroriparian washes.	MBTA BCC	SGCN (1C)	May occur.
Peregrine falcon, American peregrine falcon (*Falco peregrinus anatum*)	Sheer, steep cliffs in woodlands and desertscrub.	MBTA BCC	SGCN (1A)	Unlikely to occur, not documented within 3 miles of the Project Area and no cliff habitat present in the Project Area.
Red-naped sapsucker (*Sphyrapicus nuchalis*)	Wintering habitat includes pine oak woodlands, deciduous trees, and orchards.	MBTA	SGCN (1C)	May occur, overwinters in the vicinity.
Wood duck (*Aix sponsa*)	Prefers streams and ponds with trees and other dense vegetation.	MBTA	SGCN (1B)	Unlikely to occur, no freshwater habitats are present in the Project Area.
Yellow warbler (*Setophaga petechia* ssp. *sonorana*)	Migrates through central Arizona utilizing riparian areas and landscaping, often near water.	MBTA BCC	SGCN (1B)	May occur. The species may pass through the Project Area and vicinity during migration.
Reptiles				
Gila monster (*Heloderma suspectum*) includes Banded Gila monster (*Heloderma suspectum cinctum*)	Sonoran desertscrub, typically absent from disturbed and developed areas.	–	SGCN (1A)	Unlikely to occur, the Project Area is isolated from other desert areas by development. There are no records of the species within 3 miles of the Project Area (AGFD 2021a).
Regal horned lizard (*Phrynosoma solare*)	Valley bottoms in Sonoran desertscrub and desert grasslands, avoids the lowest elevations.	–	SGCN (1B)	May occur.
Saddle leaf-nosed snake (*Phyllorhynchus browni*)	Foothills and bajadas in Sonoran desertscrub.	–	SGCN (1B)	Unlikely to occur. There are no foothills or bajadas in the Project Area.
Sonoran coralsnake (*Micruroides euryxanthus*)	Sonoran desertscrub to oak woodlands.	–	SGCN (1B)	May occur.
Sonoran desert tortoise (*Gopherus morafkai*)	Rocky slopes, boulder fields, and washes in Sonoran desertscrub.	CCA; C	SGCN (1A)	Unlikely to occur, suitable habitat is present, but the Project Area is isolated from other desert areas by development. There are no records of the species within 3 miles of the Project Area (AGFD 2021a).
Tiger rattlesnake (*Crotalus tigris*)	Rocky slopes in Sonoran desertscrub.	–	SGCN (1B)	Unlikely to occur, the Project Area does not contain rocky slopes.
Resplendent shovel-nosed snake (*Chionactis annulata*)	Sandy valleys in Sonoran desertscrub.	–	SGCN (1A)	Unlikely to occur, outside known species range.
Variable sandsnake (*Chilomeniscus stramineus*)	Sandy valleys in Sonoran desertscrub.	–	SGCN (1B)	May occur.
Mammals				
American beaver (*Castor canadensis*)	Lakes, rivers, and large streams.	–	SGCN (1B)	Unlikely to occur, no habitat present.

Common Name (Scientific Name)	Habitat and Notes	Status*		Occurrence Status
		Federal	State	
Brazilian free-tailed bat (*Tadarida brasiliensis*)	Roosts in caves, tunnels, and buildings. Forages widely, often over farmlands.	–	SGCN (1B)	May occur. No roosting habitat is present, but the species could utilize the Project Area and vicinity for foraging.
California leaf-nosed bat (*Macrotis californicus*)	Roosts in caves, tunnels, and mines. Forages in desertscrub.	–	SGCN (1B)	May occur. No roosting habitat is present, but the species could utilize the Project Area and vicinity for foraging.
Cave myotis (*Myotis velifer*)	Roosts in caves, mines, and bridges. Forages in desertscrub, often near water.	–	SGCN (1B)	May occur. No roosting habitat is present, but the species could utilize the Project Area and vicinity for foraging.
Greater Western bonneted bat (*Eumops perotis californicus*)	Roosts in crevices in cliffs. Forages widely for insects.	–	SGCN (1B)	May occur. No roosting habitat is present, but the species could utilize the Project Area and vicinity for foraging.
Harris' antelope squirrel (*Ammospermophilus harrisii*)	Rocky slopes in Sonoran desertscrub.	–	SGCN (1B)	Unlikely to occur. No rocky slopes are present in the Project Area.
Kit fox (*Vulpes macrotis*)	Prefers open, flat desert, with soft or sandy soils.	–	SGCN (1B)	Unlikely to occur, suitable habitat is present, but the Project Area is isolated from other desert areas by development. There are no records of the species within 3 miles of the Project Area (AGFD 2021a).
Lesser long-nosed bat (*Leptonycteris yerbabuenae*)	Sonoran desertscrub, grasslands, and forests with saguaros and agaves.	Delisted	SGCN (1A)	May occur. No roosting habitat is present, but the species could utilize the Project Area and vicinity for foraging as saguaros are present.
Pale lump-nosed bat, Townsend's pale big-eared bat (*Corynorhinus townsendii pallescens*)	Roosts in caves, mines, and occasionally buildings.	–	SGCN (1B)	May occur. No roosting habitat is present, but the species could utilize the Project Area and vicinity for foraging.
Pocketed free-tailed bat (*Nyctinomops femorosaccus*)	Roosts in cliffs and occasionally in buildings.	–	SGCN (1B)	May occur. No roosting habitat is present, but the species could utilize the Project Area and vicinity for foraging.
Spotted bat (*Euderma maculatum*)	Roosts in high cliffs and canyons, prefers to forage high above water.	–	SGCN (1B)	Unlikely to occur. No roosting or foraging habitat is present in the Project Area.
Western yellow bat (*Lasiurus xanthinus*)	Roosts in trees, particularly palms.	–	SGCN (1B)	May occur. No roosting habitat is present, but the species could utilize the Project Area and vicinity for foraging.

Common Name (Scientific Name)	Habitat and Notes	Status*		Occurrence Status
		Federal	State	
Yuma myotis (*Myotis yumanensis*)	Roosts in buildings, cliffs, caves, and mines. Forages over or near water.	–	SGCN (1B)	May occur. No roosting habitat is present, but the species could utilize the Project vicinity for foraging.

Source: Range or habitat information is from AGFD (2021a); Arizona Rare Plant Committee (ca. 2001); Corman and Wise-Gervais (2005); eBird 2021; USFWS (2021).

Note: Notes regarding documented occurrence, other than observations made during SWCA's Project-specific surveys, are from AGFD (2021a and 2021b).

* Federal Status Definitions

BCC = Bird of Conservation Concern

BCR = Bird Conservation Region

BGEPA = Bald and Golden Eagle Protection Act

C = Candidate species for listing under the Endangered Species Act

CCA = Candidate Conservation Agreement

Delisted = Species was delisted from the Endangered Species Act

MBTA = Migratory Bird Treaty Act

State Status Definitions

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

Birds of Conservation Concern

The Project is within Bird Conservation Region (BCR) 33 (USFWS 2008), for which 28 BCC species are listed. Of these, 10 may occur in the Project vicinity (see Table C-2): elf owl (*Micrathene whitneyi*), burrowing owl (*Athene cunicularia*), Bendire's thrasher (*Toxostoma bendirei*), back-chinned sparrow (*Spizella atrogularis*), Costa's hummingbird (*Calypte costae*), Gila woodpecker (*Melanerpes uropygialis*), gilded flicker (*Colaptes chrysoide*s), Gray's vireo (*Vireo vicinior*), Lucy's warbler (*Oreothlypis luciae*), and yellow warbler (*Dendroica petechia* ssp. *sonorana*). None of these species were observed in the Project Area during surveys.

Power line collisions and electrocution present some risk for raptors. To minimize that risk, the Applicant will construct the proposed transmission line following the guidelines outlined in *Suggested Practices for Raptor Protection on Powerlines: The State of the Art in 2006* (Avian Power Line Interaction Committee [APLIC] 2006) and *Reducing Avian Collisions with Power Lines: The State of the Art in 2012* (APLIC 2012). Measures to minimize collision risks will include designing lines without ground wires and the installation of bird diverters on wires per APLIC standards.

Species of Greatest Conservation Need (SGCN)

Twenty species categorized as SGCN 1A or 1B may occur within 3 miles of the proposed Project (see Tables C-1 and C-2), including one amphibian, seven birds, three reptiles, and nine mammals based on the results of the query of the AGFD Online Environmental Review Tool (AGFD 2021a). Among these species, none were observed during Project surveys. Four species listed as SGCN 1C may occur within 3 miles of the Project (i.e., included in Arizona Heritage Geographic Information System [AZHGIS] modeled habitat within 3 miles): red-naped sapsucker, Brewer's sparrow, Costa's hummingbird, and Lucy's warbler.

Protected Native Plants

The Arizona Native Plant Law (A.R.S. 3-904) (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. Protected native plants classified under the ANPL observed during surveys of the Project Area include saguaro (*Carnegiea gigantea*), blue paloverde (*Parkinsonia florida*), and velvet mesquite (*Prosopis velutina*).

Noxious Weeds

Non-native species observed during the site visit are found throughout the site and include stinknet (*Oncosiphon piluliferum*), prickly Russian thistle (*Salsola tragus*), Mediterranean grass (*Schismus* sp.), red brome (*Bromus rubens*), and buffelgrass (*Pennisetum ciliare*). Of these non-native species, stinknet and buffelgrass are listed as noxious weeds by the ADA under Arizona Administrative Code R3-4-245. Measures will be taken to avoid spreading noxious weeds in the project area.

Summary of Potential Effects

Areas of Biological Wealth

One area of biological wealth was identified within 3 miles of the proposed Project and outside of the Study Area: the White Tank Flood Retainment Structures located about 2.75 miles south of the Project. The structures are listed as Maricopa County Wildlife Movement Area – Landscape (AGFD 2021a). This Landscape Movement Area links the canal ROW with land adjacent to the canal, drainage basins, and surface drainage crossings (AGFD 2012b).

Due to the distance from the Project to the canal, the Project is expected to have no impact on this Wildlife Movement Area.

Federally Listed Threatened and Endangered Species

According to the USFWS IPaC report (Exhibit C-1), the Sonoran desert tortoise, monarch butterfly, California least tern, yellow-billed cuckoo, and Gila topminnow may occur in the Project region (USFWS 2021). No designated or proposed critical habitat occurs within 3 miles of the Project (AGFD 2021a; USFWS 2021). Habitat may be suitable for use by Sonoran desert tortoise and monarch butterfly; no habitat is present in the Project vicinity for any of the three remaining species. The Project site is isolated from desert habitats likely to support Sonoran desert tortoise and there are no records of the species within 3 miles of the Project. No milkweed was observed in the Project vicinity; however, monarch butterflies may utilize plants in the Project vicinity for foraging but would not use the area for reproduction. As such, the Project would be unlikely to impact these species.

Special-Status Amphibian Species

One special-status amphibian species, the Sonoran Desert toad (*Incilius alvarius*), may occur in the Project region. Sonoran Desert toads spend the majority of the year beneath the ground and are only surface-active during and shortly before the midsummer monsoon season. Proposed ground-disturbing Project activities could impact individuals of the species, including the potential for individuals being crushed or buried during ground-disturbing activities.

Special-Status Bird Species

Fourteen special status bird species (SGCN 1A, 1B, 1C, and BCC species) may occur within the Project vicinity. None of these species were observed in the Project vicinity. Of these 14 species, six may occur only during winter or migration. Table C-2 notes habitats used by these species during wintering or migration. Potential impacts to these 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 would be avoided and/or minimized either by limiting ground clearing/vegetation removal activities to outside the breeding season (generally March to September) 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 (APLIC 2012). However, many factors influence whether birds are likely to collide with a specific transmission line. Collision risk is relatively low when multiple transmission lines are collocated or placed near other infrastructure (APLIC 2012). The Project would be constructed in an area with numerous existing transmission lines and would not be likely to contribute to an increase in bird mortality within the Project Area.

Electrical 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).

While burrowing owls (*Athene cunicularia hypugaea*) may occur in the Project vicinity, no burrows suitable for use by the species were observed in the Project vicinity.

Special-Status Fish Species

No habitat for special-status fish species is present in the Project vicinity. The only perennial water in the Project vicinity is the Beardsley Canal, located approximately 0.8 mile north of the Project. Project activities would not impact the canal. The Project would have no impact on special-status fish species.

Special-Status Mammal Species

Nine special-status mammal species may occur in the Project vicinity based on records near the Project, habitat characteristics, and species' ranges. All nine of these species are bat species; thus, they are addressed together here as the potential impacts associated with the Project are similar for these species. The Project vicinity does not support any suitable roosting habitat for the nine bat species; however, the surrounding region likely includes features that support roosting bats. Bats may use the Project vicinity for foraging. Project activities would remove vegetation, which may decrease the suitability of the area for foraging by these species.

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 Project would pose a risk to bats.

Special-Status Reptile Species

Three reptile species—regal horned lizard (*Phrynosoma solare*), variable sandsnake (*Chilomeniscus stramineus*), and Sonoran coralsnake (*Micruroides euryxanthus*)—may occur in the Project vicinity based on the species' habitat requirements and ranges. Potential Project-related impacts on these species would include changes in behavior due to the presence of workers and equipment, including moving away from sources of noise and vibration; and the potential for individuals to be crushed or buried during ground-disturbing activities.

Other Species

Special-status species listed in Table C-2 may be affected by the Project as discussed below, but none of the species are likely to be substantially affected.

- Construction-related activity and noise may disturb wildlife species in the area and cause them to avoid or move away from the site or temporarily alter their behavior in other ways (e.g., remain underground). Once construction is completed, it is expected that wildlife would return to the area surrounding the Project and resume normal behavior patterns.
- Ground-dwelling animals including small mammals and reptiles in areas of ground disturbance could be injured or killed during construction.
- Ground-nesting birds could be disturbed during construction and their nests, eggs, or young destroyed.
- Removal of vegetation associated with ground-clearing activities would result in loss of habitat that could provide nesting sites, cover, and/or forage for wildlife species or their prey. The acreage of vegetation to be cleared is relatively small and is located within an area of reduced habitat quality as the area is isolated by development. Removal of vegetation is expected to have a negligible effect on special-status species due to the limited area to be disturbed and the isolated nature of the Project Area.
- Transmission lines do not appear to affect most wildlife movements, but there could be some minor habitat fragmentation effects. However, these effects would be minimal as the area to be disturbed is relatively small and is located within an area of reduced habitat quality due to the isolated nature of the Project Area.
- Transmission lines pose a risk of collisions and electrocution for birds, particularly raptors. To minimize that risk, the Applicant will construct the proposed transmission line following the guidelines outlined in *Suggested Practices for Raptor Protection on Powerlines: 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).
- Project impacts to bat species would be limited to a loss of foraging habitat. These potential effects are expected to be negligible because bats can utilize the habitats outside of the Project vicinity and they are well adapted to avoid stationary objects by using echolocation, thus avoiding any potential collisions with transmission lines or towers.

Plant Communities of Concern

The Project Area is located in the Lower Colorado River Valley subdivision of the Sonoran Desert biome, which is widespread within the Sonoran Desert (Brown 1994). Potential effects of the proposed Project on plant species protected under the ANPL include direct removal during vegetation-clearing activities. In accordance with the law, the ADA will be notified 30 days before these plants are destroyed as the Project disturbance area is greater than 1 acre but less than 40 acres.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Arizona Ecological Services Field Office
9828 North 31st Ave
#c3
Phoenix, AZ 85051-2517
Phone: (602) 242-0210 Fax: (602) 242-2513
http://www.fws.gov/southwest/es/arizona/
http://www.fws.gov/southwest/es/EndangeredSpecies_Main.html

In Reply Refer To:
Consultation Code: 02EAAZ00-2021-SLI-0600
Event Code: 02EAAZ00-2021-E-01526
Project Name: Westwing

March 19, 2021

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The Fish and Wildlife Service (Service) is providing this list under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). The list you have generated identifies threatened, endangered, proposed, and candidate species, and designated and proposed critical habitat, that may occur within one or more delineated United States Geological Survey 7.5 minute quadrangles with which your project polygon intersects. Each quadrangle covers, at minimum, 49 square miles. In some cases, a species does not currently occur within a quadrangle but occurs nearby and could be affected by a project. Please refer to the species information links found at:
http://www.fws.gov/southwest/es/arizona/Docs_Species.htm
http://www.fws.gov/southwest/es/arizona/Documents/MiscDocs/AZSpeciesReference.pdf .

The purpose of the Act is to provide a means whereby threatened and endangered species and the habitats upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of Federal trust resources and to consult with us if their projects may affect federally listed species and/or designated critical habitat. A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, we recommend preparing a biological evaluation similar to a Biological Assessment to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

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

Activities that involve streams (including intermittent streams) and/or wetlands are regulated by the U.S. Army Corps of Engineers (Corps). We recommend that you contact the Corps to determine their interest in proposed projects in these areas. For activities within a National Wildlife Refuge, we recommend that you contact refuge staff for specific information about refuge resources.
If your action is on tribal land or has implications for off-reservation tribal interests, we encourage you to contact the tribe(s) and the Bureau of Indian Affairs (BIA) to discuss potential tribal concerns, and to invite any affected tribe and the BIA to participate in the section 7 consultation. In keeping with our tribal trust responsibility, we will notify tribes that may be affected by proposed actions when section 7 consultation is initiated.

We also recommend you seek additional information and coordinate your project with the Arizona Game and Fish Department. Information on known species detections, special status species, and Arizona species of greatest conservation need, such as the western burrowing owl and the Sonoran desert tortoise (Gopherus morafkai) can be found by using their Online Environmental Review Tool, administered through the Heritage Data Management System and Project Evaluation Program https://www.azgfd.com/Wildlife/HeritageFund/.

For additional communications regarding this project, please refer to the consultation Tracking Number in the header of this letter. We appreciate your concern for threatened and endangered species. If we may be of further assistance, please contact our following offices for projects in these areas:

Northern Arizona: Flagstaff Office 928/556-2001
Central Arizona: Phoenix office 602/242-0210
Southern Arizona: Tucson Office 520/670-6144

Sincerely,
/s/ Jeff Humphrey Field Supervisor

Attachment

Attachment(s):

- Official Species List

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

If the Federal action agency determines that listed species or critical habitat may be affected by a federally funded, permitted or authorized activity, the agency must consult with us pursuant to 50 CFR 402. Note that a "may affect" determination includes effects that may not be adverse and that may be beneficial, insignificant, or discountable. You should request consultation with us even if only one individual or habitat segment may be affected. The effects analysis should include the entire action area, which often extends well outside the project boundary or "footprint." For example, projects that involve streams and river systems should consider downstream effects. If the Federal action agency determines that the action may jeopardize a proposed species or adversely modify proposed critical habitat, the agency must enter into a section 7 conference. The agency may choose to confer with us on an action that may affect proposed species or critical habitat.
Candidate species are those for which there is sufficient information to support a proposal for listing. Although candidate species have no legal protection under the Act, we recommend considering them in the planning process in the event they become proposed or listed prior to project completion. More information on the regulations (50 CFR 402) and procedures for section 7 consultation, including the role of permit or license applicants, can be found in our Endangered Species Consultation Handbook at:
http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF.

We also advise you to consider species protected under the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703-712) and the Bald and Golden Eagle Protection Act (Eagle Act) (16 U.S.C. 668 et seq.). The MBTA prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when authorized by the Service. The Eagle Act prohibits anyone, without a permit, from taking (including disturbing) eagles, and their parts, nests, or eggs. Currently 1026 species of birds are protected by the MBTA, including species such as the western burrowing owl (Athene cunicularia hypugea). Protected western burrowing owls are often found in urban areas and may use their nest/burrows year-round; destruction of the burrow may result in the unpermitted take of the owl or their eggs.

If a bald eagle (or golden eagle) nest occurs in or near the proposed project area, you should evaluate your project to determine whether it is likely to disturb or harm eagles. The National Bald Eagle Management Guidelines provide recommendations to minimize potential project impacts to bald eagles:
https://www.fws.gov/migratorybirds/pdf/management/nationalbaldeaglenanagementguidelines.pdf
https://www.fws.gov/birds/management/managed-species/eagle-management.php.

The Division of Migratory Birds (505/248-7882) administers and issues permits under the MBTA and Eagle Act, while our office can provide guidance and Technical Assistance. For more information regarding the MBTA, BGEPA, and permitting processes, please visit the following: https://www.fws.gov/birds/policies-and-regulations/incidental-take.php. Guidance for minimizing impacts to migratory birds for communication tower projects (e.g. cellular, digital television, radio, and emergency broadcast) can be found at:
https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds/collisions/communication-towers.php.

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

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Arizona Ecological Services Field Office
9828 North 31st Ave
#c3
Phoenix, AZ 85051-2517
(602) 242-0210

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

Project Summary

Consultation Code: 02EAAZ00-2021-SLI-0600
Event Code: 02EAAZ00-2021-E-01526
Project Name: Westwing
Project Type: TRANSMISSION LINE
Project Description: 230 kV Transmission connection line and associated substation expansion
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@33.7139564,-112.32253432599609,14z

Counties: Maricopa County, Arizona

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

Endangered Species Act Species

There is a total of 5 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

1. 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.

Birds

NAME	STATUS
California Least Tern *Sterna antillarum browni* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8104	Endangered
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **proposed** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

NAME	STATUS
Sonoran Desert Tortoise *Gopherus morafkai* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9289	Candidate

Fishes

NAME	STATUS
Gila Topminnow (incl. Yaqui) *Poeciliopsis occidentalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1116	Endangered

Exhibit C-1f. U.S. Fish and Wildlife Service IPaC Report

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus*	Candidate

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/9743

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Exhibit C-1g. U.S. Fish and Wildlife Service IPaC Report

Arizona Environmental Online Review Tool Report

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

Project Name:
Westwing CEC Application

User Project Number:
61775

Project Description:
230 kV Transmission line with substation expansion

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

Contact Person:
Jeff Johnson

Organization:
SWCA Environmental Consultants

On Behalf Of:
APS

Project ID:
HGIS-13067

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

Exhibit C-2a. AGFD Online Environmental Review Tool Results

Disclaimer:

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

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

Exhibit C-2b. AGFD Online Environmental Review Tool Results

Recommendations Disclaimer:

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

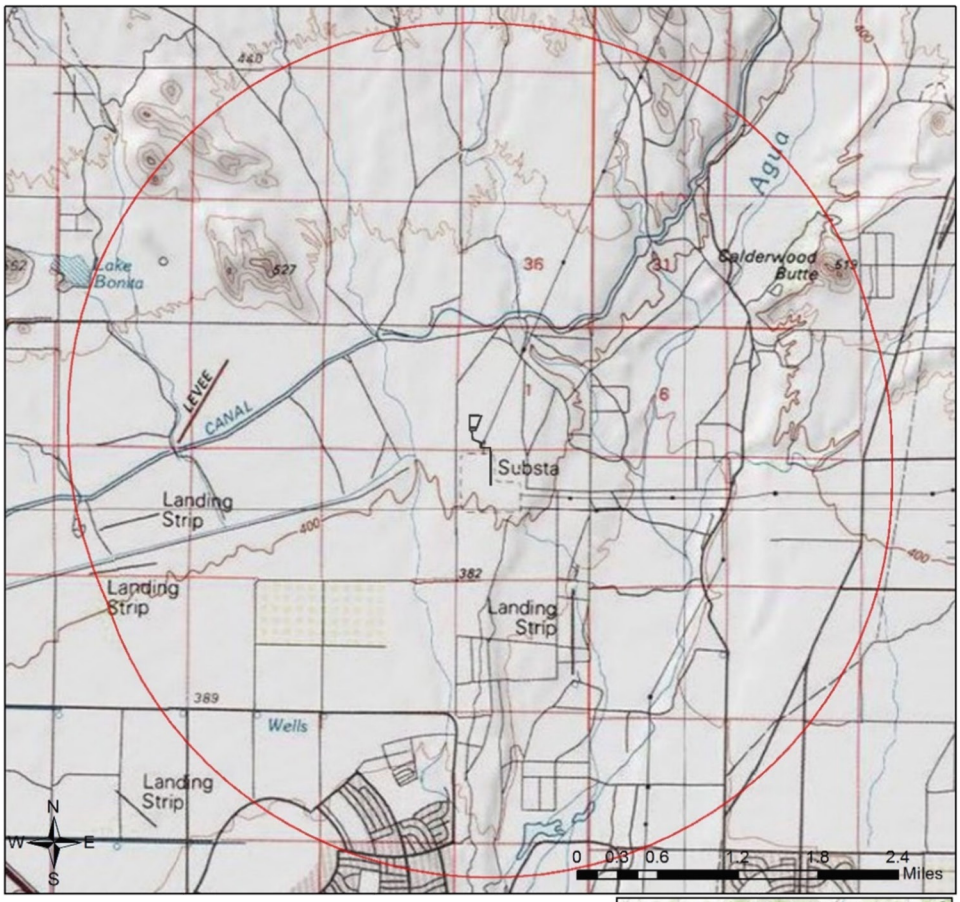
Exhibit C-2c. AGFD Online Environmental Review Tool Results

Arizona Game and Fish Department
Project ID: HGIS-13067

project_report_westwing_cec_application_42015_43443.pdf
Review Date: 3/24/2021 03:16:20 PM

Westwing CEC Application

USA Topo Basemap With Locator Map



Project Boundary

Buffered Project Boundary

Project Size (acres): 5.38

Lat/Long (DD): 33.7133 / -112.3223

County(s): Maricopa

AGFD Region(s): Mesa

Township/Range(s): T4N, R1W

USGS Quad(s): CALDERWOOD BUTTE

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap

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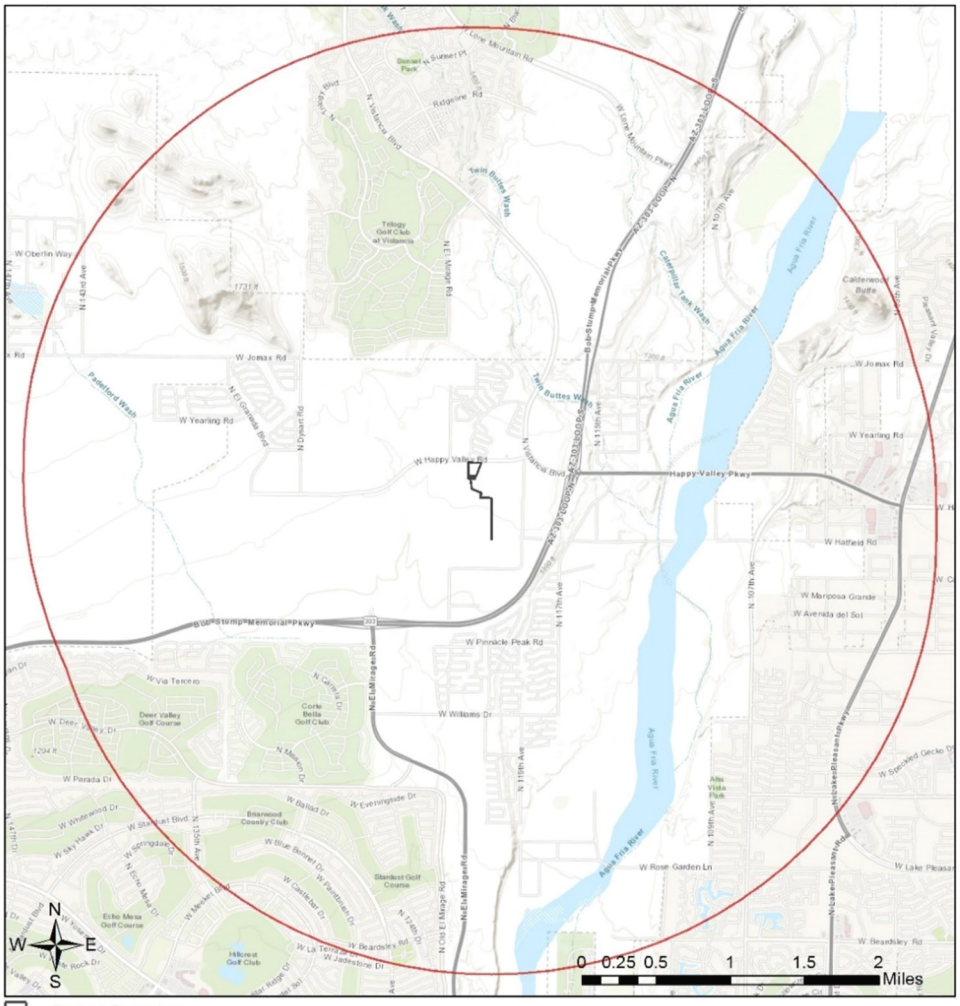
Exhibit C-2d. AGFD Online Environmental Review Tool Results

Arizona Game and Fish Department
Project ID: HGIS-13067

project_report_westwing_cec_application_42015_43443.pdf
Review Date: 3/24/2021 03:16:20 PM

Westwing CEC Application

Web Map As Submitted By User



Project Boundary

Buffered Project Boundary

Project Size (acres): 5.38

Lat/Long (DD): 33.7133 / -112.3223

County(s): Maricopa

AGFD Region(s): Mesa

Township/Range(s): T4N, R1W

USGS Quad(s): CALDERWOOD BUTTE

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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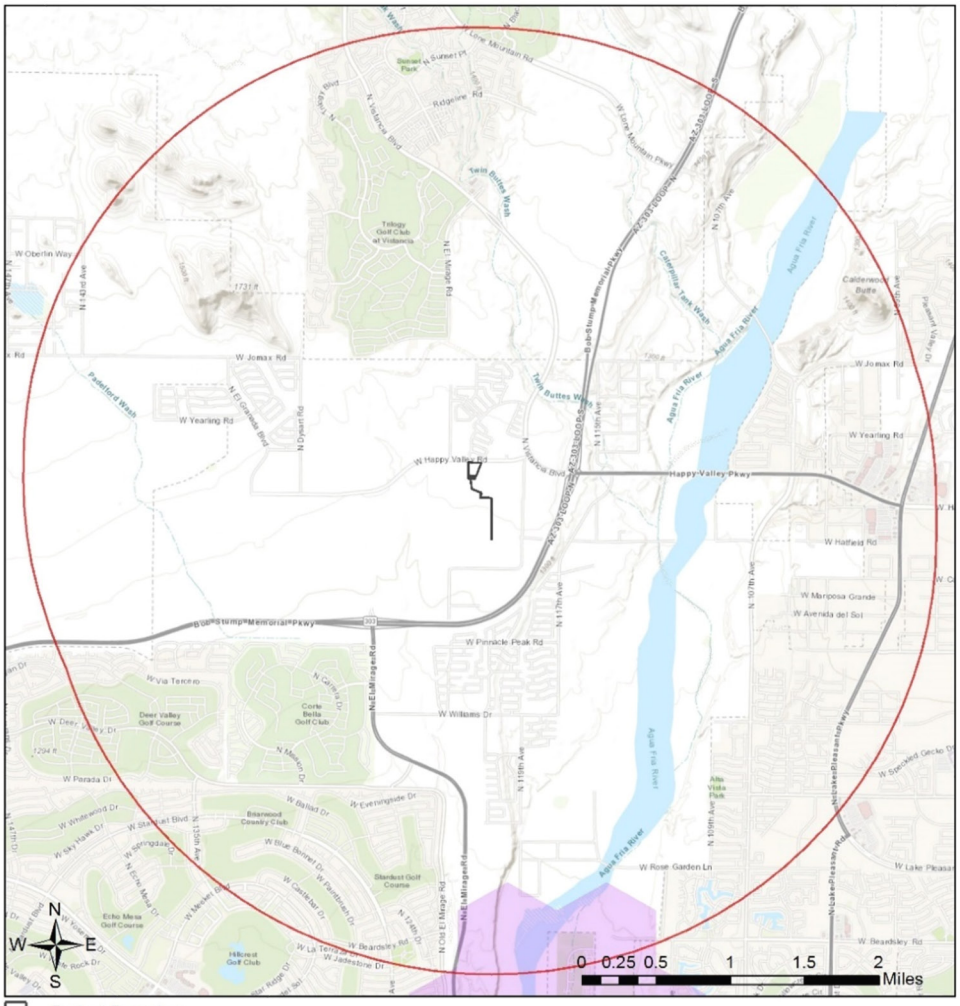
Exhibit C-2e. AGFD Online Environmental Review Tool Results

Arizona Game and Fish Department
Project ID: HGIS-13067

project_report_westwing_cec_application_42015_43443.pdf
Review Date: 3/24/2021 03:16:20 PM

Westwing CEC Application

Important Areas



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

Project Size (acres): 5.38
Lat/Long (DD): 33.7133 / -112.3223
County(s): Maricopa
AGFD Region(s): Mesa
Township/Range(s): T4N, R1W
USGS Quad(s): CALDERWOOD BUTTE

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

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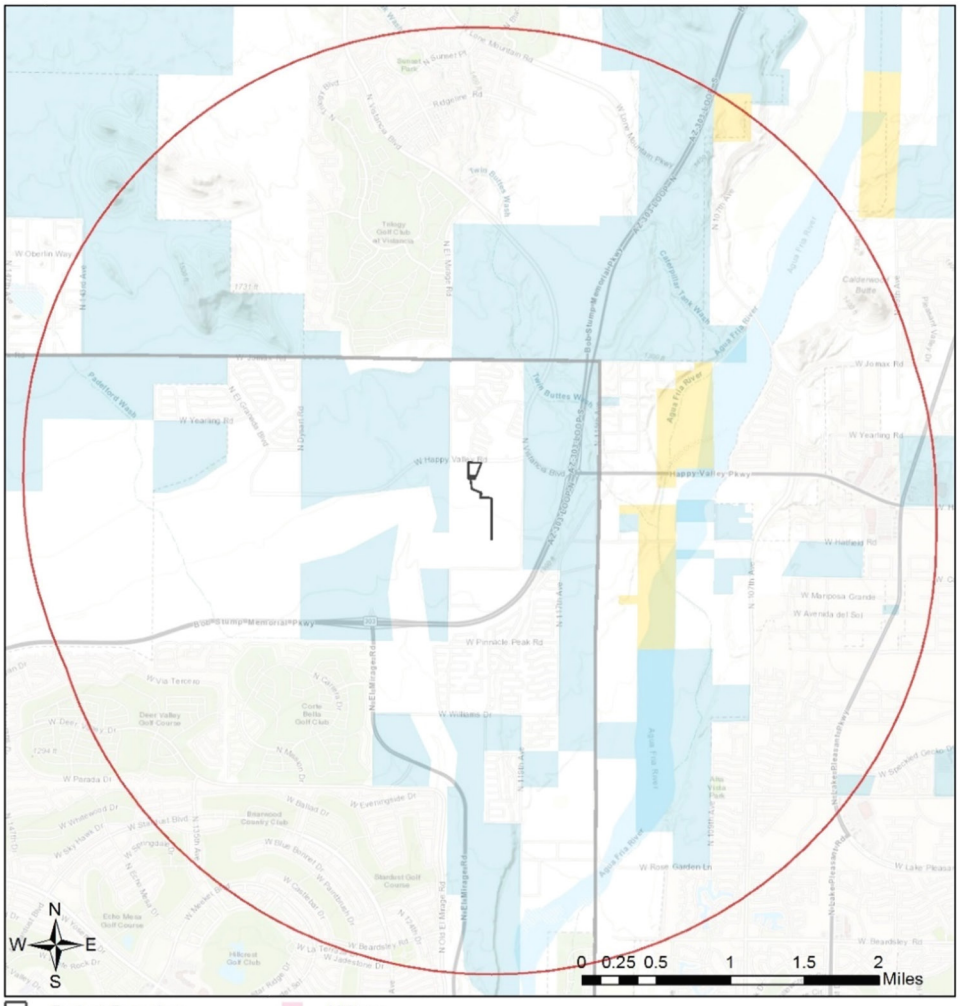
Exhibit C-2f. AGFD Online Environmental Review Tool Results

Arizona Game and Fish Department
Project ID: HGIS-13067

project_report_westwing_cec_application_42015_43443.pdf
Review Date: 3/24/2021 03:16:20 PM

Westwing CEC Application

Township/Ranges and Land Ownership



- Project Boundary
- Buffered Project Boundary
- Township/Ranges

Land Ownership

- 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

Project Size (acres): 5.38
Lat/Long (DD): 33.7133 / -112.3223
County(s): Maricopa
AGFD Region(s): Mesa
Township/Range(s): T4N, R1W
USGS Quad(s): CALDERWOOD BUTTE

Exhibit C-2g. AGFD Online Environmental Review Tool Results

No Documented Occurrences of Special Status Species
No special status species were documented as occurring within the project vicinity; however, further field investigations of the project area are highly recommended. Site visits may reveal previously unrecorded resources of special concern in locations where they are currently undocumented.

Special Areas Documented that Intersect with Project Footprint as Drawn

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
White Tank Flood Retainment Structures	Maricopa County Wildlife Movement Area - Landscape					

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
Aix sponsa	Wood Duck					1B
Ammospermophilus harrisii	Harris' Antelope Squirrel					1B
Athene cunicularia hypugaea	Western Burrowing Owl	SC	S	S		1B
Calypte costae	Costa's Hummingbird					1C
Chilomeniscus stramineus	Variable Sandsnake					1B
Chionactis annulata	Resplendent Shovel-nosed Snake	SC				1C
Colaptes chrysoides	Gilded Flicker			S		1B
Coluber bilineatus	Sonoran Whipsnake					1B
Corynorhinus townsendii pallescens	Pale Townsend's Big-eared Bat	SC	S	S		1B
Crotalus tigris	Tiger Rattlesnake					1B
Euderma maculatum	Spotted Bat	SC	S	S		1B
Eumops perotis californicus	Greater Western Bonneted Bat	SC		S		1B
Gopherus morafkai	Sonoran Desert Tortoise	C	S	S		1A
Haliaeetus leucocephalus	Bald Eagle	SC, BGA	S	S		1A
Heloderma suspectum	Gila Monster					1A
Incilius alvarius	Sonoran Desert Toad					1B
Lasiurus xanthinus	Western Yellow Bat		S			1B
Lithobates yavapaiensis	Lowland Leopard Frog	SC	S	S		1A
Macrotus californicus	California Leaf-nosed Bat	SC		S		1B
Melanerpes uropygialis	Gila Woodpecker					1B
Melospiza lincolnii	Lincoln's Sparrow					1B
Melozone aberti	Abert's Towhee		S			1B
Micrathene whitneyi	Elf Owl					1C
Micruroides euryxanthus	Sonoran Coralsnake					1B
Myiarchus tyrannulus	Brown-crested Flycatcher					1C
Myotis occultus	Arizona Myotis	SC		S		1B
Myotis velifer	Cave Myotis	SC		S		1B

Exhibit C-2h. AGFD Online Environmental Review Tool Results

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
Myotis yumanensis	Yuma Myotis	SC				1B
Nyctinomops femorosaccus	Pocketed Free-tailed Bat					1B
Oreoscoptes montanus	Sage Thrasher					1C
Oreothlypis luciae	Lucy's Warbler					1C
Perognathus longimembris	Little Pocket Mouse	No Status				1B
Phrynosoma solare	Regal Horned Lizard					1B
Setophaga petechia	Yellow Warbler					1B
Sphyrapicus nuchalis	Red-naped Sapsucker					1C
Spizella breweri	Brewer's Sparrow					1C
Tadarida brasiliensis	Brazilian Free-tailed Bat					1B
Toxostoma lecontei	LeConte's Thrasher			S		1B
Vireo bellii arizonae	Arizona Bell's Vireo					1B
Vulpes macrotis	Kit Fox	No Status				1B

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

Scientific Name	Common Name	FWS	USFS	BLM	NPL	SGCN
Callipepla gambelii	Gambel's Quail					
Pecari tajacu	Javelina					
Zenaida asiatica	White-winged Dove					
Zenaida macroura	Mourning Dove					

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.

Exhibit C-2i. AGFD Online Environmental Review Tool Results

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 herptefauna (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 (http://azstateparks.com/SHPO/index.html).

Based on the project type entered, coordination with U.S. Fish and Wildlife Service (Migratory Bird Treaty Act) may be required (http://www.fws.gov/southwest/es/arizona/).

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-2j. AGFD Online Environmental Review Tool Results

References

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EXHIBIT D. BIOLOGICAL RESOURCES

As stated in the Arizona Corporation Commission Rules of Practice and Procedure R14-3-220, Ex. D:

> *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, fish, reptile, amphibian, and wildlife species that may occur in the vicinity of the proposed Project, SWCA consulted publicly available data sources, including:

- Topographical and aerial maps
- U.S. Fish and Wildlife Service (USFWS) (2021)
- Arizona Game and Fish Department (AGFD) Online Environmental Review Tool (AGFD 2021a)
- AGFD Wildlife of Special Concern in Arizona (1196)
- *Biotic Communities: Southwestern United States and Northwestern Mexico* (Brown 1994)
- Regional checklists, reports, and publications (e.g., Brennan 2008–2012; eBird 2021; Hoffmeister 1986; iNaturalist 2021)

In addition, SWCA biologists with expertise in the biology of the flora and fauna of the region completed surveys of the Project vicinity on October 15, 2019, and May 29, 2020. During all biological resource surveys, incidental wildlife observations, including terrestrial species, raptors, incidental eagle flight paths, and bird species seen or heard were recorded.

Results

Ecological Setting

The Project is located in a previously disturbed area in the Lower Colorado River Valley subdivision of the Sonoran Desert biome (Brown 1994), south of West Happy Valley Road and west of State Route 303 on unincorporated land in Maricopa County, Arizona. The Project vicinity consists of the Westwing Substation, paved roads, private residences, the Agua Fria River channel to the east, and undeveloped land to the west. The elevation surrounding the Project is approximately 1,142 feet above mean sea level (amsl), and the topography is generally flat open desert with some trees and shrubs.

Vegetation

As observed during SWCA's site reconnaissance surveys, native plant species in the Project vicinity include trees, shrubs, forbs, and cacti. Native tree species observed in the Project vicinity include Jerusalem thorn (*Parkinsonia aculeata*), yellow paloverde (*P. microphylla*), and velvet mesquite (*Prosopis velutina*). Within the Project vicinity, these tree species occur within or adjacent to ephemeral washes or in low areas where water collects.

Shrub species observed during site reconnaissance surveys include creosote bush (*Larrea tridentata*), sweetbush (*Bebbia juncea*), four-wing saltbush (*Atriplex canescens*), brittlebush (*Encelia farinosa*), desert globemallow (*Sphaeralcea ambigua*), triangle bur ragweed (*Ambrosia deltoidea*), and Coues' cassia (*Senna covesii*). Creosote bush is the dominant shrub in upland areas, with yellow paloverde and velvet mesquite

dominant in and along ephemeral washes. Native forb species were limited to scarlet spiderling (*Boerhavia coccinea*). Other species could be present at other times of year depending on rainfall. One cactus species was observed in the Project vicinity: saguaro (*Carnegiea gigantea*). Yellow paloverde, velvet mesquite, and saguaro are all protected under the Arizona Native Plant Law (ANPL) (A.R.S. 3-904).

Non-native species observed during the site visit are found throughout the Project vicinity and include stinknet (*Oncosiphon piluliferum*), prickly Russian thistle (*Salsola tragus*), Mediterranean grass (*Schismus* sp.), red brome (*Bromus rubens*), and buffelgrass (*Pennisetum ciliare*). Red brome and Mediterranean grass are the dominant grass species in the Project vicinity, with red brome abundant in areas with dense vegetation in and along ephemeral washes and Mediterranean grass dominant in the more open upland areas. Stinknet and buffelgrass are listed as a noxious weed by the Arizona Department of Agriculture (ADA) under Arizona Administrative Code R3-4-245. These species were found in small to medium patches scattered throughout the Project vicinity.

Fish Species

There is no aquatic habitat in or near the Project vicinity. The nearest perennial water is the Beardsley Canal located approximately 0.8 mile north of the Project. As such, no fish species would occur in the Project vicinity or in areas to be potentially impacted by the Project.

Wildlife Species

Wildlife species observed during the Project surveys were limited to seven avian species: house finch (*Haemorhous mexicanus*), verdin (*Auriparus flaviceps*), black-throated sparrow (*Amphispiza bilineata*), house wren (*Troglodytes aedon*), mourning dove (*Zenaida macroura*), Gambel's quail (*Callipepla gambelii*), and northern mockingbird (*Mimus polyglottos*). There were trees on the site as well as saguaros with cavities in use by nesting species.

Species that may occur in the Study Area are listed in Table D-1 (amphibians and reptiles), Table D-2 (birds), and Table D-3 (mammals). These species were determined to have the potential to occur based on their habitat requirements, known ranges, and occurrence records (AGFD 2021; Brennan 2008–2012; eBird 2021; iNaturalist 2021; USFWS 2021). Species observed during SWCA's reconnaissance surveys are included in the tables.

Table D-1. Amphibian and Reptile Species that May Occur in the Study Area

Common Name (*Scientific Name*)	Habitat
Amphibians	
Couch's spadefoot (*Scaphiopus couchii*)	Shortgrass plains, mesquite savannah, creosote bush desert, thornscrub, tropical deciduous forest, and other areas with low rainfall. Requires areas that can support rain pools lasting at least 7 to 8 days.
Sonoran green toad (*Anaxyrus retiformis*)	Ranges from arid lowlands and arid grasslands into riparian mountain canyons, often found near permanent water. Widespread throughout the Sonoran Desert valleys and mountains.
Reptiles – Lizards	
Common side-blotched lizard (*Uta stansburiana*)	Arid or semi-arid regions with sand, rock, hardpan, or loam with grass, shrubs and scattered trees; often found along sandy washes.
Desert horned lizard (*Phrynosoma* [*Doliosaurus*] *platyrhinos*)	In Arizona, found primarily in desertscrub communities with some extension into Great Basin conifer woodland and interior chaparral communities.
Desert iguana (*Dipsosaurus dorsalis*)	Mohave desertscrub, Lower Colorado River Subdivision of Sonoran desertscrub, and less often in Arizona Upland Subdivision of Sonoran desertscrub.

Common Name (*Scientific Name*)	**Habitat**
Desert spiny lizard (*Sceloporus magister*)	Desertscrub communities, semi-desert grassland, interior chaparral, and woodlands on lower slopes.
Long-nosed leopard lizard (*Gambelia wislizeni*)	Desertscrub communities and semi-desert grasslands.
Long-tailed brush lizard (*Urosaurus graciosus*)	Brushy habitats along drainages and valleys within Lower Colorado River subdivision and Arizona Upland subdivision of Sonoran desertscrub.
Ornate tree lizard (*Urosaurus ornatus*)	Frequents mesquite, oak, pine, juniper, alder, cottonwood, and non-native trees. May also utilize urban walls, fences, and buildings from Sonoran desertscrub to Petran Subalpine Conifer Forest.
Regal horned lizard (*Phrynosoma solare*)	Rocky and gravelly slopes in desertscrub and semi-desert grasslands.
Tiger whiptail (*Aspidoscelis tigris*)	Inhabits deserts and semi-arid habitats, usually where plants are sparse; also found in woodlands, streamside growth, and in warmer, drier forests.
Western banded gecko (*Coleonyx variegatus*)	Desertscrub communities.
Zebra-tailed lizard (*Callisaurus draconoides*)	Washes, desert pavements of small rocks, and hardpan in desertscrub.
Reptiles – Snakes	
Arizona glossy snake (*Arizona elegans noctivaga*)	Found across most of south-central Arizona in Sonoran desertscrub and semi-desert grassland.
Black-tailed rattlesnake (*Crotalus molossus*)	Widespread in mountains throughout southern and central Arizona from Sonoran desertscrub into coniferous woodlands.
California kingsnake (*Lampropeltis getula californiae*)	Inhabits biotic communities from desertscrub up to lower portions of Great Basin Conifer Woodland and Madrean Evergreen Woodland.
Coachwhip [red racer] (*Coluber flagellum piceus*)	Western and southern Arizona in Sonoran desertscrub and semi-desert grassland.
Desert nightsnake (*Hypsiglena chlorophaea*)	Western and southern Arizona in a variety of biotic communities at elevations up to 8,500 feet amsl.
Desert patch-nosed snake (*Salvadora hexalepis hexalepis*)	Pinyon-juniper woodland to low deserts on a variety of soil types.
Groundsnake (*Sonora semiannulata*)	Inhabits biotic communities from Lower Colorado River desertscrub up into woodland habitats.
Long-nosed snake (*Rhinocheilus lecontei*)	Desertscrub to tropical woodlands up to 5,500 feet amsl.
Mohave rattlesnake (*Crotalus scutulatus*)	Sonoran, Mohave, and Chihuahuan desertscrub biotic communities as well as semi-desert grassland.
Ring-necked snake (*Diadophis punctatus*)	Desertscrub into montane coniferous forests.
Smith's black-headed snake (*Tantilla hobartsmithi*)	Sonoran desertscrub, semi-desert grassland, interior chaparral, Madrean evergreen woodland, and Great Basin conifer woodland at elevations from 1,500 to 5,500 feet amsl.
Sonoran coralsnake (*Micruroides euryxanthus*)	Sonoran desertscrub to oak woodlands.
Sonoran gophersnake (*Pituophis catenifer affinis*)	Found in all biotic communities in Arizona.
Sonoran lyresnake (*Trimorphodon lambda*)	Rocky habitats above valley bottoms in biotic communities from Sonoran desertscrub through montane conifer forest at elevations below 5,000 feet amsl.
Sonoran sidewinder (*Crotalus cerastes cercobombus*)	Desertscrub; flat open desert in the presence of sandy or loamy soils, predominantly in stabilized aeolian sands.

Common Name (*Scientific Name*)	Habitat
Variable sandsnake (*Chilomeniscus stramineus*)	Primarily found in the Arizona Upland subdivision of Sonoran desertscrub in drainages and canyons.
Western diamondback rattlesnake (*Crotalus atrox*)	Wide range of habitats below 7,000 feet; predominantly nocturnal.
Western threadsnake (*Leptotyphlops humilis*)	Biotic communities from desertscrub up to chaparral; primarily nocturnal.

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

Common Name (*Scientific Name*)	Habitat
Abert's towhee (*Pipilo aberti*)	Dense, brushy vegetation.
American kestrel (*Falco sparverius*)	Grasslands, desertscrub, cities, and agriculture.
Anna's hummingbird (*Calypte anna*)	Open woodlands, desert, urban and suburban areas.
Ash-throated flycatcher (*Myiarchus cinerascens*)	Open woodlands, deserts, parks, and urban areas.
Bendire's thrasher (*Toxostoma bendirei*)	Desertscrub, semi-desert grasslands, and agricultural habitats.
Black-chinned hummingbird (*Archilochus alexandri*)	Riparian areas and canyons in arid areas.
Black-chinned sparrow (*Spizella atrogularis*)	Desertscrub and chaparral.
Black-throated sparrow (*Amphispiza bilineata*)*	Wintering habitat in desertscrub.
Brewer's sparrow (*Spizella breweri*)	Wintering habitat in the desert southwest and Mexico.
Brown-crested flycatcher (*Myiarchus tyrannulus*)	Saguaro deserts and riparian areas.
Burrowing owl, Western burrowing owl (*Athene cunicularia hypugaea*)	Open areas with low brush cover, including grasslands, agricultural margins and desertscrub.
Cactus wren (*Campylorhynchus brunneicapillus*)	Sonoran, Mojave, and Chihuahuan desertscrub.
Common raven (*Corvus corax*)	Found in most habitat types in the northern hemisphere.
Cooper's hawk (*Accipiter cooperii*)	Forests and woodlands, including urban/suburban forests.
Costa's hummingbird (*Calypte costae*)	Sonoran and Mojave desertscrub.
Curve-billed thrasher (*Toxostoma curvirostre*)	In Arizona, found in Sonoran desertscrub.
Elf owl (*Micrathene whitneyi*)	Wooded canyons in Sonoran desertscrub with saguaros.
European starling (*Sturnus vulgaris*)	Urban/suburban areas and agricultural fields.
Gambel's quail (*Callipepla gambelii*)*	Sonoran, Mojave, and Chihuahuan desertscrub.

Common Name (*Scientific Name*)	**Habitat**
Gila woodpecker (*Melanerpes uropygialis*)	Sonoran desertscrub with saguaros present, or riparian woodlands with mature trees.
Gilded flicker (*Colaptes chrysoides*)	Sonoran desertscrub with saguaros present, or riparian woodlands with mature trees.
Gray vireo (*Vireo vicinior*)	Sonoran, Mojave, and Chihuahuan desertscrub.
Great horned owl (*Bubo virginianus*)	Deciduous, coniferous, and mixed forests; agricultural areas; cities and towns; and other open habitats.
Great-tailed grackle (*Quiscalus mexicanus*)	Agricultural and urban/suburban areas, and desert habitats.
Greater roadrunner (*Geococcyx californianus*)	Desertscrub, grasslands, riparian areas, and pinyon-juniper woodlands.
Harris hawk (*Parabuteo unicinctus*)	Desertscrub, savannah, and wetland habitats.
House finch (*Carpodacus mexicanus*)*	Human-created habitats in urban and rural areas as well as in natural habitats from deserts to coniferous forests.
House sparrow (*Passer domesticus*)	Human-created habitats in urban and rural areas.
House wren (*Troglodytes aedon*)*	Open woodlands, parks, and yards.
Inca dove (*Columbina inca*)	Urban and agricultural areas in the southwest.
Lesser goldfinch (*Carduelis psaltria*)	Fields, woodlands, agricultural areas, parks, gardens, and desert areas.
Lesser nighthawk (*Chordeiles acutipennis*)	Desertscrub and agricultural fields.
Lincoln's sparrow (*Melospiza lincolnii*)	Winters in central Arizona; prefers dense, brushy areas, often near water.
Lucy's warbler (*Oreothlypis luciae*)	Mesquite bosques and xeroriparian washes.
Mourning dove (*Zenaida macroura*)*	Open areas with scattered trees, woodland edges, grasslands, and agricultural areas.
Northern cardinal (*Cardinalis cardinalis*)	Dense shrubby areas, fields, areas with mesquite, and in landscaped areas.
Northern flicker (*Colaptes auratus*)	Woodlands and forest edges as well as parks and open fields.
Northern mockingbird (*Mimus polyglottos*)*	Parks, agricultural areas, suburban areas, and areas with shrubby vegetation.
Phainopepla (*Phainopepla nitens*)	Sonoran, Mojave, and Colorado deserts in areas with mistletoe.
Purple martin (*Progne subis*)	Parks, open areas, and areas with woodpecker holes in deserts and forests.
Pyrrhuloxia (*Cardinalis sinuatus*)	Upland deserts, savannas, riparian areas, agricultural areas, and desertscrub.
Red-naped sapsucker (*Sphyrapicus nuchalis*)	Winter habitat includes pine oak woodlands, deciduous trees, and orchards.
Red-tailed hawk (*Buteo jamaicensis*)	Deserts, scrublands, grasslands, agricultural areas, parks, and woodlands.
Turkey vulture (*Cathartes aura*)	Agricultural areas, forests, rangelands, and deserts.

Common Name (*Scientific Name*)	Habitat
Verdin (*Auriparus flaviceps*)*	Desertscrub and chaparral.
Vermilion flycatcher (*Pyrocephalus rubinus*)	Deserts, scrublands, grasslands, parks, and riparian areas.
Western kingbird (*Tyrannus verticalis*)	Open areas including grasslands, desertscrub, pastures, and urban areas.
White-winged dove (*Zenaida asiatica*)	Dense forests, deserts with cactus and palo verde trees, urban and suburban areas.
Yellow warbler (*Setophaga petechia*)	Migrates through central Arizona utilizing riparian areas and landscaping, often near water.

Source: Range or habitat information is from AGFD (2021a); Brown (1994); Corman and Wise-Gervais (2005); eBird (2021); iNaturalist (2021); USFWS (2021).

* = Species observed during Project surveys

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

Common Name (*Scientific Name*)	Habitat
Arizona cactus mouse (*Peromyscus eremicus eremicus*)	Desert habitats of the southwestern United States.
Arizona pocket mouse (*Perognathus amplus*)	Sonoran desertscrub.
Black-tailed jackrabbit (*Lepus californicus*)	Found in a wide variety of habitats across North America.
Bobcat (*Lynx rufus*)	Deserts, riparian areas, brushlands, and mountain forests.
Coyote (*Canis latrans*)	Habitat generalist found throughout urban, suburban, agricultural, and natural areas.
Collared peccary (*Pecari tajacu*)	Found in habitats from deserts to rainforests.
Desert cottontail (*Sylvilagus audubonii*)	Desertscrub, grasslands, shrublands, riparian areas, and pinyon-juniper forests.
Desert kangaroo rat (*Dipodomys deserti*)	Desert areas of the southwestern United States.
Desert pocket mouse (*Chaetodipus penicillatus*)	Desert areas of the southwestern United States.
Gray fox (*Urocyon cinereoargenteus*)	Deciduous forests, riparian areas, and agricultural areas
Harris' antelope squirrel (*Ammospermophilus harrisii*)	Usually on rocky slopes in desertscrub.
Hooded skunk (*Mephitis macroura*)	Desertscrub and grasslands often near a water source.
Kit fox (*Vulpes macrotis*)	Arid and semi-arid regions of the southwestern United States.
Merriam's kangaroo rat (*Dipodomys merriami*)	Desertscrub through pinyon-juniper biotic communities.
Ringtail (*Bassariscus astutus*)	Great Basin, Chihuahuan, and Sonoran deserts.
Round-tailed ground squirrel (*Xerospermophilus tereticaudus*)	Sonoran desertscrub.

Common Name (*Scientific Name*)	**Habitat**
Southern grasshopper mouse (*Onychomys torridus*)	Arid regions of the southwestern United States.
Striped skunk (*Mephitis mephitis*)	Brushy habitats including wooded areas and riparian areas.
White-throated woodrat (*Neotoma albigula*)	Low deserts to pine forests.
Bat Species	
Arizona myotis (*Myotis occultus*)	Varied habitats in the southwestern United States.
Big brown bat (*Eptesicus fuscus*)	Generalist species using wide variety of habitats in the United States, Canada, and Central America.
Big free-tailed bat (*Nyctinomops macrotis*)	Found throughout North and South America.
Brazilian free-tailed bat (*Tadarida brasiliensis*)	Roosts in caves, tunnels, and buildings. Forages widely, often over farmlands.
California leaf-nosed bat (*Macrotus californicus*)	Sonoran and Mojave deserts.
California myotis (*Myotis californicus*)	Desertscrub to pine woodlands.
Canyon bat (*Parastrellus hesperus*)	Deserts and lowlands of the western United States.
Cave myotis (*Myotis velifer*)	Roosts in caves, mines, and bridges. Forages in desertscrub, often near water.
Greater Western bonneted bat (*Eumops perotis californicus*)	Roosts in crevices in cliffs. Forages widely for insects.
Hoary bat (*Aeorestes cinereus*)	Usually roosts alone in trees and winters in the southwestern United States.
Long-legged myotis (*Myotis volans*)	Deserts (occasionally) through pine forests.
Pallid bat (*Antrozous pallidus*)	Arid or semi-arid habitats near water or rocky areas.
Pocketed free-tailed bat (*Nyctinomops femorosaccus*)	Roosts in cliffs and occasionally in buildings.
Pale lump-nosed bat, Townsend's pale big-eared bat (*Corynorhinus townsendii pallescens*)	Roosts in caves, mines, and occasionally buildings.
Spotted bat (*Euderma maculatum*)	Deserts, agricultural areas, wetlands, riparian areas, deciduous forests, and conifer forests.
Western red bat (*Lasiurus blossevill*ii)	Wide variety of biotic communities in North America.
Western yellow bat (*Lasiurus xanthinus*)	Roosts in trees, particularly palms.
Yuma myotis (*Myotis yumanensis*)	Roosts in buildings, cliffs, cave, and mines. Forages over or near water.

Source: Range or habitat information is from AGFD (2021a); Brown (1994); Hoffmeister (1986); iNaturalist (2021).

Summary of Potential Effects

Plant Species

Construction of the proposed Project would result in the long-term removal of approximately 1 acre of vegetation, in a previously disturbed area. Native vegetation characteristic of the Lower Colorado River Valley subdivision of Sonoran Desertscrub is abundant in central Arizona, and the acreage of disturbance as a percentage of the remaining habitat is small. The removal of approximately 1 acre of vegetation would not result in significant impacts to this vegetation community as a whole. Standard best management practices (BMPs) will be employed during construction to minimize the introduction and spread of noxious weeds.

Amphibian Species

Two amphibian species may occur in the Project vicinity: Sonoran Desert toad (*Incilius alvarius*) and Couch's spadefoot (*Scaphiopus couchii*). The Sonoran Desert toad and Couch's spadefoot spend the majority of the year beneath ground and are only surface-active during and shortly before the midsummer monsoon season. Proposed ground-disturbing Project activities could impact individuals of these species, including the potential for individuals to be crushed or buried during ground-disturbing activities.

Bird Species

Forty-nine bird species typical of the Sonoran Desert may occur within the Project vicinity (see Table D-2). Seven of these species were observed during Project surveys. Potential impacts on these 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 Migratory Bird Treaty Act (MBTA) would be avoided and/or minimized either by limiting ground clearing/vegetation removal activities to outside the breeding season (generally March to September) or through conducting surveys to identify active nests and placing 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. Collision risk is relatively low when multiple transmission lines are collocated or placed near other infrastructure. The Project would be constructed in an area with numerous existing transmission lines and would not be likely to contribute to an increase in bird mortality within the Project vicinity.

Electrical 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 almost entirely precluded (APLIC 2012).

Fish Species

There is no habitat for fish species in the Project vicinity. The Beardsley Canal is about 0.8 mile north of the Project Area; however, the proposed Project would have no effect on the canal and any aquatic species that may occur there. Standard BMPs will be employed during construction to prevent contamination of stormwater runoff from the site.

Mammal Species

Thirty-seven mammal species, including 18 bat species, may occur in the Project vicinity based on records near the Project, habitat characteristics, and species' ranges (see Table D-3). Potential impacts on terrestrial mammal 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 to be crushed or buried during ground-disturbing activities; and the loss of approximately 1 acre of habitat.

The Project vicinity does not support any suitable roosting habitat for bat species; however, the surrounding region likely includes features that support roosting bats. Bats may utilize the Project vicinity for foraging. The proposed Project activities would minimally remove vegetation that may decrease the suitability of the area for foraging by these species.

Bat species can collide with manmade structures during long-distance migration. Migrating bats often fly high above ground level and do not actively echolocate. However, during normal foraging activity, bats are actively using echolocation and are typically able to detect and avoid features such as overhead transmission lines (Arnett et al. 2015).

Reptile Species

Twenty-nine reptile species, including 18 snake species, may occur in the Project vicinity based on the species' habitat requirements and ranges (see Table D-1). Potential Project-related impacts on these species would include changes in behavior due to the presence of workers and equipment, including moving away from sources of noise and vibration and the potential for individuals to be crushed or buried during ground-disturbing activities.

Conclusion

The Project would be located in an isolated desert area with numerous existing transmission lines and is surrounded by urban/suburban development. As such, the proposed Project would potentially affect individuals of species but would be unlikely to significantly contribute to the loss of native vegetation that provides wildlife habitat or lead to declines in populations of native plant or wildlife 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 R14-3-220, Ex. E:

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

Scenic Areas and Visual Resources

Overview

This section of Exhibit E addresses the inventory of and potential effects to scenic or visual resources in relation to construction and operation of the Project. The methodology for this assessment is identified below and includes separate discussions associated with scenery (i.e., scenic quality) and sensitive viewers. The methodology is followed by the results of the inventory and the impact assessment, both of which include separate discussions for scenery and sensitive viewers within the context of the Study Area. The Project is located within privately owned land and within an existing APS-owned 69kV sub-transmission line corridor. The Project would not be located on lands managed by the BLM, United States Forest Service, or any other agency that requires conformance with visual resource management objectives or guidelines and would not be located 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 in the landscape that would result from the construction and operation of the Project. Modification of the landscape is typically described in the 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 that have been approved by the Siting Committee.

The Study Area for the visual assessment is defined as a 1-mile-wide buffer from 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 lands, regardless of jurisdiction, and used to develop a comprehensive understanding of the existing landscape and associated visual resources.

Impacts to 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 that 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 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

In the context of the Project, scenery is a measure, or 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 quality of the scenery to the anticipated quality considering any contrast introduced as a result of the construction and operation of the Project.

Sensitive Viewers

The concept of sensitive viewers refers to members of the public who could have potential views of the Project and may be sensitive to potential changes in the scenery that surrounds them. 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 that the Project would be visible and is based on the idea that viewer attention is attracted to a higher degree as the duration of view increases. Viewing conditions refer to whether the viewer is looking down at the Project from a superior position, looking up at the Project from an inferior position, or viewing the Project from an elevation that is similar to that of the Project (i.e., a neutral view). The term "degree of visibility" refers to whether views of the Project would be either open and unobstructed, or partially to fully obstructed by other features in the existing landscape (i.e., topography, vegetation or built features). The degree of visibility also refers to whether the Project would be viewed against the sky (i.e., skylined) or 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 Arizona Upland/Eastern Sonoran Basins Level IV ecoregions (U.S. Department of the Interior 2014). The Arizona Upland/Eastern Sonoran Basin ecoregion is a transitional zone between the more mountainous topography of the Arizona Upland/Eastern Sonoran Mountains Ecoregion to the north and the generally flat to sloping expansive landscape of the Gila/Salt Intermediate Basin, which comprises a large portion of the Phoenix metropolitan area to the south. The Arizona Upland/Eastern Sonoran Basin ecoregion consists of flat to gently sloping basins and valleys intermixed with alluvial fans, eroded washes, and ephemeral streams, which provides for some visual variety against the more mountainous backdrop of the adjacent ecoregions to the north. Vegetation within the Arizona Upland/Eastern Sonoran Basins consists of

intermixed shrublands and grasslands with mesquite, paloverde, and other tree species occurring throughout and often associated with areas along washes where seasonal moisture sustains habitats. Human development within the Study Area and throughout the ecoregion is characterized as concentrated suburban development with a mixture of clustered residential structures with supporting commercial and industrial development.

In addition to the above land uses, the Study Area also includes the Loop 303, West Happy Valley Road, and two electrical substations, and 16 electrical transmission and sub-transmission lines within a utility corridor.

The scenic quality within the Study Area is considered relatively low based on the general lack of visually interesting landforms and vegetation, and the prominence of existing built features and development that contrasts with the appearance of the natural landscape.

Sensitive Viewers

Residences

A variety of residences are located within the Study Area, consisting primarily of clustered, dense subdivisions common to suburban residential development. The nearest residential viewers are located approximately 0.23 mile north of the Project. Views from residences within the Study Area typically include residential development and prominent roadway infrastructure with intermixed natural-appearing open space. The existing transmission line infrastructure and substations within the Study Area are also visible from many residences, and the heights of these features along with the collocated density of the infrastructure make them highly visible and dominant features in many portions of the landscape as it bisects the Study Area. With the exception of those located within the interior or neighborhoods, views from residences are mostly open and panoramic in nature and include views of the Peoria Sunrise Mountain Reserve, Thunderbird Conservative Area, and McDowell Mountains to the east and White Tank Mountains to the southwest. Residential viewers are assumed to have a relatively long duration of view and relatively high sensitivities to visual changes within the Study Area.

Recreation Areas

Recreation areas within the Study Area include pedestrian/multi-use paths, a number of "pocket parks" within residential areas, and a segment of the Maricopa Trail that intersects with the Project. Pedestrian/multi-use paths typically are located around the perimeter of neighborhoods and are often located within natural-appearing open space areas. The closest pedestrian/multi-use path is located approximately 0.15 mile east of the Project and is aligned in an east-west orientation, paralleling Happy Valley Road. Residential pocket parks are scattered throughout the Study Area and are located within the interior of residential areas to the north and south of the Project, which would result in views beyond the park areas being obscured by residential structures and roadway infrastructure. A segment of the Maricopa Trail crosses the Project alignment along an existing access road at the northern edge of Westwing Substation where it continues westward crossing under multiple existing transmission lines. There is an undeveloped Maricopa Trail trailhead at the southwest corner of Happy Valley Road and Vistancia Boulevard. Existing transmission line infrastructure within the Study Area is also visible to many recreational users, and the heights of these features make them highly visible and dominant features in many portions of the landscape. Views from recreational users along the edges of neighborhoods are a mixture of panoramic and open in nature and include views of the Peoria Sunrise Mountain Reserve, Thunderbird Conservative Area, and McDowell Mountains to the east and White Tank Mountains to the southwest, to more focused or enclosed views from interior portions of neighborhoods where paths bisect neighborhoods. Recreational viewers are assumed to have relatively moderate durations of view and a moderate sensitivity to visual changes as a result of the mixture of existing visible development and infrastructure in the area in conjunction with more open natural views of surrounding mountainous landforms.

Travel Routes

The primary travel routes within the Study Area and in proximity of the Project include Loop 303, West Happy Valley Road, West Happy Valley Parkway, and Vistancia Boulevard and range from approximately 0.20 to 0.75 mile from the nearest Project components. Collector routes that support access to residential areas are also located in the proximity of the Project. These routes include Hatfield Road, North El Mirage Road, North 121st Lane, and West El Cortez Place and range from approximately 0.25 to 0.45 mile from the nearest Project components. Views from travel routes within the Study Area typically include residential development and natural occurring open space areas. The existing transmission infrastructure within the Study Area is also visible to many travel route users, particularly along West Happy Valley Road and Loop 303 as the infrastructure bisects the route and the heights of these features make them highly visible and dominant features when visible. With the exception of travel routes surrounded by existing buildings and vegetation, views from travel routes are mostly open and panoramic and include views of the Peoria Sunrise Mountain Reserve, Thunderbird Conservative Area, McDowell Mountains, and White Tank Mountains. Travel routes south and east of the Loop 303 area have been determined not to have discernible views of the Project as a result of intervening roadway infrastructure. Viewers moving along travel routes are expected to have relatively short durations of view due to travel speeds and relatively low sensitivities to visual changes as a result of the existing visible development and infrastructure within the Study Area.

Impact Assessment Results

The descriptions below provide a general description of the potential impacts on scenic quality and sensitive viewers based on the construction and operation of the Project. Overall, impacts associated with the Project would be low because the Project components would appear similar to the existing transmission lines and substation infrastructure adjacent to the Project, which are a visually dominant feature in the landscape.

Scenery

The Project would introduce a 0.52-mile, 230kV transmission line interconnection. The interconnection consists of steel monopole structures that will be collocated with the existing Calderwood-Westwing 69kV transmission line. The lines, forms, colors, textures, and scale of the Project facilities would be similar in appearance to other transmission line infrastructure and industrial facilities within the existing landscape, though they would add to the density of that utility and industrial infrastructure. The Project is expected to create low impacts to the existing, relatively low scenic quality within the Study Area. Project components could be seen but would not attract attention and would be subordinate to other built features within the landscape, which would result in a weak degree of contrast.

Sensitive Viewers

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

Residences

Although views from residences within the Study Area would vary based on location from unobstructed to partially or fully obstructed, most views of the Project would be partially obstructed by existing features within the landscape, such as existing trees, buildings, and other built features. Based on the generally flat landforms within the Study Area, views from residences would generally be from a neutral position and would include skylined views of the transmission line and interconnection within the substation, where visible.

Views from these residences would have partially obstructed views of the Project (represented by Key Observation Point [KOP] 1) [see Exhibit G-5], approximately 0.45 mile northeast of the Project as well as KOP 2 [see Exhibit G-5], approximately 0.16 mile north east of the Project. The lines, forms, colors,

textures, and scale of the Project would be similar to those found within the existing visual setting. Despite the relatively close proximity of these residence and the anticipated long duration of view, the Project could be seen but 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.

Recreation Areas

Views of the Project from recreation areas within the Study Area would vary from partially obstructed to fully obstructed, and most views would be partially obstructed by existing features within the landscape, such as trees, existing buildings and fences, and roadway infrastructure. Based on the relatively flat landform on which the Project would be located and the similar topography in which existing recreational viewers would be located, views of the Project from recreation viewers would be from typically a neutral viewing position. Views from neutral viewing positions would typically include skylined views of the transmission line interconnect within the substation.

The Christopher Todd Communities Residential Development recreation playground space to the east would have partially obstructed views of the Project (represented by KOP 2 [see Exhibit G-6], approximately 0.16 mile east of the Project). The lines, forms, colors, textures, and scale of the Project features would be similar to those of the existing transmission line infrastructure in the area. Despite the relatively close proximity of these residences and playground and the anticipated long duration of view from this location, the Project could be seen but 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.

A segment of the Maricopa Trail intersects the Project. Due to the orientation of travelers along Maricopa Trail, the project would be viewed for a moderate duration of time based on travel speeds. The lines, forms, colors, textures, and scale of the Project features would be similar to those of the existing transmission line infrastructure in the area. Despite the intersection with the project and moderate duration of views from this location, the Project could be seen but 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.

Travel Routes

Views from travel routes within the Study Area would vary based on location from unobstructed to partially or fully obstructed. Most views of the Project would be partially obstructed by existing features within the landscape, such as trees, existing buildings, and other built features. 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 and substation infrastructure, where visible.

West Happy Valley Road is an east–west-oriented primary travel route within the Study Area (represented by KOP 3 [see Exhibit G-7], located approximately 0.75 mile west of the Project). Due to the orientation of travelers along West Happy Valley Road in the eastbound direction, the Project would be viewed peripherally and for a short duration of time based on travel speeds. Intervening vegetation, existing transmission line and substation infrastructure, and surrounding roadway and residential infrastructure would further influence the viewers' ability to focus on the Project. The Project could be seen but 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.

Loop 303 is a primary travel route within the Study Area, located approximately 0.30 mile from the Project. Due to the orientation of travelers along Loop 303 in the study area, the Project would be viewed peripherally from the travel lanes for a short duration of time due to travel speeds. Additionally, intervening vegetation, existing transmission line infrastructure and surrounding roadway infrastructure would further influence the viewer's ability to focus attention on the Project. The Project could be seen, though would not

attract attention and would be subordinate to other built features within the landscape, which results in a weak degree of contrast and low impacts.

The collector roads with the closest views of the Project would be North El Mirage Road, North 121st Lane, and West El Cortez Place, which are approximately 0.25 to 0.40 mile from the nearest Project components. Southbound travelers on North El Mirage Road, North 121st Lane, and West El Cortez Place would have head-on, long duration views of the Project while waiting to turn onto West Happy Valley Road. The lines, forms, colors, textures, and scale of the Project features would be similar to those of the existing transmission line infrastructure in the area but would appear to be more prominent and of greater density within the viewshed when visible. The Project could be seen, though it would not attract attention and would be subordinate to other built features within the landscape, which results in a weak degree of contrast and low impacts.

Conclusion

Overall, the Project would be similar in form, line, color, and texture compared with other transmission line infrastructure in the Study Area, which would result in low impacts to scenery. Similarly, impacts to sensitive viewers overall would be low as a result of perceived contrast due to intervening visual element and the duration of view of the Project within the Study Area.

Cultural Resources (Historic Sites and Structures and Archaeological Sites)

Introduction

The following analysis describes the cultural resources within the Study Area, as well as the effects of the Project on cultural resources.

The Arizona Corporation Commission (ACC), as a state agency, must review the project in consideration of the State Historic Preservation Act of 1982 (A.R.S. §41-861 et seq.) and its implementing regulations, which stipulate that all cultural resources must be identified prior to any construction or ground-disturbing activities with a state nexus. Site identification is accomplished through records searches and field surveys. Previously unrecorded sites discovered during surveys must be evaluated for their eligibility for inclusion in the Arizona Register of Historic Places (ARHP). Resources are considered eligible for both the ARHP and the National Register of Historic Places (NRHP)[1] if they meet one or more of the following four criteria:

A. Associated with events that have made a significant contribution to the broad patterns of our history.

B. Associated with the lives of significant persons in our past.

C. Representative of a type, period, or method of construction, or the work of a master.

D. Capable of yielding important information about the past.

Methods

Professional archaeologists employed by SWCA reviewed archival records to identify any previously conducted cultural resources surveys and known cultural resources within the Study Area. The review served two purposes: 1) to assess the extent of previous pedestrian surveys completed in the area, and 2) to assess the nature and number of previously recorded cultural resources in the area. Data sources searched include the AZSITE database, the NRHP NPGallery database, and the appropriate General Land Office (GLO) plat maps and historic-era topographic maps.

Results of the Archival Records Search

Historic Maps and Aerial Photographs

A review of original and supplemental GLO survey plat maps of the Study Area was conducted (U.S. Department of the Interior 2020). The survey of Township 4 North, Range 1 West filed in 1896 depicts no historic-era cultural features mapped within the Study Area.

The historic 1957 U.S. Geological Survey (USGS) Calderwood Butte, Arizona, 7.5-minute quadrangle topographic map depicts an unnamed road trending northeast to southwest directly east of the Study Area (USGS 2021a). The map also depicts the Westwing Substation in place by that year, along with what would become the 500kV overhead transmission lines and two associated towers in the SE ¼ of the SW ¼ of Section 1.

Historical aerial photographs of the Study Area, available through Maricopa County (2021) and the USGS (2021b), were also reviewed. The earliest available aerial photograph is from 1949 and depicts the Study

[1] Eligibility determinations for the ARHP and the NRHP are made in tandem. Historic properties, including archaeological sites, on private land with a state nexus (met by the granting of an ACC CEC) must be evaluated for eligibility for inclusion in the ARHP, but such evaluations also apply by default to the NRHP. Conversely, historic properties discovered in surveys that have a federal nexus must be evaluated for eligibility for inclusion in the NRHP, but such evaluations also apply by default to the ARHP.

Area as consisting of undisturbed natural desert. Aerial photographs from subsequent years are sparse, but the 1976 aerial photograph clearly depicts the Westwing Substation and 500kV overhead transmission line.

National Register of Historic Places and Archaeological Records Databases

The National Park Service's NRHP database was searched to identify properties listed in the NRHP that are located within the Study Area. No NRHP-listed properties were identified.

Previous Research

Cultural resources records available in AZSITE, the Arizona statewide cultural resources database, revealed that 42 cultural resources projects have been previously conducted within the 1-mile Study Area and include primarily Class III cultural surveys for transmission and transportation projects. Those 42 previously conducted cultural resources projects resulted in 31 archaeological sites being recorded, none within the Project Area. Two previously recorded sites in particular are located in close proximity (approximately 0.25-mile) to the Project Area—AZ T:7:244(ASM), a Classic period Hohokam artifact scatter and possible short-term habitation site; and AZ T:7:441(ASM), a site of unknown cultural and temporal affiliation. Of the 42 previously conducted cultural resources projects within the Study Area, only two have partially encompassed the immediate Project Area. Approximately 645 linear feet of the Project Area were covered by those two surveys, and no archaeological sites were recorded. In 2020, Stantec conducted a Class III survey of 51 acres of land for the AES Battery Storage Facility at the Westwing Substation, as well as small segments of the Project Area. Stantec's survey resulted in no cultural resources being recorded.

Summary of Potential Effects

Because the Project has a federal nexus, federal laws regarding effects on cultural resources do apply, along with Arizona state laws and regulations regarding effects on cultural resources on private land when a state nexus is involved. If a site on private land with a state nexus is determined to be *ineligible* for listing in the ARHP, no further work is required. If a site on private land with a state nexus is determined to be *eligible* for listing in the ARHP, it should be avoided. If avoidance is not possible, or desirable, mitigation for adverse effects is required. Portions of the Project Area have been previously surveyed for cultural resources (approximately 645 linear feet), and none were recorded. Based on our archival review, approximately 1,222 feet of the Project Area have not been previously surveyed for cultural resources; however, this portion of the project area lies within the heavily modified in-use substation facility. SWCA's review of historic topographic maps indicates that the Westwing Substation and overhead transmission lines are historic-era structures; however, they are considered in-use transmission infrastructure outside of the project area and will not be affected. The Project, therefore, is unlikely to affect cultural resources, including those eligible for the ARHP/NRHP.

References

Maricopa County Assessor. 2014. U.S. Department of the Interior. Ecoregions of Arizona. Available at: https://www.epa.gov/eco-re search/ecoregion-download-files-state-region-9#pane-02. Accessed March 2021.

———. 2020. Bureau of Land Management, General Land Office Records. Available at: https://glorecords.blm.gov/. Accessed April 17, 2020.

———. 2021. Historical Aerial Photography. Available at: https://gis.maricopa.gov/GIO/HistoricalAerial/index.html. Accessed April 17, 2020.

U.S. Geological Survey (USGS). 2021a. USGS Topographic Map Explorer. Available at: http://historicalmaps.arcgis.com/usgs/. Accessed March 17, 2021.

———. 2021b. Earth Explorer. Available at: https://earthexplorer.usgs.gov. Accessed March 17, 2021.

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EXHIBIT F. RECREATION

As stated in the Arizona Corporation Commission Rules of Practice and Procedure R14-3-220, Ex. F:

> *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.*

Numerous recreation sites or opportunities exist within the Study Area, including privately owned and Maricopa County–managed recreation facilities. While APS has no plans to formally designate land for new public recreation purposes as a component of this Project, APS will work to ensure that the existing recreation facilities that intersect with the Project are not permanently impacted.

Multiple privately owned community parks are situated in the residential communities of Dos Rios and Coldwater Ranch in the Study Area. These private community parks provide active recreation opportunities, such as facilities for smaller groups for baseball, soccer, volleyball, and playground activities, as well as some neighborhood hiking/walking paths and small "pocket-parks". These recreational sites also offer passive recreational opportunities, such as sporting event spectatorship and picnicking. There are no existing public parks, golf courses, pools, or stadiums, and no commercial recreation facilities, such as private gyms, in the Study Area.

Existing and planned future recreational sites within the Study Area are managed by Maricopa County or the City of Peoria and are generally limited to public pathways and bike lanes along some major arterial roads (City of Peoria 2020; Maricopa County 2020), except for the Grand Avenue–Happy Valley Road segment of the Maricopa Trail. This trail segment crosses the Project alignment along an existing access road at the northern edge of the Westwing Substation. The Maricopa Trail is managed by Maricopa County Parks and Recreation, and is open for hiking, biking, and equestrian uses. There is an undeveloped Maricopa Trail trailhead at the southwest corner of Happy Valley Road and Vistancia Boulevard. The Maricopa County Comprehensive Plan and Peoria General Plan do not indicate that additional recreational land uses (Exhibit A-3) are planned in proximity to the Project or within the Study Area (City of Peoria 2020; Maricopa County 2016). However, APS will affirmatively offer to work with Maricopa County to join in long-range planning efforts for the Project vicinity as needed.

While private community parks are located within the Study Area, they are not anticipated to be adversely affected due to their distance from the Project, and by virtue of the Project being sited within an existing 69kV alignment within an existing utility corridor.

During construction, the Project could have short-term access impacts on recreational users for a small segment of the Maricopa Trail. However, because the Project would replace the existing transmission line and poles with similar structures, the temporary access impacts are expected to be minor and localized to just the single area where Project work would cross the Trail along the north side of the Westwing Substation.

Conclusion

Overall, the Project would have minimal effects on existing recreation and recreational users. If recreation activities or facilities are planned for future development near the Project Area, APS will cooperate with the appropriate planning authorities and communities to accommodate the recreational uses to the extent practicable with due consideration for the transmission line operations and maintenance requirements, as well as safety considerations. It is not anticipated that the Project will affect the future siting of proposed recreational facilities.

References

City of Peoria. 2020. *Peoria General Plan 2040*. Available at: https://www.peoriaaz.gov/home/showdocument?id=23952. Accessed October 2020.

———. 2020a. Peoria's Trail System, Interactive Trails Map. Available at: https://www.peoriaaz.gov/government/departments/parks-recreation-and-community-facilities/parks-and-trails/hiking-trails. Accessed October 2020.

Maricopa County. 2016. *Maricopa County Vision 2030 Comprehensive Plan*. Available at: https://www.maricopa.gov/DocumentCenter/View/3786/Vision-2030-Maricopa-County-Comprehensive-Plan-PDF. Accessed October 2020.

———. 2020. Maricopa Trail Maps. Available at: https://www.maricopacountyparks.net/things-to-do/activity/maps/. Accessed October 2020.

EXHIBIT G. CONCEPTUAL DRAWINGS OF TRANSMISSION FACILITIES

As stated in the Arizona Corporation Commission Rules of Practice and Procedure R14-3-220, Ex. G:

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 Double-Circuit 230kV Monopole with Double-Circuit 69kV Under Build Turning Transmission Structure

Exhibit G-2 – Typical Double-Circuit 230kV Monopole with Double-Circuit 69kV Under Build Transmission Structure #1

Exhibit G-3 – Typical Double-Circuit 230kV Monopole with Double-Circuit 69kV Under Build Transmission Structure #2

Exhibit G-4 – Photo simulation of Project from KOP 1

Exhibit G-5 – Photo simulation of Project from KOP 2

Exhibit G-6 – Photo simulation of Project from KOP 3

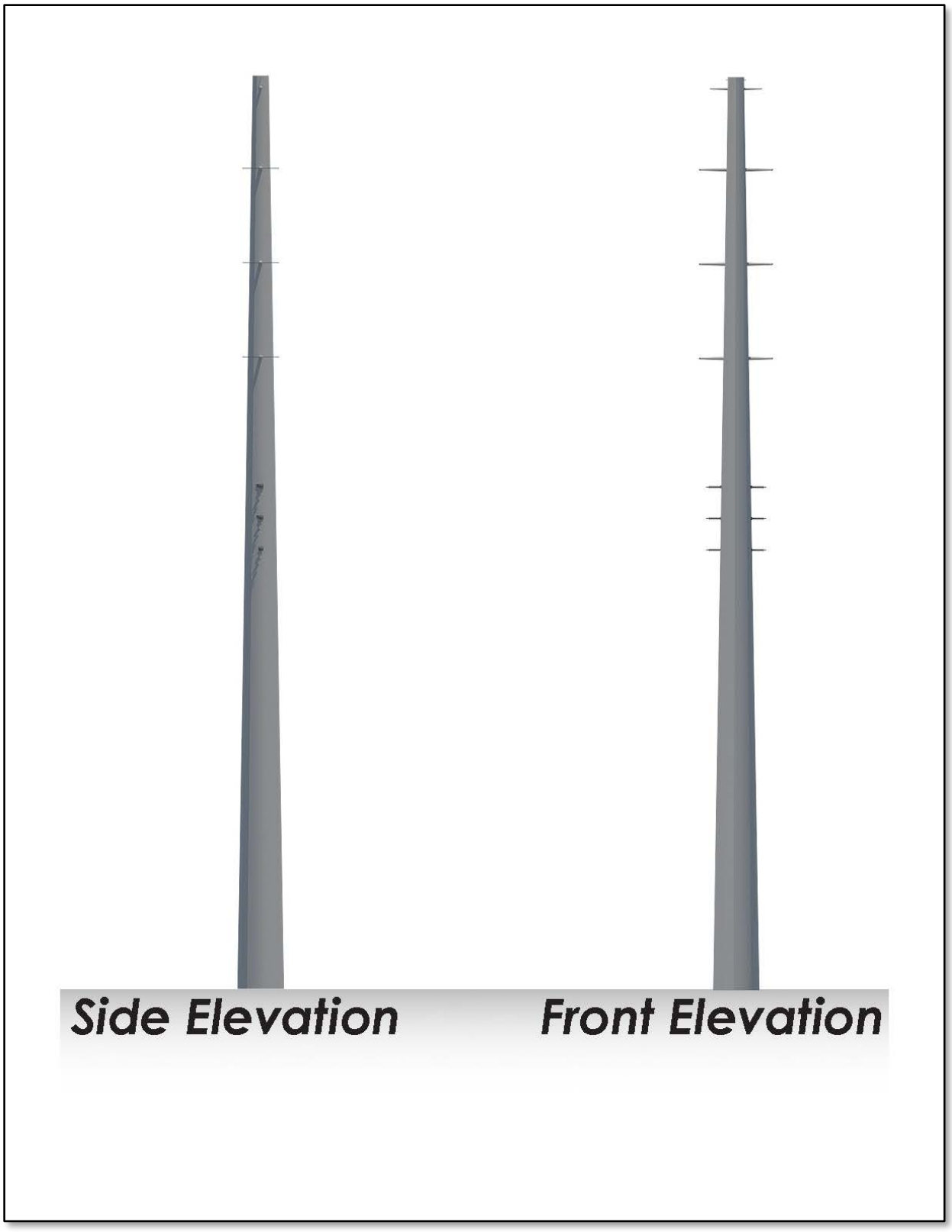


Exhibit G-1. Typical Double-Circuit 230kV Monopole with Double-Circuit 69kV Under Build Turning Transmission Structure

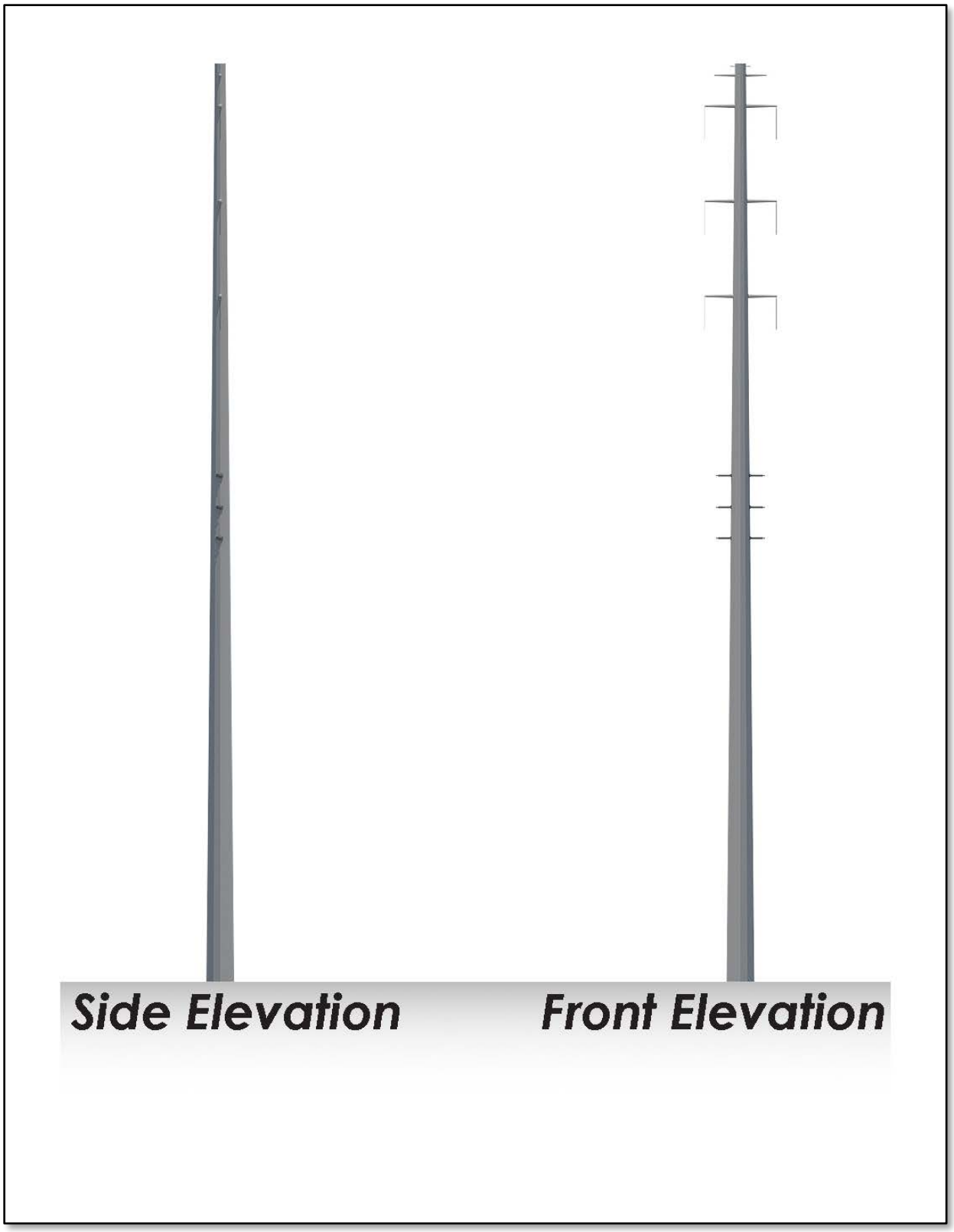


Exhibit G-2. Typical Double-Circuit 230kV Monopole with Double-Circuit 69kV Under Build Transmission Structure #1

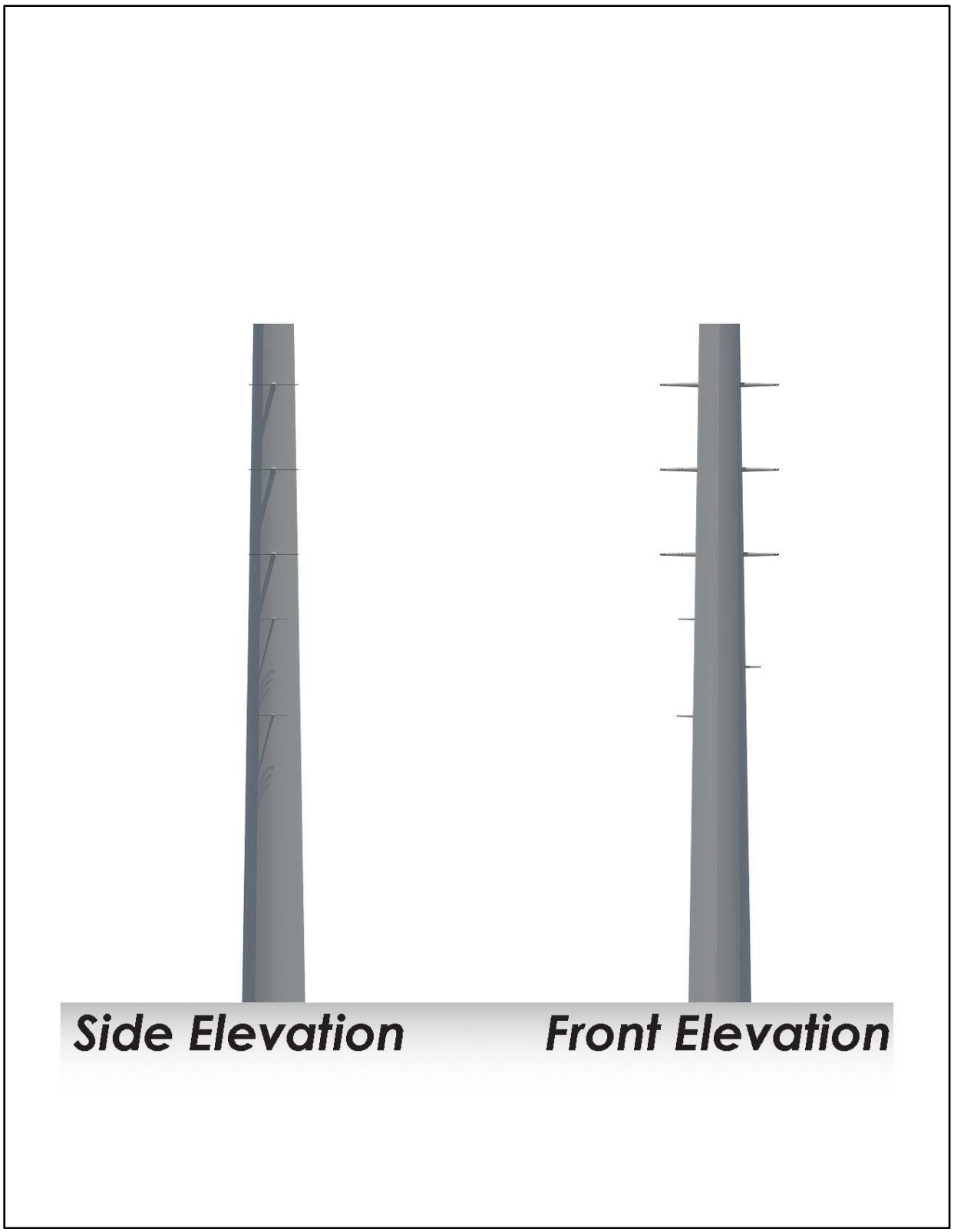
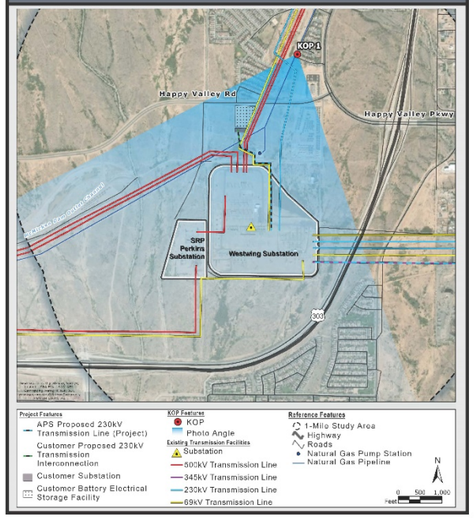


Exhibit G-3. Typical Double-Circuit 230kV Monopole with Single-Circuit 69kV Under Build Transmission Structure #2

Existing Condition KOP 1: View from within Residential Development at North 119th Lane and West El Cortez Place looking southwest

Simulated Condition KOP 1: View from within Residential Development at North 119th Lane and West El Cortez Place looking southwest

Viewing Location



Simulated Structures	Existing Structure

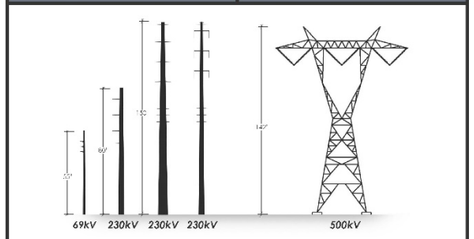


Photo Date and Time: February 2, 2021, 11:25 am

View Location: Approximate distance to nearest new pole from photo location is 0.45 miles.

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

APS Westwing 230kV Interconnection Project | March 2021
Simulation from KOP 1: View from within Residential Development at North 119th Lane and West El Cortez Place

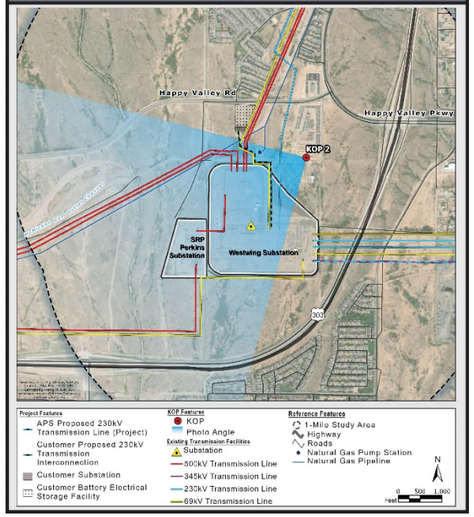
Exhibit G-4. Photo simulation of Project from KOP 1

Existing Condition KOP 2: View from playground at Christopher Todd Communities Residential Development looking southwest

Simulated Condition KOP 2: View from playground at Christopher Todd Communities Residential Development looking southwest

APS Westwing 230kV Interconnection Project | March 2021
Simulation from KOP 2: View from Christopher Todd Communities Playground

Viewing Location



Simulated Structures | Existing Structure

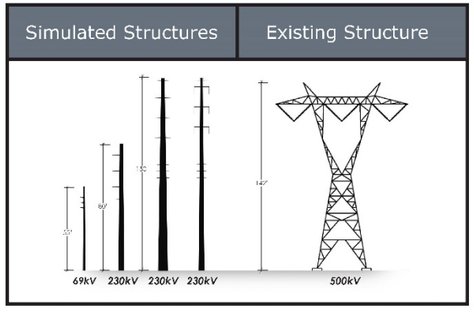


Photo Date and Time: February 2, 2021, 11:05 am

View Location: Approximate distance to nearest new pole from photo location is 0.16 miles.

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

aps SWCA ENVIRONMENTAL CONSULTANTS

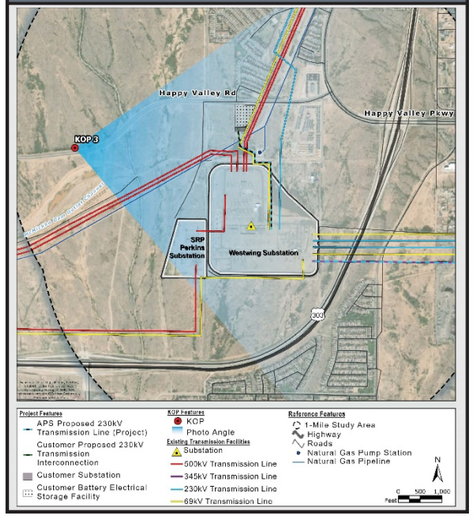
Exhibit G-5. Photo simulation of Project from KOP 2

Existing Condition KOP 3: View from West Happy Valley Road looking east

Simulated Condition KOP 3: View from West Happy Valley Road looking east

APS Westwing 230kV Interconnection Project | March 2021
Simulation from KOP 3: View from West Happy Valley Road

Viewing Location



Simulated Structures	Existing Structure

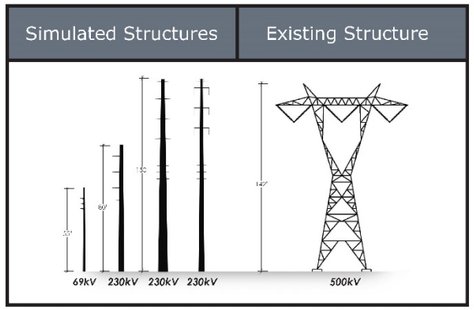


Photo Date and Time: February 2, 2021, 10:35 am

View Location: Approximate distance to nearest new pole from photo location is 0.75 miles.

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

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Exhibit G-6. Photo simulation of Project from KOP 3

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EXHIBIT H. EXISTING PLANS

As stated in the Arizona Corporation Commission Rules of Practice and Procedure R14-3-220, Ex. H:

> *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*.

Land uses are mapped in Exhibits A-2 and A-4 and discussed in Exhibit B. As part of the land use study, the Maricopa County Vision 2030 Comprehensive Plan and the White Tanks Grande Ave Area Plan, as well as the Maricopa County Planning and Development Department's interactive mapping service PlanNet, were evaluated. Identified land uses and development plans were reviewed and verified with the Maricopa County Planning and Development planning staff. Representatives from these entities were also invited to participate in the Project public involvement efforts. The purpose of this representation was to ensure consistency with plans and to identify potential issues throughout the environmental and public planning and outreach process.

In March 2021 letters were sent to the jurisdictions (listed in Table H-1) to provide Project information and request new or additional information on plans or planned developments. Exhibit H-1 provides a copy of the letter. Exhibits H-2, H-3, and H-4 include written responses and other correspondence from relevant jurisdictions.

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

Contact Name	Title	Jurisdiction/Agency
Randy Everett	Senior Division Administrator	Arizona Department of Transportation, Central District
Ginger Ritter	Project Evaluation Supervisor	Arizona Game and Fish Department
Ruben Ojeda	Manager, Right-of-Way Section	Arizona State Land Department
Lane Cowger	Hassayampa Field Manager	Bureau of Land Management
Cody Gleason	Principal Planner	City of Peoria
Randy Grant	Director	Maricopa County Planning and Development
Glen Vortherms	General Manager	Maricopa Water District
Josh Robertson	Director of Regulatory Policy	Salt River Project
Kathryn Leonard	State Historic Preservation Officer	State Historic Preservation Office
Renee Darling	Transmission and Distribution Supervisor	Tucson Electric Power Company
Eduardo Uribe		Western Area Power Administration, Desert Southwest Region

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

March 24, 2021

Randy Everett
Arizona Department of Transportation
2140 W. Hilton, MD E700
Phoenix, AZ 85009

Re: APS Westwing 230kV Interconnection Project

Dear Randy Everett:

Arizona Public Service Company (APS) plans to file an application for a Certificate of Environmental Compatibility (CEC) for a 230-kilovolt (kV) transmission line project referred to as the Westwing 230kV Interconnection Project (Project) with the Arizona Power Plant and Transmission Line Siting Committee (Siting Committee) in mid 2021. The Project includes the development of a new 230kV transmission line, approximately 0.47 miles in length, interconnecting a separate customer proposed battery electrical storage system project (BESS) to the existing Westwing Substation. The Project is needed to connect the proposed BESS to the regional transmission grid for the storage and delivery of electricity to existing and future customers within the Phoenix metropolitan area.

APS and its consultant, SWCA Environmental Consultants (SWCA), implemented a comprehensive planning process, including environmental studies, to evaluate the proposed location of the Project. The process findings support the Proposed Route identified for the Project, which will be brought before the Siting Committee (see attached map). APS will request Siting Committee approval for a CEC for the Proposed Route.

Arizona Administrative Code Rule R14-3-219 directs an applicant to include in its CEC application an Exhibit H addressing the following: "To the extent the 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."

Your organization is invited to provide information or written comments regarding development plans in the vicinity of the proposed Project (as depicted in the attached map). APS requests your comments be submitted in writing, specifically including your organization's existing or future development plans that you have identified or are known to you at this time.

To allow your information to be included in APS's CEC application, please forward your written comments to me by April 12, 2021, via email at devin.petry@swca.com, or by physical mail: Attn: Devin Petry, SWCA, 20 East Thomas Road, Suite 1700, Phoenix, AZ 85012.

Thank you for your cooperation.

Sincerely,

Devin Petry, Environmental Project Manager
SWCA Environmental Consultants
cc: Kevin Duncan, APS Senior Siting Consultant

Exhibit H-1. Example March 2021 Exhibit H Letter

Devin Petry

From: Raul Amavisca <ramavisca@azdot.gov>
Sent: Tuesday, April 6, 2021 11:45 AM
To: Devin Petry
Subject: Fwd: APS Westwing Interconnect
Attachments: APS Westwing Interconnect.pdf

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

Devin,

In response to your March 24, 2021 letter to Randy Everett, note that ADOT has a project planned for this area. Refer to https://azdot.gov/projects/central-district-projects for specific information.

Thanks,

Raul G. Amavisca, PE

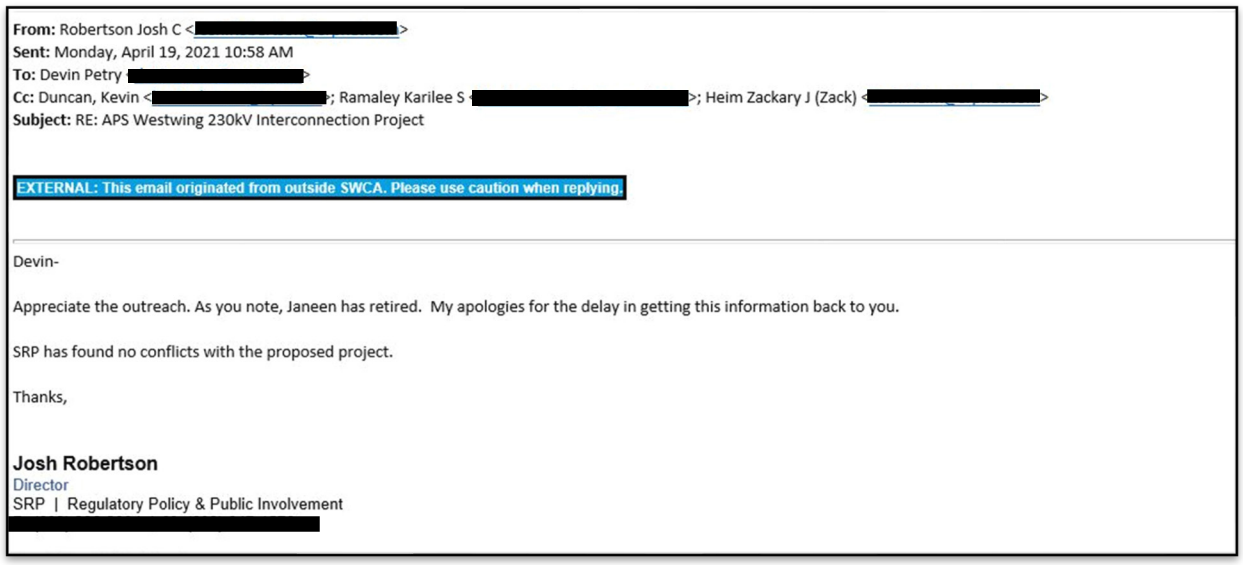
Engineering Administrator

ADOT Central District
2140 W. Hilton Avenue, Mail Drop PM00

Phoenix, AZ 85009

602.206.2543 Cell
www.azdot.gov

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



From: Robertson Josh C <[redacted]>
Sent: Monday, April 19, 2021 10:58 AM
To: Devin Petry <[redacted]>
Cc: Duncan, Kevin <[redacted]>; Ramaley Karilee S <[redacted]>; Heim Zackary J (Zack) <[redacted]>
Subject: RE: APS Westwing 230kV Interconnection Project

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

Devin-

Appreciate the outreach. As you note, Janeen has retired. My apologies for the delay in getting this information back to you.

SRP has found no conflicts with the proposed project.

Thanks,

Josh Robertson
Director
SRP | Regulatory Policy & Public Involvement
[redacted]

Exhibit H-3. Written Response from Salt River Project

April 12, 2021

Devin Petry
Environmental Project Manager
SWCA Environmental Consultants
20 East Thomas Road, Suite 1700
Phoenix, Arizona 85012

Electronically submitted to: devin.petry@swca.com

RE: APS Westwing 230kV Interconnection Project

Dear Mr. Petry:

The Arizona Game and Fish Department (Department) appreciates the opportunity to review the APS Westwing 260kV Interconnection Project that includes the development of a new transmission line across .47 miles and building of a battery storage system interconnecting to the existing Westwing substation in order to deliver electricity to existing and future customers in the Phoenix metropolitan area.

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 protect and conserve 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 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. For your consideration, the Department provides the attached Arizona Environmental Online Review Tool report for your review and reference and has no additional comments based on the agency's statutory authorities, public trust responsibilities, and special expertise related to wildlife resources and recreation.

Thank you for the opportunity to provide input on the APS Westwing 230kV Interconnection Project. For further coordination, please contact kwolff@azgfd.gov or 480-324-3550.

Sincerely,

Joshua W. Hurst

Joshua W. Hurst, Regional Supervisor, Mesa

AZGFD #M21-023264704

azgfd.gov | 480.981.9400

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

Exhibit H-4. Written Response from Arizona Game and Fish Department

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EXHIBIT I. NOISE

As stated in the Arizona Corporation Commission Rules of Practice and Procedure R14-3-220, Ex. I:

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

Introduction

Certain electromagnetic effects are inherently associated with overhead transmission of electrical power at extra-high voltage. These effects are produced by the electric and magnetic fields of the transmission line, with one of the effects being corona discharge. Corona effects are manifest as audible noise (AN), radio interference (RI), and television interference (TVI). These particular effects are minimized by line location, line design, and construction practices. The project lines were modeled using the Electric Power Research Institute (EPRI) ACDCLine software to calculate the various electromagnetic effects which are presented here. This Project involves a new transmission line serving a battery storage center, with a charging scenario and discharging scenario modeled. Summary levels represent the highest modeled results for the two scenarios. Exhibit I-7 below gives a diagram of the line path.

Corona

Corona is a luminous discharge due to ionization of the air surrounding a conductor and is caused by a voltage gradient, which exceeds the breakdown strength of air. Corona is a function of the voltage gradient at the conductor surface. This voltage gradient is controlled by engineering design and is a function of voltage, phase spacing, height of conductors above ground, phase geometry, and meteorological conditions. In particular, irregularities on the surface of the conductor such as nicks, scratches, contamination, insects, and water droplets, increase the amount of corona discharge. Consequently, during periods of rain and foul weather, corona discharges increase. For the transmission design configurations considered for this project, the calculated peak voltage gradient at the conductor surface was consistently in the range of 10.4 to 11.4 kilovolt root-mean-square per centimeter (kVrms/cm). For comparison purposes, the breakdown strength of air is 21.1 kVrms/cm at 25 degrees Celsius and 76 mm barometric pressure.

Corona represents power loss on the transmission line and creates transmission line noise. Successful operation of 230kV lines with similar gradients indicates that these transmission lines will not create adverse corona effects.

Transmission Line Audible Noise

Audible noise (AN) is created by corona discharge along the transmission line. As a result, the amount of audible noise is directly related to the amount of corona, which is in turn affected by meteorological conditions (most notably rain). Transmission line audible noise is categorized into broadband high-frequency sounds, which can be described as hissing or sputtering, and low-frequency tones, which are best described as humming sounds.

The highest calculated audible noise levels generated by these transmission line designs during foul weather (rain) may occasionally reach 40.1 decibels (dB) measured on an "A" weighted scale [dB(A)] at the edge of the right-of-way. These noise levels would occur during very heavy rain conditions,[2] and those

[2] Heavy rain conditions are designated statistically as L5 conditions (95% of the time noise levels are at or below the specified values).

conditions would serve to mask the noise. During light rain,[3] or wet conductor conditions, the expected audible noise is in the range of 27.3 dB(A) or lower at the edge of the right-of-way. During fair weather, the audible noise generated by this line as heard at the edge of the right-of-way is significantly reduced, with a maximum calculated value of 14.6 dB(A).

Study work of transmission line noise has categorized noise levels by the probability of complaints being generated. A level of 52.5 dB(A) or lower at a distance of 100 feet from the centerline of a line has been found to generate no complaint. The noise generated by this transmission line is well below this value and no noise problems due to this line are expected. Exhibits I-1 and I-2 show the calculated L50 fair weather and L50 rain audible noise levels for the worst-case model of the different line segments modeled.

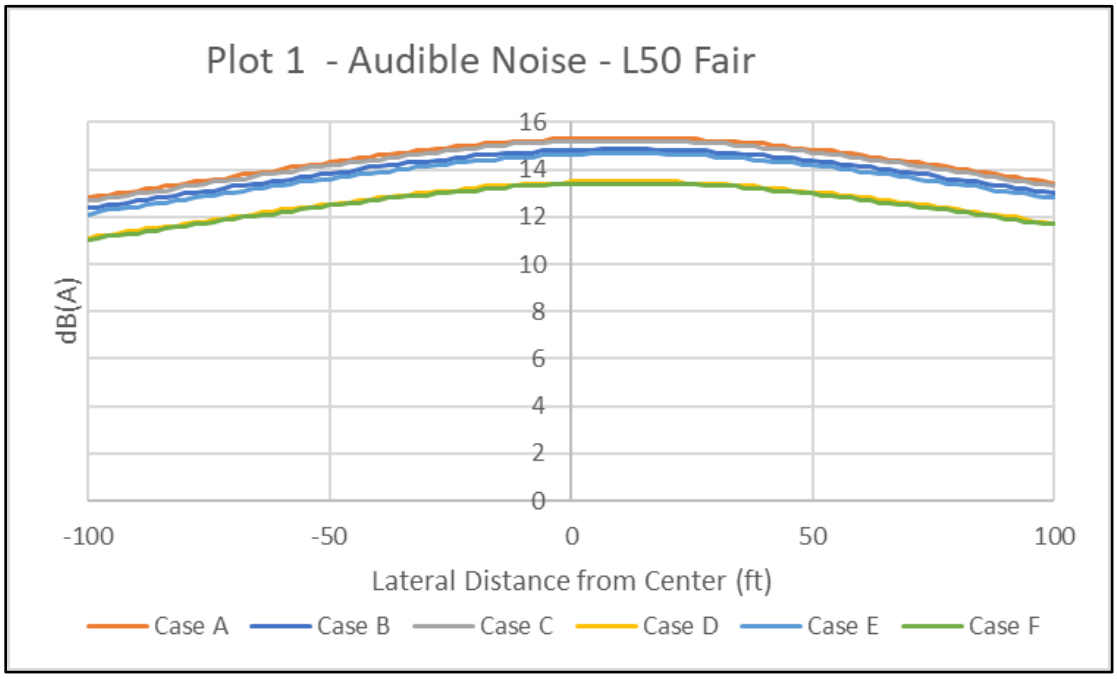


Exhibit I-1. Calculated L50 Fair Weather Audible Noise Levels

[3] Light to moderate rain levels are designated statistically as L50 conditions (50% of the time noise levels are at or below the specified values).

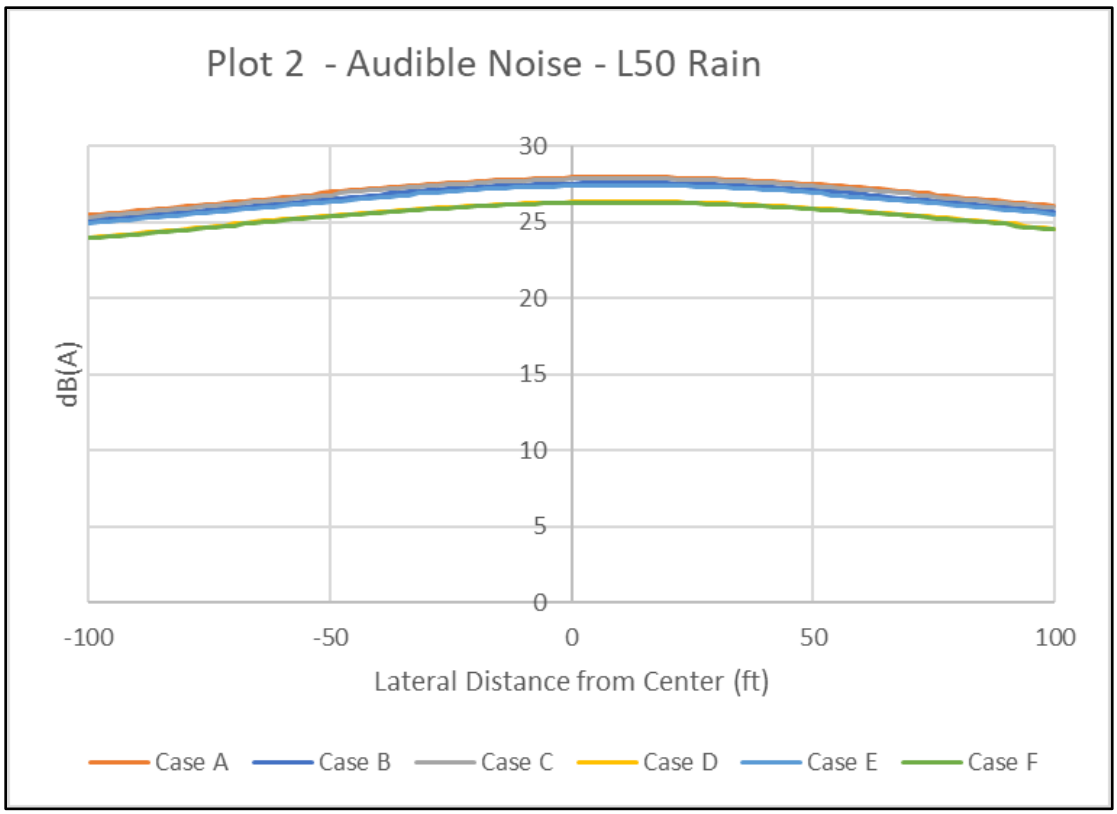


Exhibit I-2. Calculated L50 Rain Audible Noise Levels

Radio Interference

Radio interference is the reception of spurious energy not generated by the transmitting station. This energy affects the amplitude modulated (AM) radio band, but not the frequency modulated (FM) radio band. Transmission line radio interference is caused by corona and by gap discharges. Gap discharges are electrical discharges across a small gap with the most common cause being loose hardware. Gap discharges comprise a large percentage of all interference problems and are easily remedied. Experience shows that gap discharges are not a problem with steel structures but are more prevalent with wood structures due to the expansion and contraction of the wood causing hardware to loosen.

Corona-caused radio interference impact is dependent on various factors, including distance from the line to the receiver, radio signal strength, ambient radio noise level, receiving antenna orientation, and weather conditions. A common practice of determining the expected level of radio interference is to calculate the transmission line radio interference at a frequency of 1 megahertz (MHz). As the frequency of interest increases, corona-produced radio noise reduces, with typical reductions in the range of 20 to 40 dB for a frequency increase from 1 MHz to 100 MHz (EPRI 1982) depending on the distance to the conductor.

Comparison of the calculated radio noise levels for the transmission line designs shows average stable fair-weather radio noise levels generated by these transmission lines to be 25.5 dB, at a distance of 100 feet from the outside phase. This compares favorably with the maximum suggested noise level of 40 dB. (Institute of Electrical and Electronics Engineers [IEEE] 1980). During inclement weather, transmission line noise levels increase to levels in the range of 46.8 to 47.1 dB, 100 feet from the outside phase (average stable foul-weather values). In addition to these comparisons of calculated and recommended interference values, transmission line experience for lines of similar design traversing similar terrain has shown radio interference to be acceptable. It is noted that other 230kV lines traverse the area near the proposed location. Should radio interference caused by the transmission line become unacceptable in a given situation, APS

is willing to work with the complainant to resolve the interference problem. Calculated radio interference plots for average stable fair-weather and foul-weather are given in Exhibits I-3 and I-4.

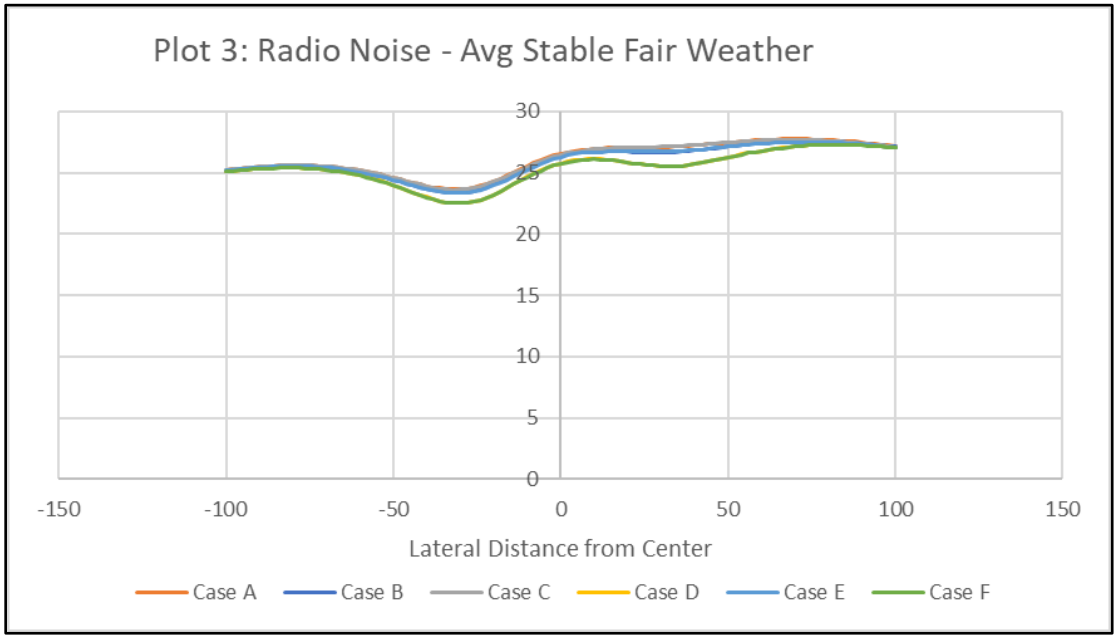


Exhibit I-3. Calculated Radio Interference, Fair Weather

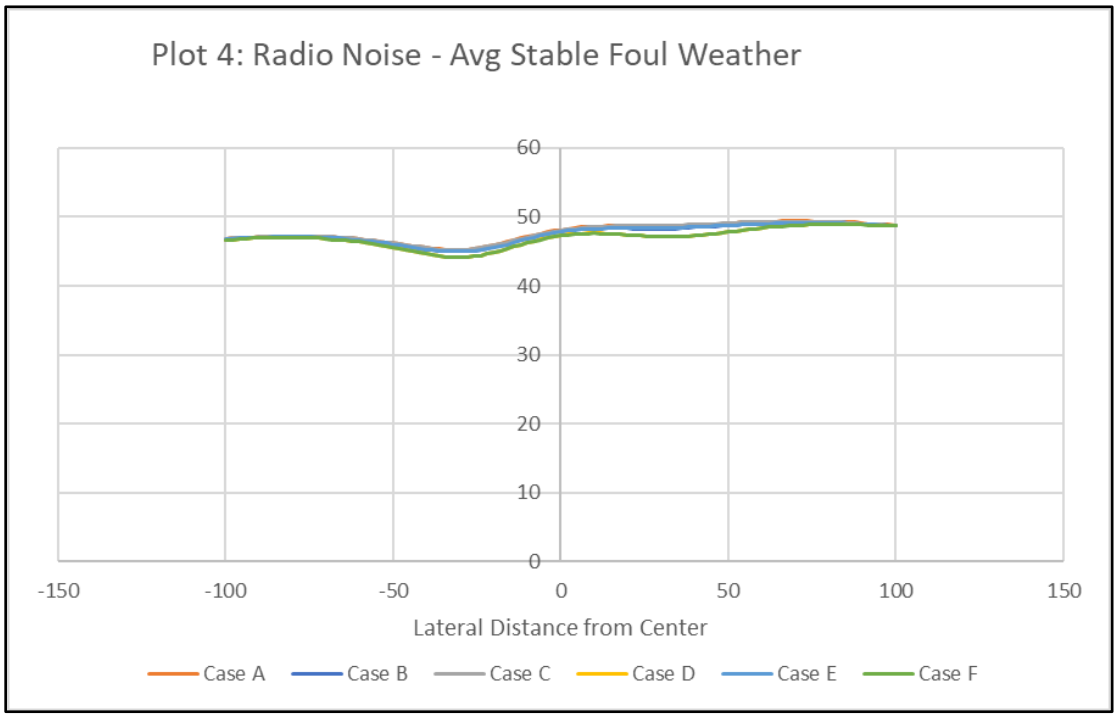


Exhibit I-4. Calculated Radio Interference, Foul Weather

Television Interference

Television interference effects are similar to radio interference. Traditional analog television broadcasts occur in three ranges:

54–88 MHz (Channels 2–6)

174–216 MHz (Channels 7–13)

470–890 MHz (Channels 14–83)

Transmission line interference reduces with increasing frequency above 100 MHz. Consequently, television interference (TVI) only affects the lower VHF band (Channels 2 through 6) and no interference would be experienced in the upper VHF (Channels 7 through 13) and UHF bands (Channels 14 through 83), even during foul weather.

No transmission line–generated television interference is expected along the lines, even during periods of inclement weather, since expected TVI levels at the edge of the right-of-way are expected to be similar to other operating 230kV lines which traverse similar terrain.

In cases where transmission line–generated television interference has been found to be a problem, it is generally the result of induced voltage on fences, conductors, and hardware, which are adjacent to the right-of-way. In these situations, the interference can be easily corrected by grounding the objects, or by realigning, relocating, or providing higher-gain television antennas. APS is prepared to assist affected parties in resolving TVI problems resulting from facilities operation. However, with the increasing popularity of newer technologies such as cable, satellite, and Internet-based television, transmission line television interference problems warranting any sort of corrective action are even more unlikely.

Electric and Magnetic Field Effects

Electric and magnetic field (EMF) effects are primarily electric and magnetic induction effects whereby voltages and currents are induced in nearby conductive objects by the voltage and current associated with the line.

Electrostatic induction is the capacitive coupling of a voltage onto insulated objects near the transmission line. The induced voltage is a function of the electric field associated with the line, which in turn is a function of the line voltage. Other factors which affect the level of induced voltage include insulation, object orientation and dimensions, and line height. When a person reaches to touch a conducting object which has been charged by electrostatic induction, a spark discharge will occur similar to that experienced by a person reaching for a doorknob after walking on a nylon carpet—with the difference that sparking will continue to occur as long as the person's hand remains close to the object. Based on computer modeling, the electric fields associated with the proposed transmission lines will be consistent with the electric field values of similar existing 230kV transmission lines. No electrostatic induction problems are anticipated. Should any electrostatic induction problems occur, they can be easily corrected by grounding the conductive objects. Exhibit I-5 shows the expected electric field (calculated 1 m above ground) for the various expected configurations of the lines. Note that the expected electric field is well below the 5 kV/m limit outside the right-of-way and 10 kV/m inside the right-of-way, as specified by IEEE Standards (IEEE 2002).

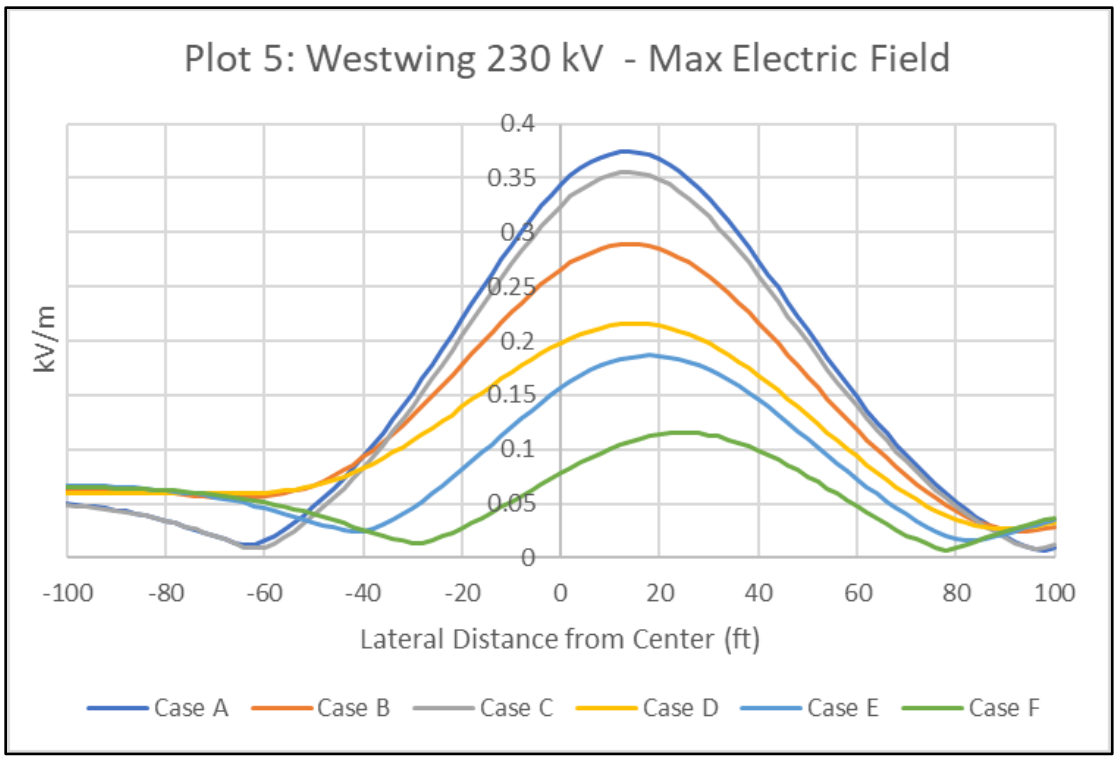


Exhibit I-5. Expected Electric Field

The magnetic fields associated with transmission lines can also induce voltages and currents in conductive objects (e.g., fences, communication lines, railroads, pipelines, etc.), which are close to and run parallel to the transmission line. The magnetic field level is a function of the current level in the transmission line, which in turn is a function of the line loading.

In addition to the electric and magnetic field induction issues described above, scientific and public interest regarding potential health effects of human exposure to 60 hertz EMF has led to extensive study for more than 30 years. One recent example of such research was a study completed in 2007 by the World Health Organization (WHO). The report, *Extremely Low Frequency Fields Environmental Health Criteria Monograph No. 238*, details the results of a health risk assessment of extremely low frequency (ELF) electromagnetic fields (EMF) up to 100 kHz. The WHO study found that scientific evidence that demonstrates a consistent pattern of increased risk for childhood leukemia due to chronic low-intensity power-frequency magnetic field exposure is based on epidemiological studies. The report goes on to state that "virtually all of the laboratory evidence and the mechanistic evidence fail to support a relationship between low-level ELF magnetic fields and changes in biological function or disease status" (WHO 2007:12). The report concludes, "Thus, on balance, the evidence is not strong enough to be considered causal, but sufficiently strong to remain a concern" (WHO 2007:12). The results of the WHO report support previous findings by the National Institute of Environmental Health Science (NIEHS 1999) and International Agency for Research on Cancer (IARC 2002) that the use of electricity does not pose a major unrecognized health danger.

As noted above, the WHO report did concur with the overall conclusions of the 2002 IARC report on electric and magnetic fields. The 2002 IARC report did not conclude that power frequency fields present a specific health risk; however, IARC did state that, with respect to childhood leukemia, power frequency magnetic fields are "possibly carcinogenic to humans". This finding was based on limited human evidence and inadequate evidence in experimental animals (IARC 2002).

The actual electric and magnetic fields associated with these power lines will depend on the final construction, the amount of current in the lines, height of the conductors, and other nearby sources of fields. Based on computer modeling of expected construction configuration and operating conditions, the electric and magnetic fields associated with these lines are comparable to other already existing lines of this voltage in the state. Exhibit I-6 shows the calculated magnetic field for the expected line configurations (calculated 1 m above ground).

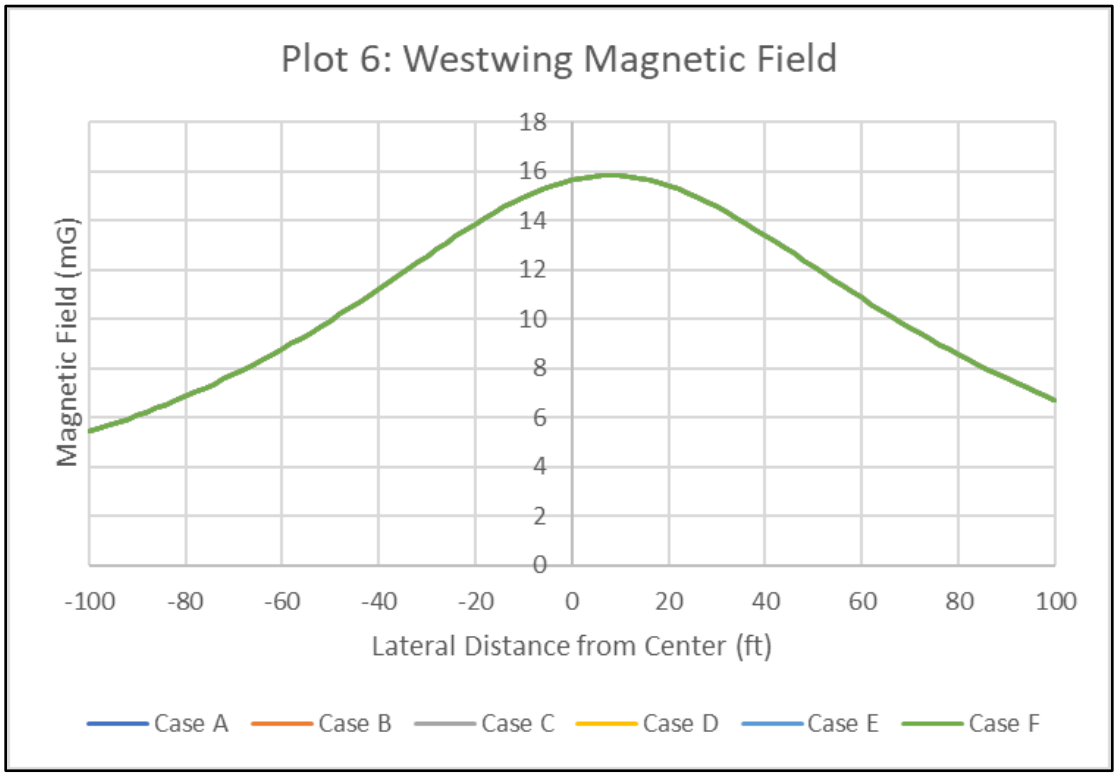


Exhibit I-6. Expected Magnetic Field

Calculation Notes

The EPRI ACDCLine program was used to calculate the various corona, noise, and electric/magnetic field quantities reported herein, based on the expected transmission line designs for the lines of interest. Different cases based on the different possible conductor phase configurations of the lines were modeled to represent the conditions expected along the entire line lengths.

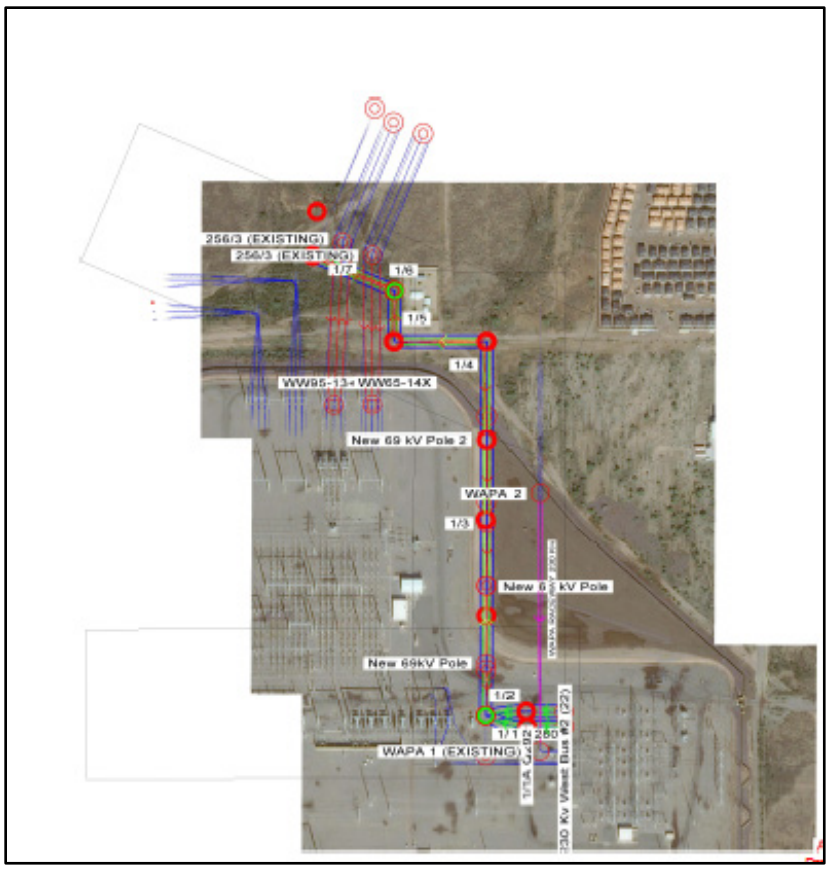


Exhibit I-7. Map of the Proposed Route

References

Electric Power Research Institute (EPRI). 1982. *EPRI Transmission Line Reference Book*. 2nd ed.

Institute of Electrical and Electronics Engineers (IEEE). 1980. *Review of Technical Considerations on Limits to Interference from Power Lines and Stations*. IEEE Radio Noise and Corona Subcommittee Report, RI Limits Task Force, Working Group #3, IEEE Transactions on Power Apparatus and Systems, Vol. PAS-99(1):365–388.

———. 2002. C95.6-2002: IEEE Standard for Safety Levels with Respect to Human Exposure to Electromagnetic Fields, 0–3 kHz. Available at: https://ieeexplore.ieee.org/document/1046043.

International Agency for Research on Cancer (IARC) 2002. *IARC Monographs on the Evaluation of Carcinogenic Risks to Humans*, Volume 80, *Non-Ionizing Radiation, Part 1: Static and Extremely Low Frequency (ELF) Electric and Magnetic Fields*. Lyon, France.

National Institute of Environmental Health Science (NIEHS). 1999. *Report on Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields*. National Institute of Environmental Health Sciences, National Institutes of Health, NIH Publication No. 99-4493.

World Health Organization (WHO). 2007. *Extremely Low Frequency Fields Environmental Health Criteria Monograph No. 238*. ISBN 978-92-4-157238-5. Geneva, Switzerland: World Health Organization. Available at: https://www.who.int/peh-emf/publications/elf_ehc/en/.

EXHIBIT J. SPECIAL FACTORS

As stated in the Arizona Corporation Commission Rules of Practice and Procedure R14-3-220, Ex. J:

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

Introduction

This exhibit includes information on the public and agency involvement program that has been conducted for the Project. The outreach efforts provided information to agencies and individuals, solicited feedback on the proposed Project and information on the Project Area, and helped to identify potential issues relative to the Project.

In addition, this exhibit includes the Draft Environmental Assessment, developed by WAPA for the ESP.

Public Involvement Program Summary

The public involvement program was initiated to ensure that the local jurisdictions, relevant agencies, and community residents were provided with the opportunity to relay information or potential concerns.

To reach the affected residents and agencies, APS and SWCA instituted multiple public participation activities, including a virtual public open house meeting, jurisdictional and agency briefings, a newsletter mailing, newspaper and Facebook advertisements, a telephone information line, a website, and a customer email.

Project Newsletters

One newsletter was prepared during the public involvement process to provide technical information to the public, announce the virtual public open house, and inform the public of the various methods to comment on the Project (e.g., in writing, by telephone, and via the Project's website or email address) and otherwise become involved in the siting process. Two additional newsletters are upcoming.

Newsletter One

The first Project newsletter mailing (Exhibit J-1) was prepared and distributed in March 2021 to more than 2,300 residents, businesses, landowners, agencies, and key stakeholders within the Study Area. The newsletter served to announce the Project to the public and provide notice of the virtual public open house meeting made available starting March 23, 2021. The content of the newsletter included an overview of the Project's purpose and need, an overview of the siting process, a description of the infrastructure being proposed, and information about when, where, and how the public could be involved in the process.

Future Newsletter Two

A second newsletter is being prepared for distribution anticipated in July 2021, and will announce the filing of this CEC Application, as well as the dates of the Project's Siting Committee hearings. This mailing will be sent to the same mailing list used in the previous newsletter mailing.

Future Newsletter Three

A third newsletter will be distributed following any Project decisions made relative to this CEC Application by the ACC. The newsletter will announce the ACC's decision and provide further information on the anticipated timing of the construction and operation of the Project facilities. This mailing will be sent to the same mailing list used in the previous newsletter mailings.

Website

A Project website (aps.com/westwingproject) was created and maintained to provide access to Project information and electronic copies of distributed materials. Through the website, viewers can access the newsletter, maps, and virtual public open house. Viewers can also provide their comments or questions on the Project through an embedded comment form on the website. The website address was advertised in newsletters, in the virtual open house, in paid newspaper advertisements, on the Project information line, and a customer email. A copy of this website is included in Exhibit J-2.

Virtual Open House

An online Project virtual open house (westwingopenhouse.com) was hosted for the Project starting March 23, 2021. The virtual open house was announced in the newsletter, through paid newspaper advertisements, on the Project website and telephone information line, and a customer email.

The virtual open house format entailed an interactive website, with Project information provided in clickable modules and videos which allowed interested parties to visit and review the materials at their convenience, and to ask questions, request information, or provide comment through embedded comment forms. The clickable modules included large maps and text displays with highlighted details of the Project, including the Project's purpose and need, proposed facilities, facility siting criteria and process, environmental data, and images simulating what the Project would look like after construction, as proposed. Following the online publishing of the virtual open house, APS initiated a 2-week comment period, requesting that stakeholder comments or questions be provided by April 6, 2021; the virtual open house remained accessible after this date.

A copy of the comment form provided through the virtual open house and Project website is included in Exhibit J-3. Images taken of the virtual open house are included in Exhibit J-4, and the informational display boards presented in the virtual open house are also included in Exhibit J-4.

Media Relations

APS placed paid advertisements in the *Arizona Republic*, *Peoria Independent*, and *Sun City Independent*, all of which have a distribution territory that encompasses the Project Area. These advertisements introduced the Project and announced the virtual open house meeting. Advertisements were published in the *Arizona Republic* on March 17, March 19, and March 20; in the *Peoria Independent* on March 24; and in the *Sun City Independent* on March 17, 2021. A copy of the display advertisement is included in Exhibit J-6.

Social Media

APS purchased Facebook and Instagram advertisements, which were shown to individuals within the Project Study Area. These advertisements informed individuals of the Project and provided information on the CEC hearings.

Telephone Line

APS created a dedicated telephone information line as an additional opportunity for members of the public to learn about the Project and to leave comments or questions. The telephone number was provided in the newsletter mailing, the newspaper advertisements, the Project website, and through the virtual open house. Initially, the telephone line gave a brief message about the Project and announced the Project virtual open house and associated comment period. Following the completion of the 2-week comment period, APS updated the telephone line message to inform callers that APS was in the process of reviewing comments and developing an Application for CECs. The telephone line continued to provide callers with the opportunity to leave a voicemail comment or request information.

All voice messages requesting further information were returned within approximately 24 hours by a Project team member unless they were received on a weekend or holiday.

Agency and Local Officials Briefings

During the Project process, team members coordinated with City of Peoria and Maricopa County representatives, including elected officials and planning staff, and others to relay information on the Project, answer questions, and request feedback. These meetings enabled the Project team to identify stakeholder issues, consider suggestions during the planning process, and relay information on developments in the Project.

Public Comment

Throughout the public involvement program, comments from the public were solicited and considered in the planning process. As part of the public involvement program, comments were received from three individuals either by written comment form, email, or voicemail. Comments from agency and jurisdiction representatives were also received and considered in the planning process.

Comments received contained questions about the location and look of the Project as well as questions about structures associated with the Project and the surrounding electrical infrastructure.

A listing of the comments, including APS responses where applicable, is included as Table J-1.

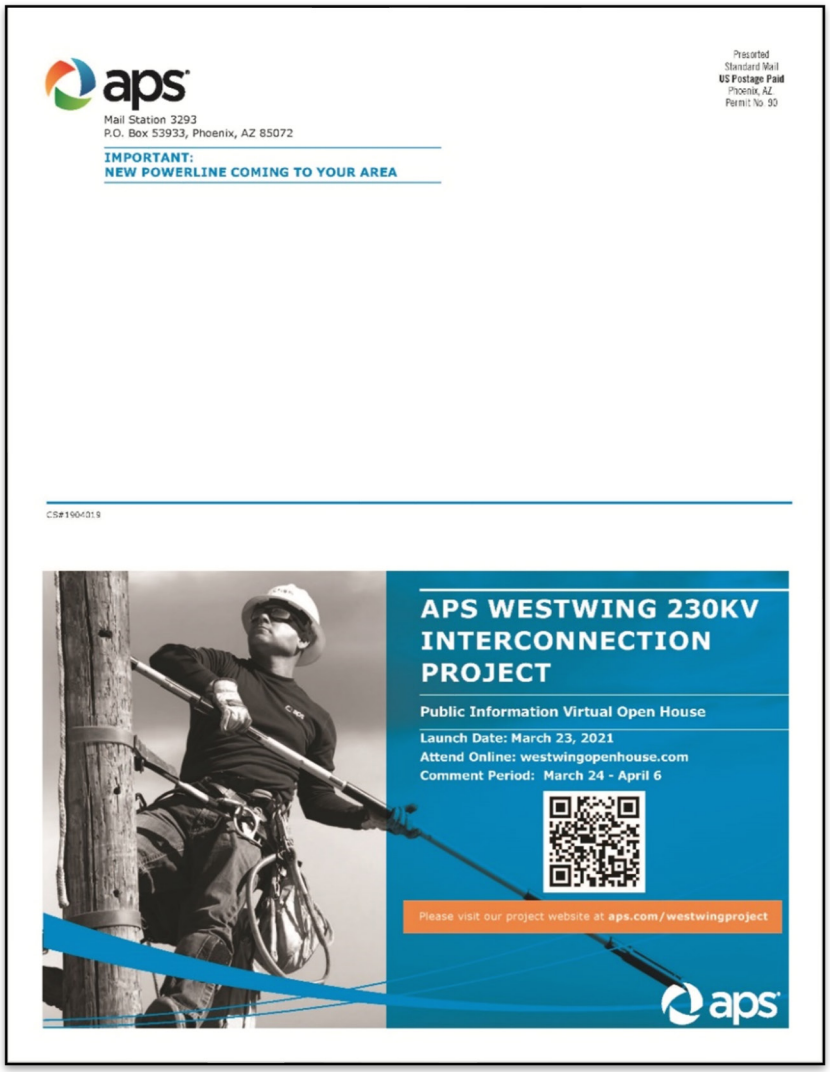
Western Area Power Administration Draft Environmental Assessment

The Draft Environmental Assessment, developed by WAPA, is included as an attachment to this Exhibit J.

Table J-1. Comments Received

Comment #	Comment	Response
1	Yes, I'd like a return call this is Janine Linsenmeyer of HR L Peoria LLC. I own the property HR Peoria, which I believe is just adjacent to this battery storage project. That is anticipated. I would like someone to give me a call and tell me if this line is project to go anywhere near my property. Thank you very much look forward to your call.	The APS Environmental Consultant, Devin Petry, called Ms. Linsenmeyer to answer her questions and was able to leave a voicemail for her letting here know that her property is located west and adjacent to the ESP (being developed by AES), and that the APS transmission line being proposed would follow an existing alignments and interconnect into the ESP adjacent to her property. Ms. Linsenmeyer called Mr. Petry back in response to the voicemail. The two discussed the adjacent location of the ESP to the Project as well as the proposed installation of the project transmission line noting that the facilities are not proposed on Ms. Linsenmeyer's property, but adjacent. Upon understanding the location of the project, Ms. Linsenmeyer noted her concern about the project's effect on her ability to develop to a residential use at some point in the future.
2	(Voicemail) Hi, my name is Chris Koester I am currently studying the proposed to 230 kV line at West Wing and from reviewing the materials provided by APS I've noticed that the planet max structure height is approximately 150 feet and that that is shorter than nearby structures. According to APS materials. I'm now trying to determine the heights of the existing structures at both Westwing and the adjacent Perkins substation and I was hoping That you could perhaps provide me with some documentation or information confirming the heights of those nearby existing structures at West Wing. I would appreciate any information that you can provide. (Email) I am currently studying APS's proposed 230 kV transmission line at the Westwing Substation. As part of our research, we are also trying to determine the heights of the existing transmission structures located at Westwing and SRP's Perkins Substation. Is there any information or documentation that you could provide that would confirm the heights of the existing structures? Thank you in advance for your help. Regards, Chris Koester	Chris Koester submitted a comment via voicemail and email. Kevin Duncan responded to Mr. Koester informing him that he is gathering typical height structure information of the APS structures in and around the Westwing Substation. Mr. Duncan noted that he is unable to provide specific structure heights for all structures in the area because some equipment and structures, such as SRP's Perkin's substation, are owned and operated by other companies. Mr. Duncan later provided typical heights of structures in the APS system including Typical 500kV A-frames (within the substation): 40'-80'; Typical 500kV towers/structures: 130'-160'; Typical 230kV A-frames (within the substation): 40'-60'; Typical 230kV towers/structures: 120'-150'. Mr. Duncan noted that these are the current design standards, and the heights present in both the Westwing Substation and the adjacent transmission lines may be taller than these ranges due to different standards applicable in the past, as well as the fact that the Westwing Substation contains many different lines which may necessitate line crossings which may require taller structures. Mr. Duncan concluded mentioning that APS usually designs with taller structures to minimize the number of poles needed, but every design is site specific.

Comment #	Comment	Response
3	Hi, I do NOT want poles and wires in my area. That is one reason I bought a house out here… no wires over our house and area. Please go somewhere else and do your project. Thanks, Mary Whitten	Comment noted. Ms. Whitten's home is located approximately 0.80 miles southeast of the Project, on the opposite side of the Loop 303 freeway.
4	Hi, my name is Les Kennedy. This is in regards to the Westwing Open House. My telephone number is *redacted*. This is in regards to the circle that you have here. And we're like, right on the border of where it says El Mirage and Williams Road. There's like two, three subdivisions right there. Are we not a part of this planned project? And does this have something to do with solar? Once again my name is Les Kennedy and my number is *redacted*. Thanks.	Kevin Duncan called Mr. Kennedy and the two discussed the following: 1) Mr. Kennedy was unclear on what the study area boundary on the project map meant. Through discussion, Mr. Duncan assisted Mr. Kennedy in understanding what the study area boundary was for, and that the overall project (including the AES facility) may benefit customers throughout the APS service territory. 2) Mr. Kennedy was unclear of how the project was being funded. He was concerned that he might be paying for it without benefitting. Mr. Duncan clarified that the project proponent is directly paying for the APS project work, as with most customer projects. 3) Mr. Kennedy and Mr. Duncan discussed the nature of the project and why the impacts from the transmission line will be minimal in its planned location due to the circumstances of the site.



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IMPORTANT:
NEW POWERLINE COMING TO YOUR AREA

CS#1904019

APS WESTWING 230KV INTERCONNECTION PROJECT

Public Information Virtual Open House

Launch Date: March 23, 2021
Attend Online: westwingopenhouse.com
Comment Period: March 24 - April 6

Please visit our project website at **aps.com/westwingproject**

aps

APS WESTWING 230KV INTERCONNECTION PROJECT

APS WESTWING 230KV INTERCONNECTION PROJECT

March 2021

We are proposing to build the APS Westwing 230kV Interconnection Project, a new 230-kilovolt (kV) transmission line needed to interconnect a separate customer proposed battery electrical storage project to the existing Westwing Substation.

The proposed battery electrical storage facility will enhance the APS electric system throughout the Phoenix metropolitan area. With this facility comes a need for a new 230kV transmission line to interconnect the customer battery electrical storage facility to the existing Westwing substation, located west of Loop 303, south of Happy Valley Road.

We are dedicated to providing safe and reliable electric service to make this facility a part of our system. Our plan is to rebuild and co-locate the new transmission line with an existing 69kV line for a total length of approximately 0.5 mile.

A new 230kV transmission line, approximately 0.5 mile in length, between the planned customer battery storage facility and the existing Westwing Substation, which we will rebuild and co-locate with an existing 69kV line.

To interconnect the planned customer battery storage facility north of the Westwing Substation with our system in order to enhance the capability of the system and allow flexibility in the delivery of power to customers.

We will rebuild and co-locate the new transmission line with an existing 69kV line that runs adjacent to and between the customer proposed battery storage project, located south of Happy Valley Road and east of the El Mirage Road alignment, and the Westwing Substation, located south of Happy Valley Road, west of Loop 303.

PROJECT SCHEDULE

1ST QUARTER 2021
- Project Announcement
- Data Collection
- Stakeholder Engagement

2ND QUARTER 2021
- Virtual Open House
- Prepare and File CEC* Application
- Continue Public and Stakeholder Outreach

3RD QUARTER 2021
- Arizona Power Plant and Transmission Line Siting Committee Hearings for CEC* Application

Certificate of Environmental Compatibility

aps

Exhibit J-1a. Project Newsletter One – Pages 1 and 2

TYPICAL STRUCTURES*

We work hard to balance the energy needs of our customers while protecting the environment and natural beauty of the area.

The rebuilt transmission line structures will consist of double-circuit 230kV steel monopoles with a double-circuit 69kV built lower on the pole. The steel monopoles are anticipated to be up to 150 feet in height, which is generally shorter than nearby existing transmission structures.

**Exact structure, height and right-of-way width may vary*

PUBLIC INPUT

An important component of our siting process is the receipt of input from residents, tenants, property owners, businesses, and recreational users within the study area. Members of the public and all interested parties are invited to visit our virtual open house at any time online at **westwingopenhouse.com**, to learn more about the purpose and need for the project and the siting process. You will be able to provide input and, if desired, request a call to speak with one of our subject matter experts. If you cannot access the site online, you can call or email a request for a hard copy of the open house materials to be mailed.

We welcome your feedback for this project. All comments must be submitted by April 6, 2021, to ensure its review and consideration in this process. To learn more, please visit the APS Westwing 230kV Interconnection Project website at **aps.com/westwingproject**. Comments and questions may be submitted within the virtual open house by clicking the comments form link on the project website, or by phone or email to:

KEVIN DUNCAN
Senior Siting Consultant
Project information phone number: (623) 303-3796
westwinginterconnection@aps.com

Public Information Virtual Open House

Launch Date: March 23, 2021
Attend Online: westwingopenhouse.com
Comment Period: March 24, 2021 - April 6, 2021

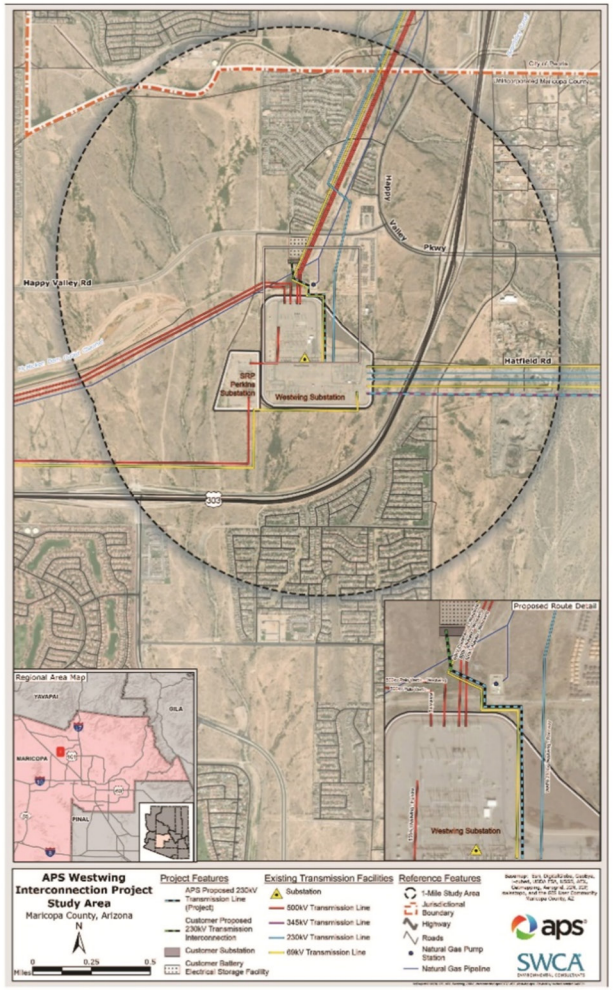


Exhibit J-1b. Project Newsletter One – Pages 3 and 4

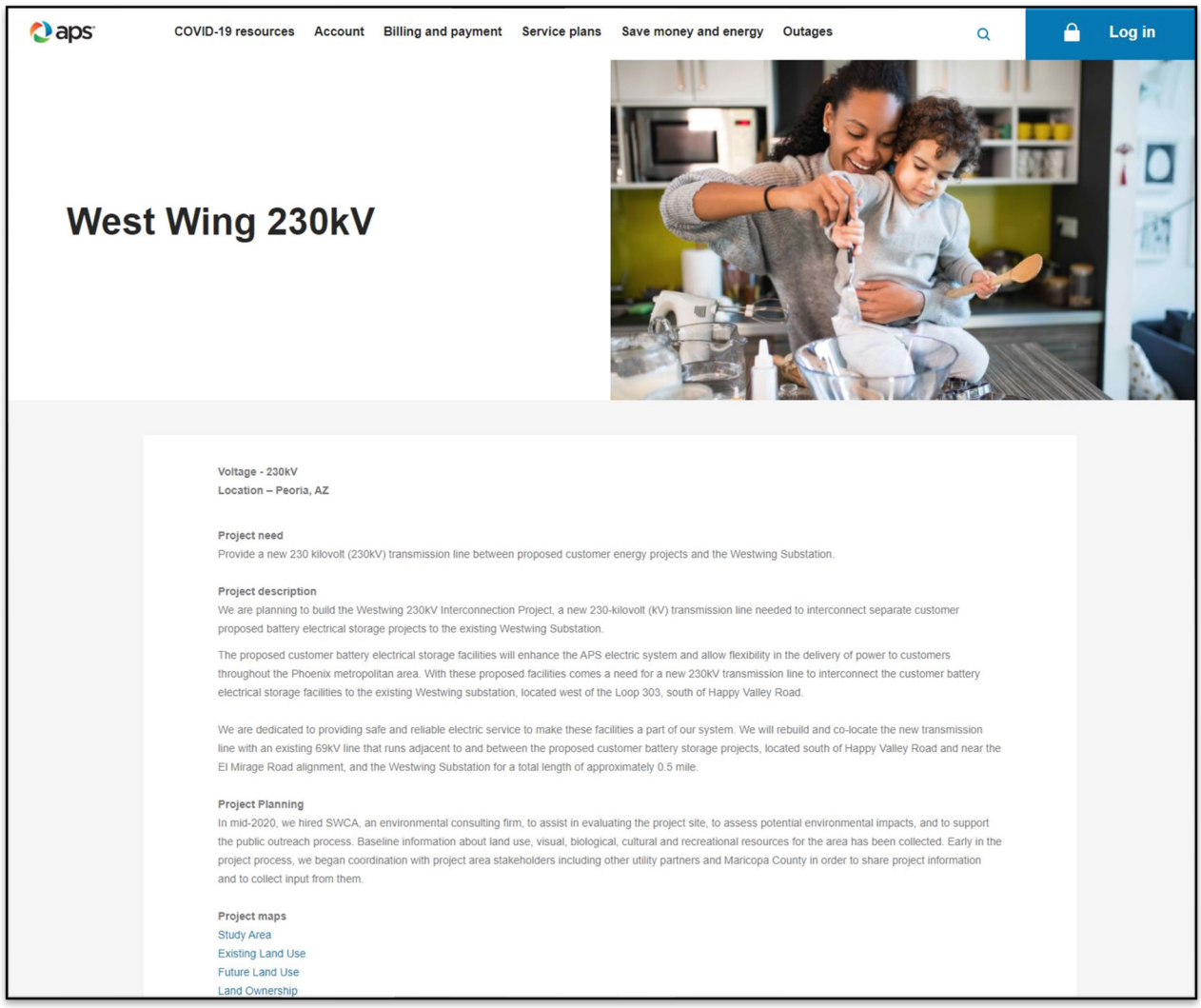
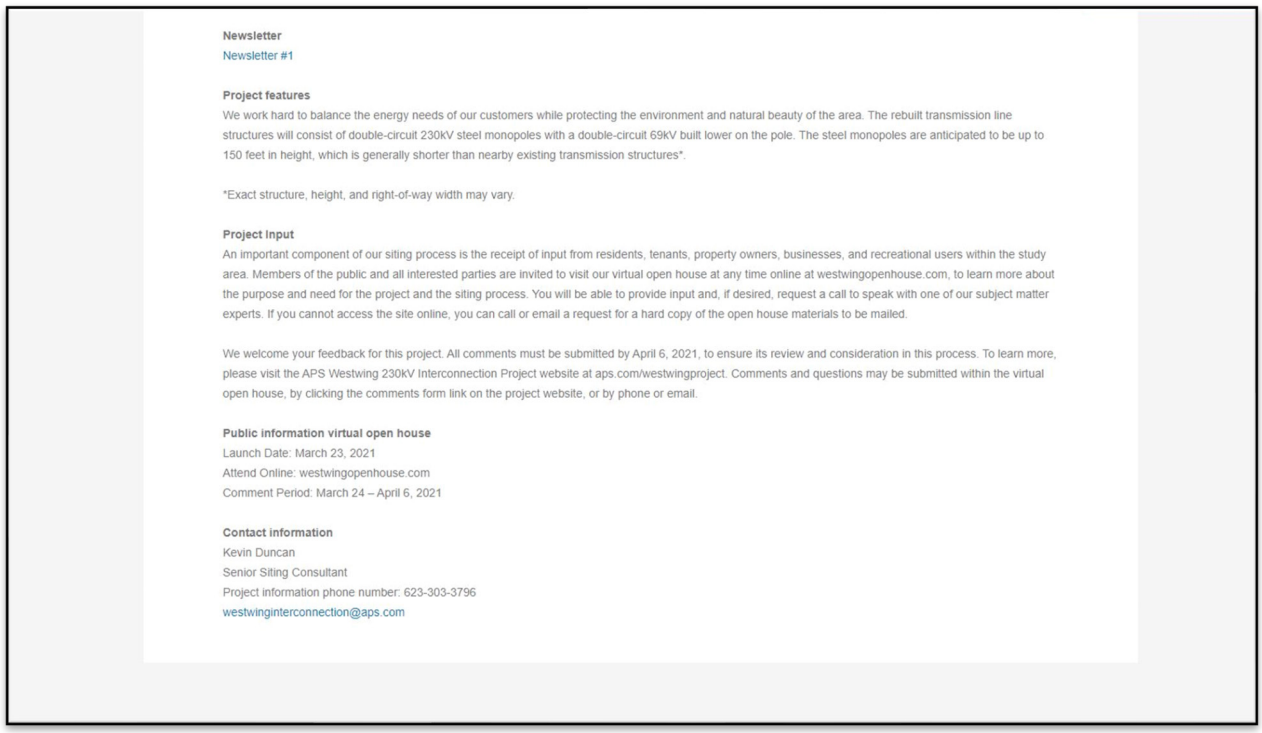


Exhibit J-2a. Project Website



Newsletter
Newsletter #1

Project features
We work hard to balance the energy needs of our customers while protecting the environment and natural beauty of the area. The rebuilt transmission line structures will consist of double-circuit 230kV steel monopoles with a double-circuit 69kV built lower on the pole. The steel monopoles are anticipated to be up to 150 feet in height, which is generally shorter than nearby existing transmission structures*.

*Exact structure, height, and right-of-way width may vary.

Project Input
An important component of our siting process is the receipt of input from residents, tenants, property owners, businesses, and recreational users within the study area. Members of the public and all interested parties are invited to visit our virtual open house at any time online at westwingopenhouse.com, to learn more about the purpose and need for the project and the siting process. You will be able to provide input and, if desired, request a call to speak with one of our subject matter experts. If you cannot access the site online, you can call or email a request for a hard copy of the open house materials to be mailed.

We welcome your feedback for this project. All comments must be submitted by April 6, 2021, to ensure its review and consideration in this process. To learn more, please visit the APS Westwing 230kV Interconnection Project website at aps.com/westwingproject. Comments and questions may be submitted within the virtual open house, by clicking the comments form link on the project website, or by phone or email.

Public information virtual open house
Launch Date: March 23, 2021
Attend Online: westwingopenhouse.com
Comment Period: March 24 – April 6, 2021

Contact information
Kevin Duncan
Senior Siting Consultant
Project information phone number: 623-303-3796
westwinginterconnection@aps.com

Exhibit J-2b. Project Website (continued)

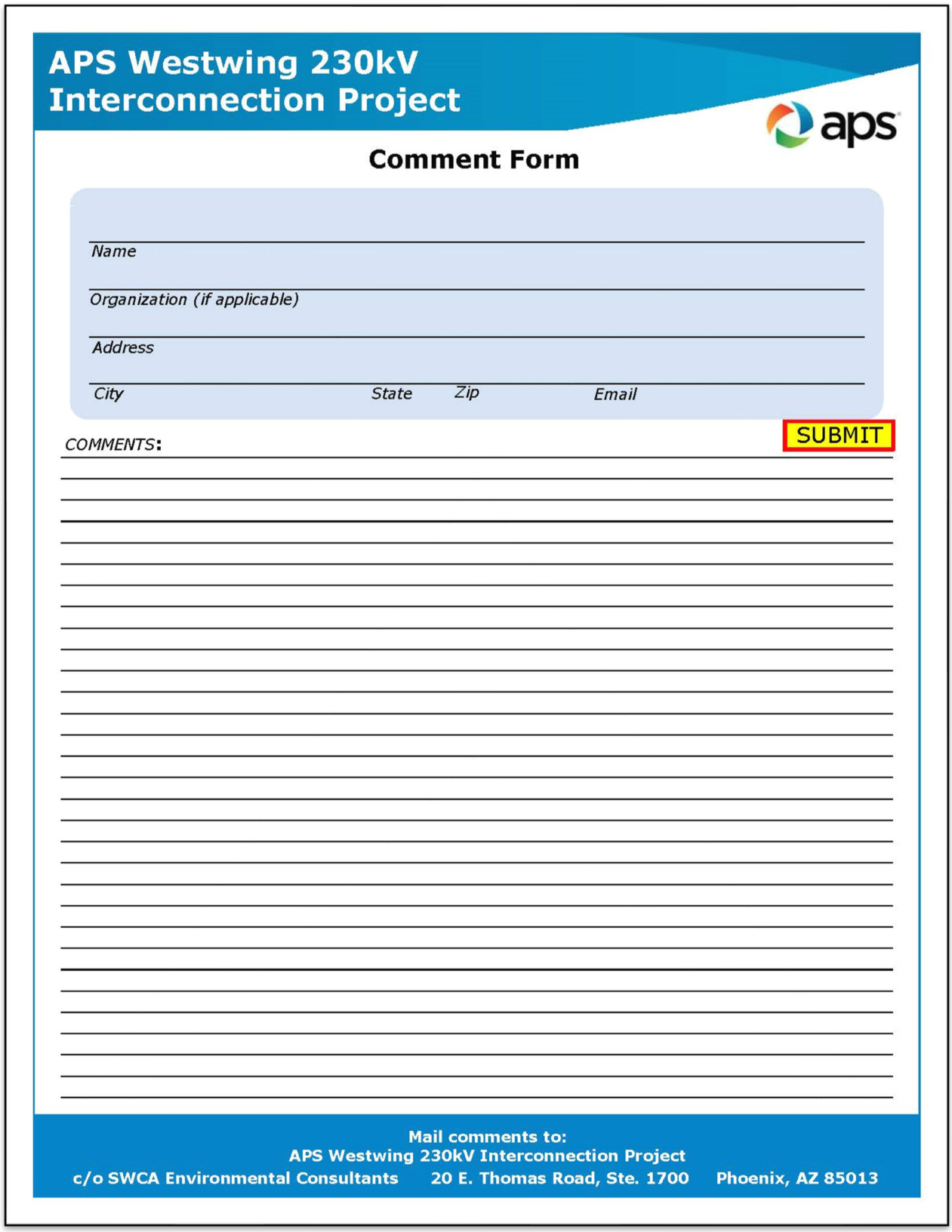


Exhibit J-3. Project Comment Form

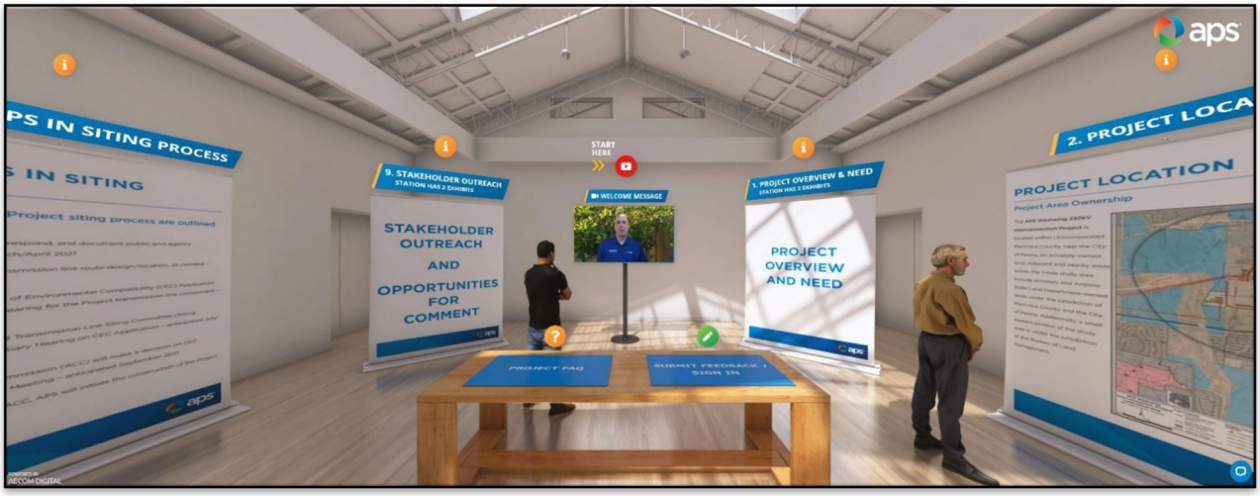


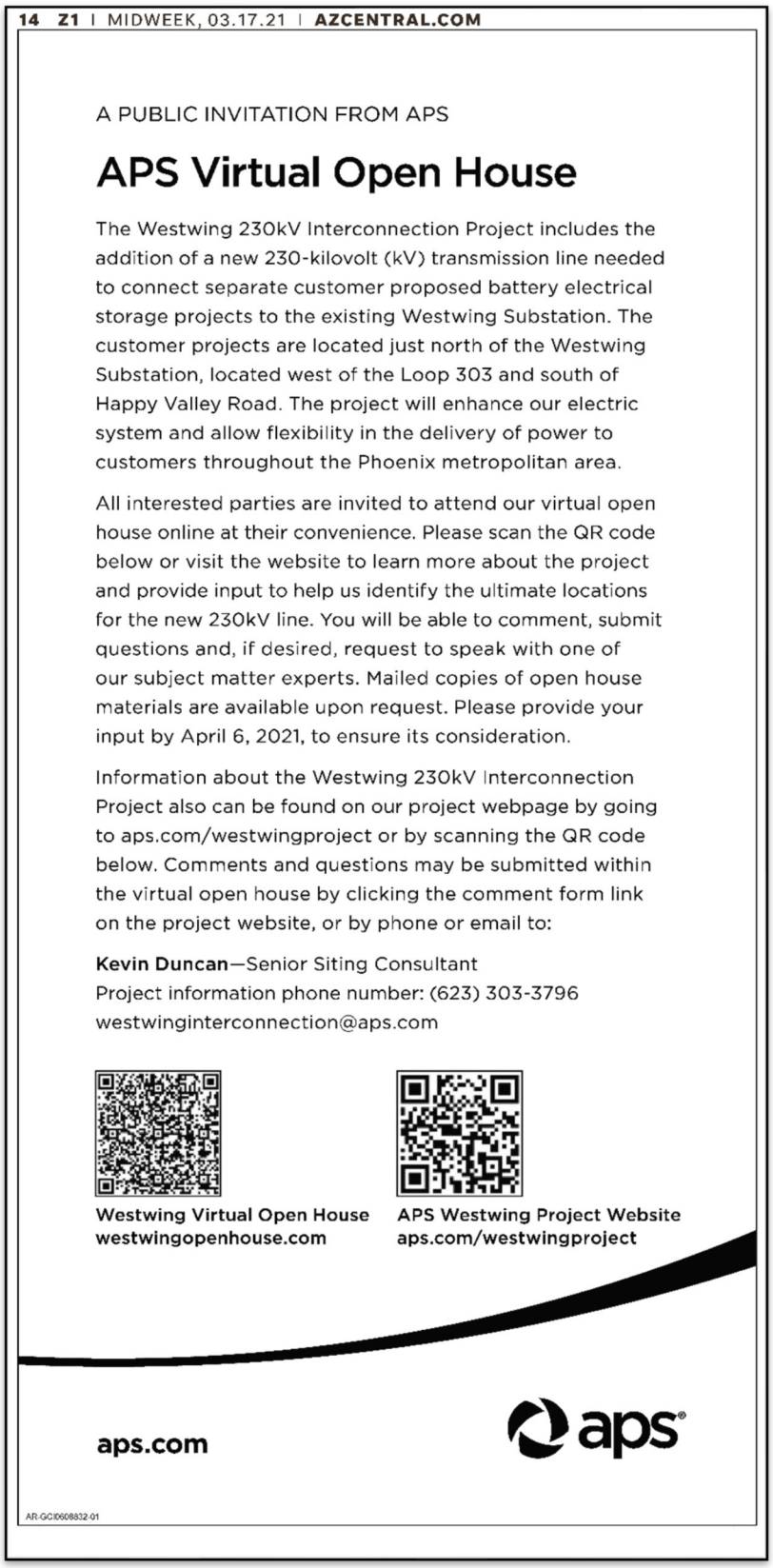
Exhibit J-4a. Project Virtual Open House

Exhibit J-4b. Project Virtual Open House (continued)

Exhibit J-4c. Project Virtual Open House (continued)

Exhibit J-4d. Project Virtual Open House (continued)

Exhibit J-4e. Project Virtual Open House (continued)



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A PUBLIC INVITATION FROM APS

APS Virtual Open House

The Westwing 230kV Interconnection Project includes the addition of a new 230-kilovolt (kV) transmission line needed to connect separate customer proposed battery electrical storage projects to the existing Westwing Substation. The customer projects are located just north of the Westwing Substation, located west of the Loop 303 and south of Happy Valley Road. The project will enhance our electric system and allow flexibility in the delivery of power to customers throughout the Phoenix metropolitan area.

All interested parties are invited to attend our virtual open house online at their convenience. Please scan the QR code below or visit the website to learn more about the project and provide input to help us identify the ultimate locations for the new 230kV line. You will be able to comment, submit questions and, if desired, request to speak with one of our subject matter experts. Mailed copies of open house materials are available upon request. Please provide your input by April 6, 2021, to ensure its consideration.

Information about the Westwing 230kV Interconnection Project also can be found on our project webpage by going to aps.com/westwingproject or by scanning the QR code below. Comments and questions may be submitted within the virtual open house by clicking the comment form link on the project website, or by phone or email to:

Kevin Duncan—Senior Siting Consultant
Project information phone number: (623) 303-3796
westwinginterconnection@aps.com

Westwing Virtual Open House
westwingopenhouse.com

APS Westwing Project Website
aps.com/westwingproject

aps.com

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AR-GCI0608832-01

Exhibit J-5. Display Advertisement

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APPENDIX J. DRAFT ENVIRONMENTAL ASSESSMENT ARIZONA PEAKING CAPACITY ENERGY STORAGE PROJECT, DOE/EA-2123

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DRAFT ENVIRONMENTAL ASSESSMENT

Arizona Peaking Capacity Energy Storage Project, DOE/EA-2123

Prepared by

U.S. Department of Energy
Western Area Power Administration
Desert Southwest Region

Cooperating Agencies

U.S. Department of the Interior
Bureau of Reclamation
Phoenix Area Office

June 2021

LIST OF ACRONYMS AND ABBREVIATIONS

AES	AES Energy Storage, LLC
ACC	Arizona Corporation Commission
ADA	Arizona Department of Agriculture
ADOT	Arizona Department of Transportation
AGFD	Arizona Game and Fish Department
APLIC	Avian Power Line Interaction Committee
Applicant	AES Energy Storage, LLC
APS	Arizona Public Service
ASM	Arizona State Museum
BESS	battery energy storage system
BLM	Bureau of Land Management
BMP	Best Management Practice
BMS	Battery Management System
CEC	Certificate of Environmental Compatibility
CESA	Cumulative effects study area
CFR	Code of Federal Regulations
DOE	United States Department of Energy
EA	Environmental Assessment
EPA	Environmental Protection Agency
ESA	Endangered Species Act
F-Stop	fast response shutdown sequence
FERC	Federal Energy Regulatory Commission
GHG	Greenhouse gas
HDMS	Heritage Data Management System
HV	high voltage
HVAC	heating, ventilation, and air conditioning
KOP	Key Observation Point
kV	kilovolt
LGIA	Large Generator Interconnection Agreement
LV	low-voltage
MBTA	Migratory Bird Treaty Act
MPH	miles per hour
MV	medium-voltage
MW	megawatt
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NESC	National Electrical Safety Code
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
NSTS	Navajo Southern Transmission System
O&M	operations and maintenance
Project	Arizona Peaking Capacity Energy Storage Project
Proposed Action	Federal Action
ROW	right-of-way
sf	square feet
SHPO	State Historic Preservation Officer
State	Arizona
SWPPP	Stormwater Pollution Prevention Plan
TCP	Traditional cultural properties
TIP	Transmission Infrastructure Program
USACE	U.S. Army Corps of Engineers
Reclamation	U.S. Bureau of Reclamation
USFWS	United States Fish and Wildlife Service
WAPA	Western Area Power Administration
WOTUS	Waters of the U.S.

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EXECUTIVE SUMMARY

PROJECT LOCATION

The Arizona Peaking Capacity Energy Storage Project (Project) is located in Maricopa County, Arizona, approximately 25 miles northwest of Phoenix and 11.8 miles west of Interstate 17 on approximately 6 acres of privately owned land.

PROJECT PARTICIPANTS AND BACKGROUND

Western Area Power Administration (WAPA), a Federal power marketing agency within the U.S. Department of Energy (DOE), is the lead Federal agency for the Project under the National Environmental Policy Act (NEPA) review. The U.S. Bureau of Reclamation (Reclamation) Phoenix Area Office is a cooperating agency under NEPA. AES Energy Storage, LLC (AES or the Applicant) is a private energy company and the Project proponent.

WAPA is responding to a request to fund the Applicant's proposed Project for project financing under the Transmission Infrastructure Program (TIP) for the proposed Project. As an owner of a share of the Navajo Southern Transmission System (NSTS), Reclamation is responding to the Applicant's Large Generator Interconnection Agreement (LGIA) request for the proposed Project. AES proposes to build, operate and maintain, and decommission an approximately 100-megawatt (MW) battery energy storage system (BESS) facility on approximately 6 acres of a 10-acre parcel of private land.

PURPOSE AND NEED

WAPA

WAPA's purpose and need is to respond to AES's request for project financing through its TIP. The TIP leverages WAPA's borrowing authority and transmission development expertise to help selected project applicants secure financing for a project, and if needed, address barriers and streamline project development activities. In addition to providing project financing, WAPA must also ensure that the proposed Project will not adversely impact its transmission system reliability or operations.

Reclamation

Reclamation's purpose and need is to respond to AES's LGIA request. If the proposed Project is funded, Reclamation would review and, if appropriate, approve the LGIA with AES. Approval or disapproval of the LGIA is the responsibility of the Regional Director of Reclamation's Lower Colorado Basin.

AES Proposed Project

The primary purpose of the AES BESS facility is to provide advanced energy storage that contributes to a strong grid and aids in the incorporation of variable power generation.

PROPOSED ACTION

WAPA

WAPA's Proposed Action consists of providing funding in response to a request from AES for project financing under the TIP for their proposed Project. WAPA could provide project financing from the United States Treasury under authority granted to WAPA under Section 402 of the Recovery Act of 2009 (Public Law 111-5), which amended the Hoover Power Plant Act of 1984 (Public Law 98-381). However,

in order to finalize AES's request for project financing, WAPA needs to complete an environmental review to analyze the environmental effects of the Project.

Reclamation

The Proposed Action for Reclamation would be to approve and sign the LGIA with AES. The approval of the LGIA by Reclamation, and other participants, would allow AES to interconnect to the Arizona Public Service (APS) Westwing Substation. Because Reclamation is a Federal agency and owner of a share of the NSTS, interconnections are subject to environmental review under NEPA. Therefore, Reclamation's underlying purpose is to analyze the effect of the interconnection to the surrounding environment.

AES Proposed Project

AES's proposed battery storage facility is not part of WAPA's Federal funding action, but its impacts are considered and presented alongside that of WAPA and Reclamation's Federal action (Proposed Action) as part of a comprehensive analysis in this Draft Environmental Assessment (EA). AES proposes to build, operate, maintain, and decommission an approximately 100-MW BESS facility on private land. Construction of the proposed battery storage facility would include battery storage enclosures, inverters/transformers, communications equipment, switchgear, heating, ventilation, and air conditioning (HVAC) units. In addition, transmission poles and associated electricity transmission facilities would connect the proposed facility to the APS Westwing Substation to the south.

ALTERNATIVES

A No Action Alternative was evaluated to provide a baseline against which the impacts of the Proposed Action can be compared. Under the No Action Alternative, WAPA would not provide financing to AES for their proposed Project and the Project would not be built using financing from the United States Treasury. Under the No Action Alternative, the Project would not be built and would potentially increase grid instability without addressing storage needs at the local load center. Construction activities associated with the Proposed Action would not occur. Additionally, under this alternative, Reclamation would not enter into a LGIA with AES.

SUMMARY OF THE PROPOSED ACTION'S ENVIRONMENTAL CONSEQUENCES

Cultural Resources

No direct or indirect impacts on NRHP-eligible, or indeterminate cultural resources or historic properties are expected from construction, O&M, or decommissioning activities associated with the Project. There are no known historic properties that would fall within the temporary and/or permanent disturbance footprint and/or the 30-meter buffer of the temporary/permanent disturbance footprint of the Project. Ground disturbance activities associated with construction of the Project would be limited to temporary disturbance associated with staging areas for the installation of the proposed battery storage facility, pulling sites for the overhead transmission line, and replacement of existing transmission poles. Ground disturbing activities associated with operations and maintenance (O&M) and decommissioning of the Project would be confined to areas in the disturbance footprint created during construction. No additional impacts on historic properties are expected from O&M or decommissioning activities. The implementation of design elements and conservation measures (e.g., restricting vehicular traffic to existing access roads) would further minimize potential impacts to historic properties, should they exist, from the construction, O&M, and decommissioning of the Project.

Biological Resources

There would be negligible to minor, localized, short- and long-term, direct and indirect adverse impacts to biological resources due to the construction, O&M, and decommissioning of the Project. There would be a temporary loss of approximately 7.01 acres and permanent loss of about 5.18 acres of wildlife habitat as a result of the Project.

Direct and indirect adverse impacts to general and special status wildlife species during construction include potential disturbance from noise and activity, potential disturbance from artificial lighting, and risk for direct mortality from ground disturbance, vehicle strikes, and collision with transmission lines. Activities associated with O&M would be infrequent and would have a negligible impact on general and special status wildlife species. Impacts from decommissioning would be similar to those during construction. The implementation of design elements and conservation measures would minimize potential impacts to biological resources from the construction, O&M, and decommissioning activities.

Visual Resources

The Project would create a long-term, permanent change in the local visual landscape; however, it would be a minor change in the characteristic landscape and in the scenic quality of the Project area from the construction, O&M, and decommissioning activities. The new BESS facility and associated transmission line replacement would represent a long-term, permanent change in the visual landscape in terms of form and color in comparison to the existing setting. However, the landscape already consists of large-scale utility structures, including the Westwing Substation, and an existing transmission line corridor; installation of a low-profile BESS facility and associated interconnection among the dense backdrop of numerous utility towers and facilities would result in a noticeable but minor change in the overall visual landscape consistent with existing visual character. The Project would be consistent with the existing scenic quality and character of the visual landscape. In addition, the implementation of design elements such as screening, and conservation measures such as restoration of disturbance areas, would further reduce impacts to visual resources during construction, O&M, and decommissioning activities.

1.0 INTRODUCTION

1.1 Project Background

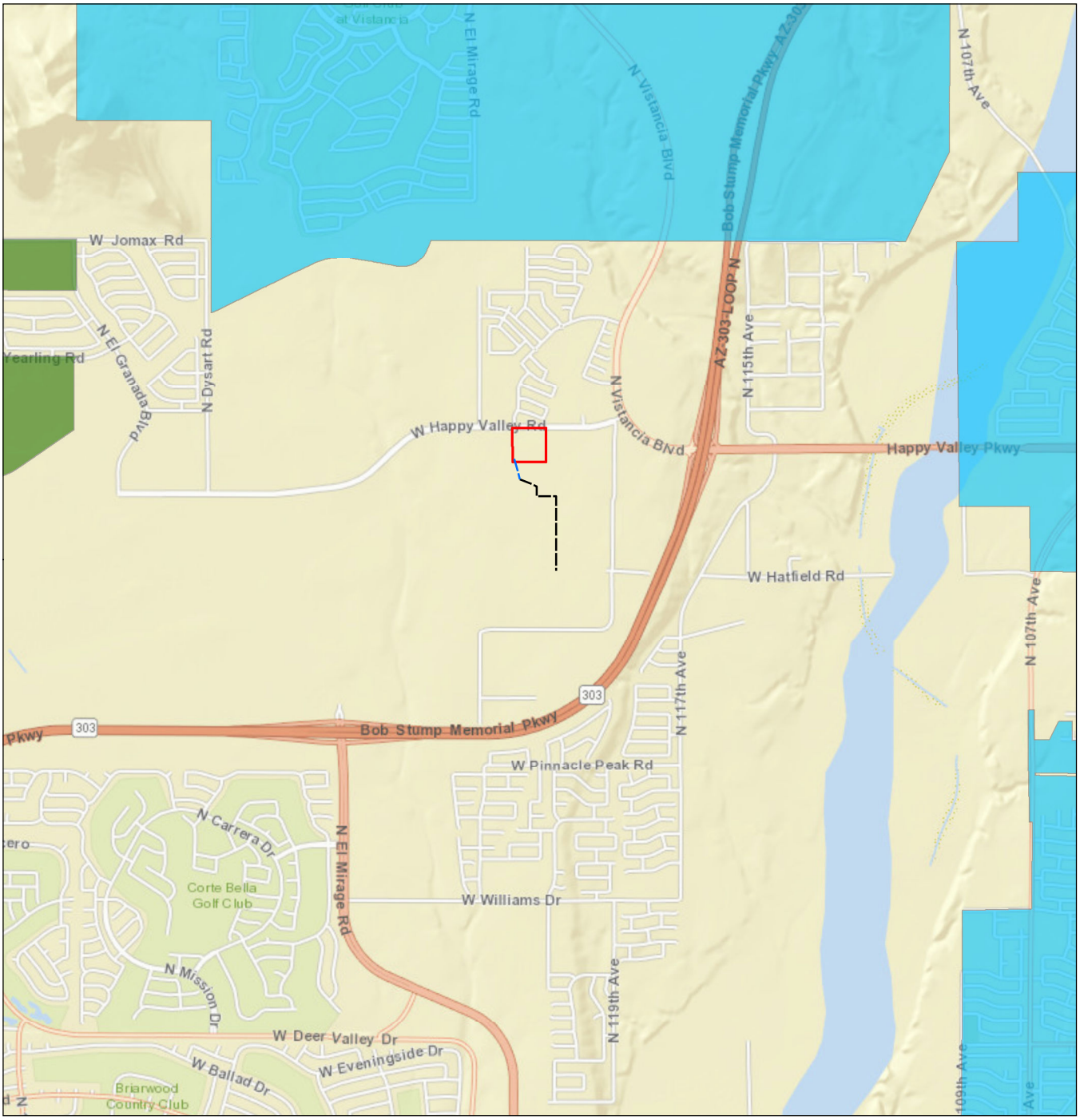
Western Area Power Administration (WAPA) is proposing to respond to a request to fund AES Energy Storage, LLC's (AES or Applicant) proposed Arizona Peaking Capacity Energy Storage Project (Project) for project financing under the Transmission Infrastructure Program (TIP). WAPA would provide project financing from the United States Treasury under authority granted to WAPA under Section 402 of the American Recovery and Reinvestment Act of 2009 (Recovery Act) (Public Law 111-5), which amended the Hoover Power Plant Act of 1984 (Public Law 98-381).

WAPA is a Federal power-marketing agency within the U.S. Department of Energy (DOE) that operates and maintains electric transmission lines and associated facilities in accordance with the Federal Power Act, Section 211, and our Open Access Transmission Service Tariff. WAPA's TIP is a unique Federal infrastructure financing program aimed at expanding and modernizing the electric grid. TIP manages WAPA's statutory $3.25 billion borrowing authority and can make strategic loans to project applicants for qualifying projects and offer experience and expertise to address development hurdles when needed. The program's primary goal is to leverage Federal funds and attract private and other non-federal co-investment companies to support the development of critical transmission and related infrastructure.

The United States Bureau of Reclamation (Reclamation) is a Federal agency with partial ownership of the Navajo Southern Transmission System (NSTS). Reclamation is proposing to approve AES's request to interconnect their proposed battery energy storage system (BESS) facility into the NSTS. The NSTS, which terminates at the Arizona Public Service (APS) Westwing Substation, powers the Central Arizona Project Canal System and provides power to private and public utilities in the Southwest.

Reclamation shares ownership of the NSTS with five other entities, including APS, but is the only Federal owner of this transmission system. A 1976 Co-Tenancy Agreement established ownership of the NSTS, and the NSTS Operating Agreement establishes the authorized use of the transmission system. AES's request for interconnection to the NSTS is processed through APS; however, all six owners of the system must review and approve a Large Generator Interconnection Agreement (LGIA) with AES. LGIAs are required for generators of more than 20 megawatts (MW), which includes battery storage facilities such as AES's proposed Project (Federal Energy Regulatory Commission [FERC] Order 845, 2018). As a Federal agency, Reclamation must comply with the National Environmental Policy Act (NEPA) prior to approving AES's LGIA.

AES proposes to build, operate and maintain, and decommission an approximately 100-megawatt (MW) BESS facility on approximately 6 acres of a 10-acre parcel of private land as depicted in Figures 1-1 and 1-2. This proposed facility would be located approximately 25 miles northwest of the City of Phoenix near the City of Peoria, Maricopa County, Arizona. Construction of the proposed facility would include battery storage enclosures, inverters/ transformers, communications equipment, switchgear, heating, ventilation, and air conditioning (HVAC) units. In addition, transmission poles and associated electricity transmission facilities would connect the proposed facility to the APS Westwing Substation to the south. Construction and operation of AES's proposed battery storage facility is not part of WAPA's Federal funding action, but its impacts are considered and presented alongside that of the Federal action as part of a comprehensive analysis in this Draft Environmental Assessment (EA).



Proposed AES Battery Storage Facility
Proposed AES 230kV Transmission Interconnection
Proposed APS 230kV Transmission Line

Cities
PEORIA
SURPRISE

County Boundaries
MARICOPA

0 1,500 3,000 Feet
(At original document size of 8.5x11)
1:36,000

N

Stantec

Project Location	Prepared by DL on 2021-05-22
	TR by ST on 2021-05-28
Maricopa County, Arizona	IR by LZ on 2021-05-28
Client/Project	185805080

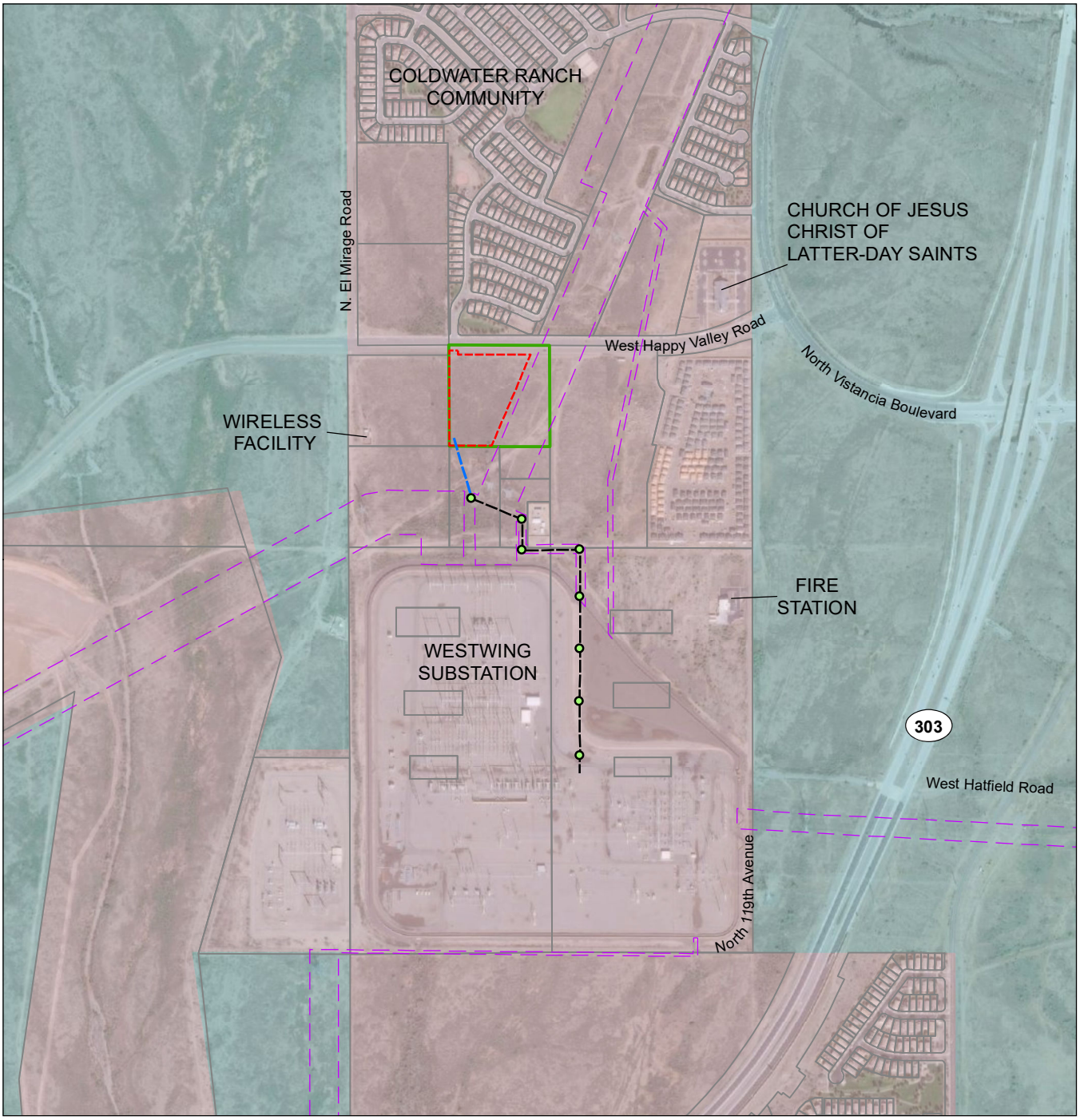
Arizona Peaking Capacity
Energy Storage Project

Figure No.
1-1

Title
Project Location Map

Notes
1. Coordinate System: NAD 1983 StatePlane Arizona Central FIPS 0202 Feet
2. Data Sources: Stantec 2021. Parcels From Maricopa County 2021.
3. Background: © OpenStreetMap (and) contributors, CC-BY-SA
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

V:\185805080\gis\Figure1_ProjectLocation_Map_20210528.mxd Revised: 2021-05-28 By: stroedson



- Proposed AES Battery Storage Facility
- Parcel Boundary
- Pole Replacement Locations
- Approximate Location of Existing Trasmission Line Corridors
- Proposed AES 230kV Transmission Interconnection
- Proposed APS 230kV Transmission Line
- Maricopa County Parcels

Ownership

- Private
- State

0 500 1,000 Feet

(At original document size of 8.5x11)
1:12,000

N

Stantec

Project Location
Maricopa County, Arizona

Prepared by DL on 2021-05-22
TR by ST on 2021-05-28
IR by LZ on 2021-05-28

Client/Project
185805080

Arizona Peaking Capacity
Energy Storage Project

Figure No.
1-2

Title
Project Vicinity Map

Notes
1. Coordinate System: NAD 1983 StatePlane Arizona Central FIPS 0202 Feet
2. Data Sources: Stantec 2021. Parcels From Maricopa County 2021.
3. Background: © OpenStreetMap (and) contributors, CC-BY-SA
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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On August 9, 2019, WAPA made a determination to prepare an EA for the Proposed Action in accordance with Section 3.b.(3) of Department of Energy Policy 451.1 and the NEPA implementing procedures (10 Code of Federal Regulations [CFR] 1021) to analyze the effects of the Project.

1.2 Need for Action

WAPA needs to respond to AES's request for project financing through its TIP. The TIP leverages WAPA's borrowing authority and transmission development expertise to help selected project applicants secure financing for a project, and if needed, address barriers and streamline project development activities. A project applicant does not have to request project development assistance to pre-qualify for a loan. To be eligible for a project loan or project development assistance from TIP, prospective utility-scale transmission and/or related projects must meet and demonstrate, at minimum, the following eligibility requirements:

- Have at least one terminus in WAPA's 15-state service territory;
- Demonstrate a reasonable expectation of repayment;
- Facilitate the delivery of clean energy;
- Not adversely impact system reliability or operations; and
- Serve the public interest.

More information about WAPA's Transmission Infrastructure Program can be found here: *https://www.wapa.gov/transmission/TIP/Pages/tip.aspx*

As an owner of a share of the NSTS, Reclamation needs to respond to AES's LGIA request. If the proposed Project is funded, Reclamation would review and, if appropriate, approve the LGIA with AES. If approved, Reclamation's Lower Colorado Basin Regional Director would be the signatory on the LGIA.

1.3 Purposes of Action

In addition to providing project financing, WAPA must also ensure that the Project will not adversely impact its transmission system reliability or operations. The characteristics of advanced energy storage, such as fast, firm, and exact power control, ability to act as load and supply, and no minimum generation level make storage ideally suited as a resource that contributes to a strong grid and aids in the incorporation of variable power generation. Such a flexible and resilient grid can add and maximize the most beneficial forms of power generation available, whether those are emissions-free renewables, efficient combined cycles, or other forms of power generation. Once those new renewable or efficient generating sources come online, the battery storage facilities would make sure they are able to be used in the most efficient way to maximize available power production, minimize fuel cost, and maintain power system reliability.

The proposed battery storage facility would be located in Arizona and interconnected to the APS grid. The proposed battery storage facility is not expected to impact transmission system reliability or operations. In fact, one of the operational benefits of battery storage is improved system reliability through reducing transmission congestion and providing ancillary services, such as spinning reserves.

Energy storage is the most flexible power resource for the grid, allowing for a flexible range of twice the interconnected capacity. A battery storage facility can provide spinning reserves in excess of its nameplate capacity while charging and can be conveniently located near load to further reduce any transmission-related constraints.

Energy storage is cost competitive with other peaking resources and provides more grid benefits than open cycle peaking plants. The benefits include no air emissions, no water requirements, and faster response speeds. The Project would allow for increased utilization of existing resources thus allowing the region to avoid procurement of single function peaker power plants which burn fossil fuels and contribute to air pollution. Energy storage can meet peak capacity, while also supplying ancillary services to the grid with unmatched availability and reliability.

1.4 Public and Tribal Involvement

1.4.1 Public Scoping

Per 40 CFR § 1501.7, WAPA initiated its Scoping process by conducting public outreach for the Project through various means, including providing notice of the Project, describing the environmental review process and opportunities to comment. On September 25, 2019, WAPA sent a letter to potentially interested parties including adjacent landowners, public interest groups, local governments, tribes, and State and Federal agencies.

WAPA also created a website specifically for the Project where interested parties can access current information about the Proposed Action and the environmental review process. That website can be found at: *https://www.wapa.gov/transmission/EnvironmentalReviewNEPA/Pages/AZ-Energy-Storage-Project.aspx*.

The public comment period began on September 25, 2019, and WAPA accepted comments on the Project until October 25, 2019. No public scoping meetings were held. A total of 18 comments were received. Comments received during the scoping comment period were considered in the environmental analysis. Comments were received during the scoping comment period on the following topics:

- Consider the environmental effects of battery disposal at their end-of-life versus more environmentally friendly options;
- Consider the economic impacts to adjacent residential neighborhoods and local businesses;
- Requests to consider siting the proposed battery storage facility in a less populated area;
- Requests to consider the visual and traffic-related impacts and to an adjacent residential development; and
- Requests to consider fire and other public health hazards to an adjacent residential development.

1.4.3 Tribal Consultation

WAPA identified six tribes that may have resources of traditional religious and cultural significance in the Project area including the following: the Fort McDowell Yavapai Nation, the Salt River Pima-Maricopa Indian Community, the Hopi Tribe, the White Mountain Apache Tribe, the Yavapai-Prescott Indian Tribe, and the Pascua Yaqui Tribe. WAPA provided Project information and described the cultural resources review process to tribal cultural resources specialists. WAPA also requested information from the consulting tribes on historic properties in the Project area and solicited comments from tribal representatives. The tribal comments were used to shape the Project's cultural resource field investigation.

WAPA has addressed the scoping comments in appropriate sections in this EA as applicable. WAPA is releasing this Draft EA for review and comment. This Draft EA is also posted on the Project website. During the review period, WAPA will accept comments via e-mail, letter, public meeting, or telephone. After considering comments received during the Draft EA review period, the EA will be revised, if necessary, and finalized with a decision on how to proceed.

2.0 PROPOSED ACTION AND ALTERNATIVES

This chapter describes the Proposed Action, the No Action Alternative, and alternatives considered but eliminated from detailed study. This chapter also compares the Proposed Action and the No Action Alternative to the Project purpose, as well as to the potential environmental impacts.

2.1 Proposed Action

2.1.1 WAPA's Proposed Action

The Proposed Action is for WAPA to provide funding in response to a request from AES for project financing under the TIP for their proposed Project. WAPA could provide project financing from the United States Treasury under authority granted to WAPA under Section 402 of the Recovery Act of 2009 (Public Law 111-5), which amended the Hoover Power Plant Act of 1984 (Public Law 98-381). However, in order to finalize AES's request for project financing, WAPA needs to complete an environmental review to analyze the environmental effects of the Project.

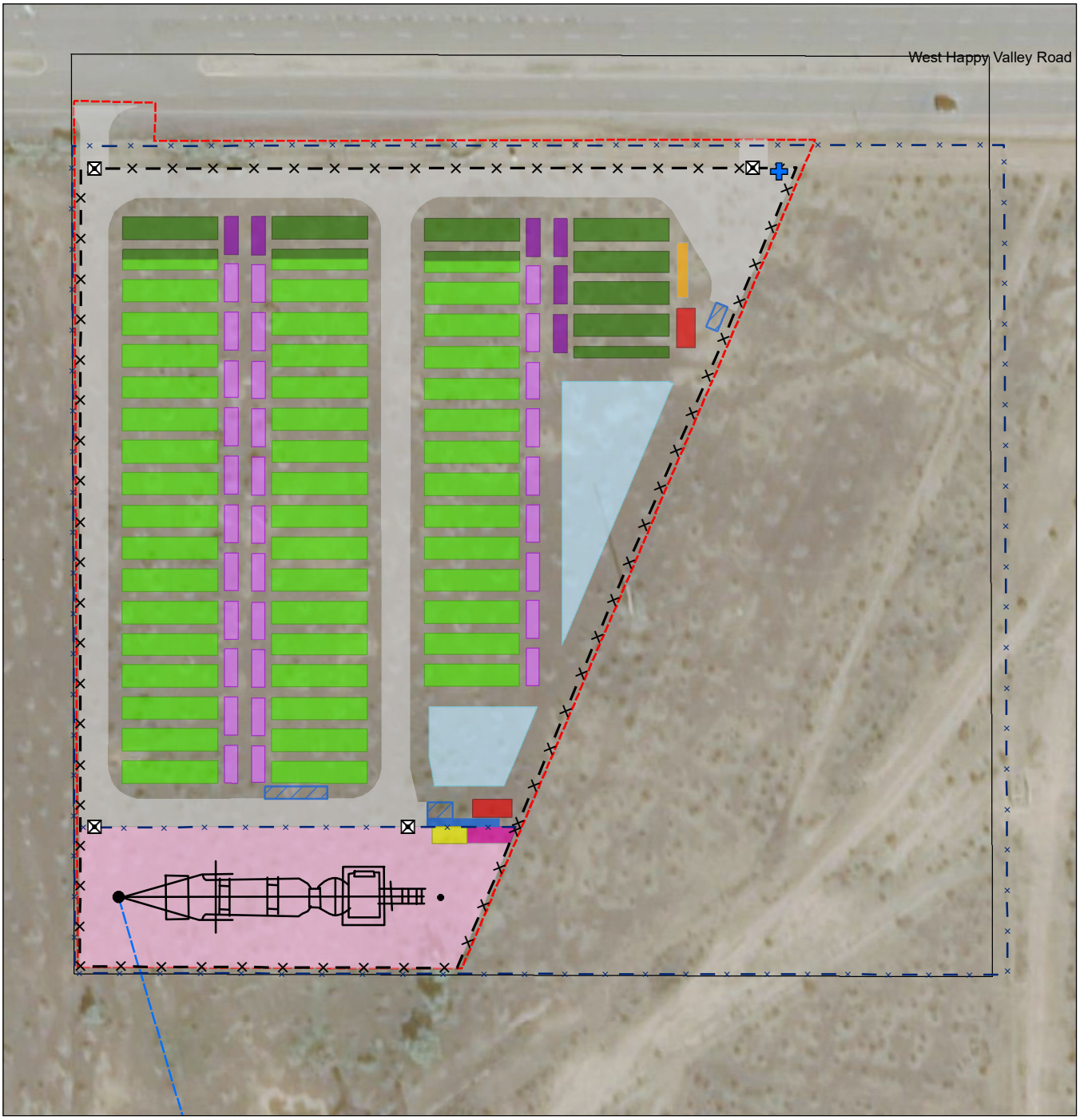
AES's proposed battery storage facility is not part of the Federal funding action, but its impacts have been considered and are presented alongside that of the Federal action (Proposed Action) as part of a comprehensive analysis in this document.

2.1.2 Reclamation's Proposed Action

The Proposed Action for Reclamation would be to approve and sign the LGIA with AES. The approval of the LGIA by Reclamation, and other participants, would allow AES to interconnect to the Arizona Public Service (APS) Westwing Substation. Because Reclamation is a Federal agency and an owner of a share of the NSTS, interconnections are subject to environmental review under NEPA. Therefore, Reclamation's underlying purpose is to analyze the effect of the interconnection to the surrounding environment.

2.1.3 Proposed Project Facilities

AES proposes to build, operate, maintain, and decommission an approximately 100-MW BESS facility on approximately 6 acres of a 10-acre parcel of private land, as depicted in Figure 2-1. Construction of the proposed battery storage facility would include battery storage enclosures, inverters/transformers, communications equipment, switchgear, and heating, ventilation, and HVAC units. The proposed facility would also include a stormwater retention basin system and fire access road. In addition, a 34.5-ilovolt (kV)/230-kV substation with a transformer, transmission poles, and associated electricity transmission facilities would connect the Project to the APS Westwing Substation to the south, as summarized in Table 2-1.



- AES Proposed Battery Storage Facility Boundary
- Parcel
- Gate
- First Responder Station
- Proposed AES 230kV Transmission Interconnection
- Existing Fence
- Proposed 8' CMU Wall/ Intrusion Detection System
- Battery Housing
- Battery Housing/ Phase II: Battery Augmentation End of Life (EOF) Cubes
- Control Enclosure with Electrical and HVAC
- Electrical Substation by EPE
- Fire Access Road
- Parking
- Proposed Medium Voltage Transformer and Pad
- Retention Basin
- Sidewalk (ADA Compliant)
- Storage Unit
- Substation Control Enclosure by EPE
- Transformation/ Load Distribution Center
- Transformation/ Load Distribution Center/ Phase II: Battery Augmentation End of Life (EOF) Cubes

0 55 110 Feet

(At original document size of 8.5x11)
1:1,320

N

Notes

1. Coordinate System: NAD 1983 StatePlane Arizona Central FIPS 0202 Feet
2. Data Sources: Stantec 2021. Parcels From Maricopa County 2021.
3. Background: © OpenStreetMap (and) contributors, CC-BY-SA
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Stantec

Project Location
Maricopa County, Arizona

Prepared by DL on 2021-03-26
TR by ST on 2021-03-26 IR by LZ on 2021-06-01

Client/Project
185805080

Arizona Peaking Capacity Energy Storage Project

Figure No.
2-1

Title
Project Features Map

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Table 2-1. Project Summary

Project Component	Quantity	Approx. Dimensions (each)
Battery Core	37	68’ 5”L x 30’ 7”W x 8’H
Inverter/Transformer Skid	37	27’L x 8’W
High Voltage Substation	1	300’ L x 95’ W
Overall Facility Area	1	600’L x 250-500’W
Transmission Poles[2]	8	6-8’W [1] x 80-150’H

(1) Diameter width at base, depending on if the pole is tangent or an angle.
(2) The transmission line and poles would be constructed by APS and approved by the ACC.

AES is applying for and obtaining zoning and development permits from Maricopa County Planning and Development for construction and operation of the proposed battery storage facility, which are subject to County Planning and Zoning Commission and Board of Supervisors approvals. Development of the proposed battery storage facility would be required to follow Maricopa County ordinances, regulations, and codes which regulate the use, occupancy, location, design, and construction.

2.1.3.1 Battery Storage Facility

The proposed battery storage facility would consist of thirty-seven (37) battery storage “cores.” The initial installation would include thirty-one (31) cores and an additional six (6) cores would be added over the life of the proposed facility to maintain the required capacity. Each energy storage core consists of three (3) bi-directional inverters, transformer, and twenty-four (24) battery “cubes.” Each “cube” is an approximately 7-foot by 8-foot by 9-foot, non-entry, self-contained enclosure housing batteries, fire detection and suppression systems, controls, and cooling chiller units (chillers). Balance of Plant (BOP) equipment would also include two (2) medium-voltage (MV) transformers and pad, two (2) low-voltage (LV) switchboards, one (1) approximately 320-square foot (sf) (8-foot by 40-foot) storage enclosures, and a 300-sf control enclosure with electrical and HVAC equipment. A detailed list of the major equipment is as follows:

- Batteries: Battery modules are assembled in racks within the cubes and monitored by the Battery Management System (BMS) to prevent overheating and risk of thermal runaway. Electrical isolation monitoring devices are present on each battery to detect faults and disconnect the system, and allow isolated replacement as necessary.
- Power Conversion System: The proposed facility would utilize up to 111 bi-directional inverters to convert direct current into alternative current and vice versa.
- Chillers systems: Each cube would be equipped with integral wall-mounted chiller units to keep battery cores at optimal operating temperature.
- Fire Detection/ Suppression Systems: Each non-entry cube would be equipped with a three-zone fire detection and suppression system, incorporating photoelectric smoke detectors which would be monitored remotely 24/7. The system would utilize aerosol suppressant supplied via two canisters. The fire suppression system may also be manually activated via pull stations. Combination horn/ strobe devices would indicate that the system has been deployed. Each non-entry cube is designed to be electrically isolated to contain potential fire inside and prevent propagation to battery modules in adjacent cubes.

- Gas Detection: Each cube would be equipped with incipient gas detection. This allows for early detection and mitigation as off-gassing is a symptom indicating potential battery failure. The non-entry cubes would utilize carbon monoxide detectors. In the event gas is detected, the system would initiate a fast response shutdown sequence (F-Stop).
- Fire Water: A fire water loop would be installed with five fire hydrants and requisite isolation valves. Fire water would be supplied from a water supply main running along Happy Valley Road on the northern site boundary.
- LV and MV electrical switching equipment and auxiliary power panels
- Plant Controller: Computer and telecommunications equipment integrating the individual BMS, inverter controls, Chillers, and fire detection systems
- MV transformers: 37 MV transformers, one for each inverter lineup, plus 2 for station auxiliary power
- MV switchgear
- Battery array control house
- Operations room
- Security lighting at every turning point of the access road plus intermediate locations along the access road spaced no greater than 200 feet and directed downward and shielded to minimize offsite visibility
- Signage (entrance sign at each entrance up to 4'x6' and required safety signage)
- Perimeter wall (8-foot-tall solid masonry wall plus intrusion detection system on top of wall) along all proposed facility boundaries. Intrusion detection system to alert the system operators of any potential intruders. The Intrusion detection system would consist of infrared beam columns approximately 8 inches diameter by 2 meters high to be located approximately every 100 meters.
- Chain-link fencing with sleeved, removable post and vehicle access gates on the north side of the high-voltage (HV) substation within the perimeter wall
- Stormwater retention basins along the eastern facility boundary (100-year, 2-hour, 49,875 cubic foot capacity, 3-foot deep)
- 20-foot-wide fire access road

WAPA would not construct, operate or maintain, or decommission the new battery storage facility. AES would be responsible for construction, operation and maintenance, and decommissioning activities.

2.1.3.2 High-Voltage Substation and Transformer

A new HV substation and transformer would be needed for the proposed battery storage facility to transform the stored energy from the facility from 34.5-kV to 230-kV. The substation would be connected to the new transmission line that would be carrying electricity from the facility to the existing Westwing Substation. The substation would be pad-mounted and fenced within an approximately 300-by 95-foot area at the southern end of the facility accessed by two internal gates, and would include an HV step-up transformer, circuit breakers, protective relaying, unmanned control house, and associated

structures. WAPA would not construct, operate or maintain, or decommission the new transformer. AES would be responsible for construction, operation and maintenance, and decommissioning activities.

2.1.3.3 Transmission Line Interconnection

Completion of the proposed battery storage facility and integration into the regional electrical grid system would require a new, approximately 0.54-mile, 230-kV transmission line for interconnection between the proposed facility and the existing APS Westwing Substation to the south. As depicted in Figure 1-2, the new transmission line would exit the proposed facility at the southwestern corner from the facility HV substation and continue south and east following existing transmission line rights-of-way (ROWs) until connecting into the APS Westwing Substation. The first span would be approximately 0.07-mile (370-feet) from the facility to an existing APS transmission pole and would be constructed and operated by AES (AES responsibility). The remainder of the 230-kV transmission line would be approximately 0.47-mile (2,482-feet) and would be a rebuild of an existing transmission line which would be constructed and operated by APS (APS responsibility). The rebuild would include adding a 230-kV circuit to the APS 69-kV portion of the existing 69-kV Calderwood-Westwing transmission line (from single to double circuit). It is anticipated that eight new steel monopole structures, ranging in height from approximately 80- to 150-feet tall, would replace the existing APS transmission poles which are approximately 55- to 60-feet tall. Additional structure types may be needed depending on final design. Three of the new transmission poles would be located within the boundaries of the existing Westwing Substation, while five would be located within the existing transmission line corridor.

The transmission line interconnection is subject to approval by the Arizona Corporation Commission (ACC) and would be managed by APS through the Line Siting process which requires the preparation of an application to support issuance of a Certificate of Environmental Compatibility (CEC) resulting in ACC approval. Additionally, authorization for the transmission line interconnection would require a LGIA, which would need approval by all six owners of the NSTS, including Reclamation. APS would be responsible for constructing and operating the interconnection infrastructure. WAPA and Reclamation would not be responsible for constructing, operating or maintaining, or decommissioning the new transmission line.

2.1.3.4 Access Roads, Rights-of-Way and Easements

Site Access. Primary access to the proposed battery storage facility would be via West Happy Valley Road, which is a major east-west arterial roadway (Road of Regional Significance), with two, east-bound paved lanes and a raised median (with a median break) adjacent to the property. The typical half-street roadway dedication for an arterial/road of regional significance is 65 feet. There is no half-street dedication adjacent to the site. Driveway access on West Happy Valley Road would be paved and would be permitted through the Maricopa County Department of Transportation. The primary access driveway would be gated and connect to the onsite access road.

Site Circulation. The proposed battery storage facility site currently consists of vacant, partially disturbed (dirt roads) land. Circulation within the site would consist of a 20-foot-wide internal fire access loop around the perimeter of the facility which would consist of aggregate. The primary access gate would be located at the northwest corner of the site. An additional access gate would be located at the northeast corner of the site, and two internal access gates would provide access to the HV substation at the southern end of the facility. Parking would be accommodated onsite for part-time staff to perform

routine maintenance activities on a periodic (monthly) basis. In compliance with County requirements, parking would consist of one paved Arizona Department of Agriculture (ADA)-Accessible space (12 ft. x 18 ft.) located adjacent to the control house, and one aggregate base standard spaces (9 ft. x 22 ft.) adjacent to the station auxiliary transformer at the northeast corner of the site and two standard spaces (9 ft. x 22 ft.) along the south road.

Transmission Line Access Roads. Transmission line access roads exist underneath or adjacent to the majority of the proposed transmission line ROW. An access road extension may be needed underneath or adjacent to the first approximately 0.07-mile (370-feet) AES span of the new transmission line ROW from the proposed battery storage facility to the existing APS transmission pole. Improvements to existing access roads as well as new temporary or permanent access roadway may be needed for construction and operation and maintenance of the new transmission line. Typically, upgrading existing roads and constructing temporary and permanent new access roads requires a construction width of 14 feet along straightaways and 16 to 20 feet around corners to facilitate safe movement of equipment and vehicles. However, all temporary roads would be restored to pre-existing conditions when they are no longer needed, and all upgraded existing roads and new permanent roads would be restored to a width of 12 feet. Maximum road grades would vary depending on the erosion potential of the soil: 6-8% on erodible soils, or 10-15% for erosion resistant soils.

Dirt roads in the area of the proposed facility can become slippery and impassible when wet. Gravel would be placed on roads, where needed, to assist with dust abatement, stability, load bearing, and to keep them passable during wet soil conditions.

Rights-of-Way and Easements. An existing transmission tower and several easements traverse the eastern portion of the property (east of the proposed battery storage facility perimeter), including a natural gas pipeline, ROW, temporary access, temporary workspace, and road and incidental easements.

The existing APS 69-kV Calderwood-Westwing transmission line and Westwing Substation are located in a utility corridor with numerous existing transmission lines ranging from 69-kV to 500-kV. The proposed new transmission line route would cross under the 500-kV Navajo-Westwing transmission line . Other transmission lines in proximity include 500-kV Westwing-Perkins, 500-kV Palo Verde-Westwing, WAPA 230-kV Westwing-Raceway, APS 69-kV Westwing- Hatfield, SRP 230-kV Westwing-Dove Valley/Westwing-Agua Fria, WAPA 230-kV Westwing-Pinnacle Peak/Westwing -Liberty, APS 69-kV Westwing-Westbrook/ Westwing-Rio Vista, APS 230-kV Westwing- Surprise, TEP 345-kV Westwing-Pinal West, and APS 69-kV Westwing-McMicken.

The entirety of the proposed new transmission line route is within privately-owned land and within an existing 69-kV sub-transmission line corridor, for which APS currently holds easement.

AES would need to negotiate an approximate 60-foot-wide easement for the first 0.07-mile (370-feet) span of the new transmission line ROW from the proposed battery storage facility to the existing APS transmission pole with the underlying landowner. WAPA and Reclamation would not participate in or have any interest regarding these ROW negotiations.

2.2 Project Location

The Project is located off West Happy Valley Road within the north-central portion of Maricopa County, approximately 7 miles west of the City of Phoenix, 1 mile south of the Village of Vistancia and the City of Peoria, and 0.7-mile west of State Route 303 (Township: 4 North, Range: 1 West, Section: 1).

The proposed battery storage facility site is adjacent to West Happy Valley Road and single-family residential development (Coldwater Ranch) on the north, privately-owned land under development for a storage facility on the east and construction of a housing complex beyond, privately-owned undeveloped land and the existing APS Westwing Substation on the south, and privately-owned and mostly undeveloped parcel except for an existing cellular tower facility on the west. Within the larger context, land uses surrounding the site generally consist of residential and State Trust lands with the addition of golf courses to the southwest and Bureau of Land Management (BLM) and mining lands east of State Route 303. A fire station is located to the southeast, adjacent to the APS Westwing Substation.

2.3 Schedule

Construction is anticipated to occur in one phase over a duration of approximately 12 months. The proposed battery storage facility would be constructed to include 31 battery cores installed initially with the addition of 6 future augmentation battery cores in the northern portion of the site, which are planned to be installed over the life of the facility as batteries degrade from the first phase of construction. The future installations are not there to add capacity in any way, but to ensure that the Project consistently provides 100 MW of capacity as the capacity of the batteries degrade over time.

2.4 Project Implementation

The Project would store and deliver electricity to the grid through a Power Purchase Agreement with APS. AES, who leases the land, would build and commission the proposed battery storage facility. The proposed facility would be owned and operated by AES, while the current landowner, Sunbelt Land Investment, would retain land ownership.

The following sections describe the construction, operations and maintenance (O&M), and decommissioning activities for the Project. Table 2-2 provides a detailed account of all temporary and permanent disturbances related to Project implementation. The Project would result in 7.01 acres of total disturbance, of which 5.18 acres would be permanent disturbance.

Table 2-2. Proposed Project Disturbance Estimates

Component	Temporary Disturbance (acres)	Permanent Disturbance (acres)
Battery Storage Facility	0.85 [1]	4.5 [2]
HV Substation	0.25 [1]	0.67 [2]
Transmission Line/Access Roads	0.73 [3]	0.01 [4]
Total	**1.83**	**5.18**

[1] Staging areas outside the proposed battery facility site

[2] Within the proposed battery storage facility site boundary

[3] Use of existing access roads

[4] Replacement of existing pole structures

2.4.1 Construction, Operations and Maintenance, and Decommissioning

2.4.1.1 Construction

Construction activities would include site grading, foundation/concrete work, battery cube installation, electrical component and cable installation, inverter/ transformer and controls installation, installation of the HV substation and overhead transmission line to the existing APS Westwing Substation, and final grading/paving. Recycling, reduction, and reuse of materials would be incorporated whenever feasible. Construction equipment to be used would include a scraper, excavators, dump trucks, a drum roller, forklifts, a crane, pump trucks, concrete trucks, manlifts, and a boom truck. A temporary construction staging/laydown/storage area would be located adjacent to the BESS, contained within the property boundaries. The limited water required during the construction phase would be supplied from an existing water line or trucked-in, as necessary. The Project would implement stormwater Best Management Practices (BMPs) during construction, including erosion/sediment control and materials/waste management.

Transmission Line Structures. Transmission tower structure foundations are used to transfer loads to provide a stable and secure platform for the structure to permanently rest. Numerous factors enter into the selection of the foundation type and depth. In general, excavation depths could be up to 40-feet deep and 8-feet wide. Some of these factors include, but are not limited to, geotechnical information, foundation loading, base size of the monopole structure, rotation and deflection limits, site accessibility, site conditions, economics, and aesthetics. Foundation types that are commonly utilized throughout the industry for high-voltage steel tubular monopole structures are described below:

- Direct-embedded foundations are typically utilized with steel monopoles. They consist of a single steel shaft installed vertically into an over-excavated hole and back-filled with concrete or gravel. Connection of the monopole to the direct-embedded foundation can be either through a slip-joint connection or a bolted base-plate to top-plate connection. Each direct-embedded foundation is approximately 1-foot larger in diameter than the largest diameter of the monopole base section. Excavation for the direct-embedded foundation is completed with heavy equipment such as a truck-mounted auger drilling rig. The material excavated is not reused as back-fill at the monopole site and is disposed of at an approved location or reused in another approved manner for the Project. Diameter and depth of each direct-embedded foundation is directly related to the monopole load, monopole base diameter, and geological soil condition at each monopole location.

- Vibratory Caisson foundations are typically utilized with steel monopoles. They consist of a single steel shaft “driven” vertically into the ground using a vibratory hammer. Connection of the monopole to the vibratory caisson foundation can be through a slip-joint connection, bolted base-plate to top-plate connection, or inset and grout connection. Each vibratory caisson foundation is approximately the same diameter as the monopole base section at ground level. No excavation is required for vibratory caisson foundations because they are “driven” directly into the ground with a vibratory hammer that is suspended from a piece of heavy equipment such as a crane. The diameter and depth of each vibratory caisson foundation is directly related to the monopole load, monopole base diameter, and geological soil condition at each location. Vibratory caisson foundations can be difficult, if not impossible, to install in areas with certain cohesive soils such as dense clays, bedrock, boulders, or larger cobblestone.

- Drilled Concrete Pier foundations can be used with either lattice tower or steel monopoles. They consist of concrete, steel reinforcing bars and embedded anchor bolts. For a monopole, this foundation consists of a single reinforced concrete pier placed in a vertically excavated hole and projects aboveground. Connection of the monopole to the projected drilled concrete pier foundation is embedded anchor bolts to a base-plate connection. Each drilled concrete pier foundation is approximately 2 feet larger in diameter than the monopole anchor bolt circle diameter. Excavation for the drilled concrete pier foundations is completed with truck mounted auger drilling rigs. Excavated material is not reused as back-fill at the monopole site and is disposed of at an approved location or reused in another approved manner for the Project. Diameter and depth of each drilled concrete pier foundation is directly related to the monopole load, monopole anchor bolt circle diameter, and geological soil condition at each monopole location.

Wires that carry electrical current on a transmission line are called conductors. Conductors are supported above the ground by transmission monopoles. Each transmission line monopole supports three phases. A phase consists of at least one individual conductor, typically having an approximate diameter of 1.4 inches. A typical phase of conductors would have an 18-inch separation between conductors in either a vertical or horizontal configuration.

Conductors are attached to the supporting monopoles using insulators, typically made up of a string of individual discs or bells that provide the necessary insulation between the energized conductor and the supporting monopole. The insulator bells are typically made of porcelain or glass. Porcelain insulators are either brown or gray in color, and glass insulators are either clear or blue.

Design practices utilized by APS must meet or exceed requirements set forth by the National Electrical Safety Code (NESC) and Arizona Revised Statues 40-360.42 and 40-360.43. These requirements identify the minimum clearances required from the conductors to the ground, objects being crossed, and objects near the transmission line.

WAPA would not be involved with construction of the proposed battery storage facility or interconnection/transmission line. AES would be responsible for construction activities associated with the proposed battery storage facility, as well as the first approximately 0.07 mile (370 feet) span of the transmission line from the facility to the existing APS transmission pole. The remainder of the rebuilt transmission line would be constructed by APS.

2.4.1.2 Operations and Maintenance

AES would be responsible for O&M of the proposed battery storage facility, as well as the first approximately 0.07 mile (370 feet) span of the transmission line from the facility to the existing APS transmission pole. O&M of the remainder of the transmission line would be the responsibility of APS. The proposed battery storage facility would be owned and operated by AES for a planned useful life of 20 to 25 years. The long-term operational workforce would entail AES-contracted maintenance staff who would maintain the facility on a periodic basis over the Project life. The Project would require up to a four-person crew for maintenance visits twice a month on average. The crew would normally consist of one operator, one contracted field engineer, and two mechanical or electrical technicians. The Project would be primarily operated remotely. An office with a computer control monitor along with a restroom would be used periodically for operations troubleshooting and maintenance planning.

Planned maintenance would typically be developed and scheduled a few months in advance. Typical maintenance intervals for major Project components include:

- Fire protection system – twice a year
- HVAC and Chillers – twice a year
- Battery core – once a year
- Relay protection – once in two years
- Project performance testing – once a year
- Project HV substation – once a year

The proposed battery storage facility would be designed with multiple automatic and manual power-down/safety mechanisms. Electrical and fire systems are designed to open breakers automatically during fault conditions. Each cube fire protection system would have a signal that would trigger core power-down during fire, electrical fire, overheating, etc. The entire facility power-down would occur automatically during electrical fault conditions (e.g., high-voltage, high-frequency, ground fault etc.). Each cube includes a F-Stop button/switch that would de-energize the entire core upon activation. In addition, the proposed facility would be equipped with breakers that could be opened manually to power-down different equipment or the facility as a whole. The manual power-down could be done by local personnel.

Public Utilities and Services. The proposed BESS facility would include an operations room with plumbed restrooms; therefore, water and wastewater utilities and services would be connected to existing EPCOR Water Arizona water supply and sewer lines running in Happy Valley Road. Fire water would also be supplied from water connection located near the northwest entrance gate and would feed a fire water loop and fire hydrants. Fiber optic cable would be provided for internet services. Limited water required during the construction phase would be trucked in as necessary until water service is available. An electric distribution service feed from APS may be added to provide emergency backup power in the event of a main service outage. Police and fire services would be provided by Maricopa County Sherriff's Office and North County Fire and Medical, respectively.

The Project would be designed to be operational for 20 years, with the option to be reassessed for an additional 5 years of continued operation, up to 25 years.

2.4.1.3 Decommissioning

After completion of 25 years of operations, most of the Project's electrical equipment (breakers, transformers, inverters) would be removed and recycled. Project batteries would be returned to the battery manufacturer for recycling. Equipment foundations and pads would be demolished and removed. Following decommissioning, the interconnection infrastructure would remain in place as it would continue to serve transmission from other area energy facilities.

2.4.2 Design Elements and Conservation Measures

Design elements and conservation measures specific to Project facilities are presented below and are considered part of the Project. APS Construction Standards would also be implemented as part of the Project.

Soil/Erosion

- Grading would be minimized to only those areas where necessary to meet the construction and operational requirements of the Project.
- Construction and operational activities would be conducted in compliance with a Stormwater Pollution Prevention Plan (SWPPP) that would include BMPs and other erosion-control measures designed to minimize soil erosion and limit sheet flow and downstream sedimentation. The SWPPP would also incorporate adaptive management actions if erosion and sedimentation control measures are found to be insufficient to control surface water at the site.
- To minimize wind erosion, all construction activities shall comply with the Fugitive Dust Control Plan that would be developed and implemented for the Project.
- A Site Restoration Plan would be implemented as needed to limit impacts to temporary disturbance areas as much as practicable.
- Soil-disturbing activities on wet soils would be minimized.
- Temporary disturbance areas that are no longer needed would be recontoured and revegetated in order to increase infiltration and reduce soil compaction.
- Routine site inspections would be performed to assess the effectiveness of maintenance requirements for erosion and sediment control systems. Roadway ditches, and culverts would be regularly maintained.

Hydrology/Water Quality

- The proposed battery storage facility would include stormwater retention basins designed to maintain existing drainage patterns and control surface water runoff.
- The site would be graded so that downstream flows would not be adversely impacted as a result of proposed changes to natural washes from grading or drainage management measures.
- The number of drainage crossings would be minimized to the extent possible and each would be designed to accommodate adequate flow.
- A Spill Prevention and Emergency Response Plan would be developed and implemented during construction and the operations/maintenance phases of the Project. Adequately sized secondary spill containment would be incorporated around transformers to ensure proper capture and control measures for potential spills. The Spill Prevention and Emergency Response Plan would also provide for hazardous material spill prevention and cleanup measures, were a spill to occur.
- Although not anticipated, any necessary permits in accordance with the Clean Water Act Section 404 (which regulates the discharge of dredged or fill material into Waters of the U.S. [WOTUS]) and Section 401 (which requires federally licensed or permitted projects to comply with applicable water quality and discharge requirements into WOTUS) would be obtained and complied with, if applicable.

Air Quality

- The area of grading and vegetation removal would be limited to only that area required for construction and operation.

- Ground disturbing activities would be undertaken in accordance with the approved Fugitive Dust Control Plan to minimize the amount of time areas would be exposed to wind erosion.
- Vehicular speeds on unpaved roads would be limited to 25 miles per hour (MPH).
- Grading operations would be phased, where appropriate, to limit the amount of disturbance at any one time, and water would be used for stabilization of disturbed surfaces under windy conditions.
- Water would be applied to disturbed areas to control dust and facilitate soil compaction, where necessary. Water would be applied using water trucks and application rates would be monitored to prevent runoff and ponding. Palliatives would be used to control dust as required.
- Exposed material stockpile areas would be covered, and excavation and grading would be suspended during windy conditions (forecast or actual wind conditions of approximately 25 MPH or greater).
- All trucks hauling soil and other loose material would be covered or at least 2 feet of freeboard would be maintained.
- All paved roads would be kept clean of mud, dirt, or debris, as necessary. Gravel or other similar material would be used where unpaved access roads intersect paved roadways to prevent mud and dirt track-out.
- Unnecessary idling of equipment would be limited.

Invasive Species and Weed Management

- AES would implement controls at entry locations to facilitate weed management and invasive species control and to minimize infestation of the Project site from outside sources. A controlled inspection and cleaning area would be established to visually inspect construction equipment arriving at the Project area and to remove and collect seeds that may be adhering to tires and other equipment surfaces.
- Develop and implement control of noxious weeds and invasive species, which could occur as a result of new surface disturbance at the site.

Biological Resources

- To minimize activities that attract prey and predators during construction and operations/maintenance, garbage would be placed in approved containers with lids and removed promptly when full to avoid attracting nuisance wildlife. Open containers that may collect rainwater would also be removed or stored in a secure or covered location to avoid attracting wildlife.
- Lighting would be designed to provide the minimum illumination needed to achieve operations/maintenance objectives and to not emit excessive light to the night sky by installing light absorbing shields on top of all light fixtures and by focusing lights in a downward direction.
- If required, worker environmental awareness training conducted by APS staff would be implemented, for all operations/maintenance staff for the duration of the Project.
- Transmission lines, poles, and associated structures:

- As recommended by Avian Power Line Interaction Committee (APLIC 2006), transmission lines would have at least 60 inches of horizontal separation and a vertical separation of 40 inches between phase conductors, which is greater than the physical dimensions of all large birds and bats that could potentially use the structures for perching.
- In situations where particular hardware would present an electrocution risk (e.g., jumpers, cutouts, arrestors, transformers, etc.), perch guards and/or insulators would be installed per APLIC (2006) guidelines to minimize electrocution risk.
- Line marking devices would be installed as needed to reduce risk of avian collisions (APLIC 2012).

- Vegetation:
  - All vegetated areas disturbed by construction activities, except permanent road surfaces, would be reseeded with a native seed mix as applicable.
  - Herbicides and pesticides may be used, as needed, to control invasive/noxious weeds and/or pests on site. AES would use only Environmental Protection Agency (EPA)-registered pesticides and/or herbicides that also comply with Arizona State (State) and local regulations. Herbicide and pesticide use shall be limited to non-persistent immobile herbicides/pesticides and shall only be applied in accordance with label and application permit directions and stipulations for terrestrial applications.
- Lighting:
  - Utilize the minimum intensity lighting that meets safety criteria.
  - Fully shield all permanent lighting (e.g., full cut-off), except for emergency lighting triggered by alarms.
  - Mount lighting so that no light is emitted above an imaginary horizontal plane through the fixture.
  - Consider lighting control through timers, sensors, dimmers, or switches that are available to facility operators.

Cultural Resources

- Project-related vehicular traffic would be restricted to existing access roads and overland travel within the transmission line ROW whenever feasible. If improvements to existing access roads or new temporary or permanent access roadway is needed for construction and operation and maintenance of the new transmission line, all roads would be restored to pre-existing conditions when they are no longer needed. All improvements to existing access roads or new temporary or permanent access roadway would be located within the area covered by the Class III Archaeological Survey completed for the Project.
- In the event that previously unreported historic properties are encountered during ground disturbing activities, all work must cease immediately within 100 feet until a qualified archaeologist procured by AES has documented the discovery and evaluated its eligibility for the National Register of Historic Places (NRHP), in consultation with WAPA, Arizona State Museum (ASM), Arizona State Historic Preservation Office (SHPO), and tribes, as appropriate. Work must not resume in this area without approval of WAPA.

- If human remains are encountered during ground-disturbing activities, all work must immediately cease within 100 feet of the discovery. The ASM, WAPA, SHPO, and appropriate tribes must be notified of the discovery in accordance with Native American Graves Protection and Repatriation Act (Public Law 101-601; 25 United States Code 3001-3013) or Arizona burial laws (A.R.S. § 41-844 and A.R.S. § 41-865), as appropriate, and work must not resume in this area without proper authorization.

Transportation

- Deliveries of materials would be scheduled for off-peak hours, when practical, to reduce effects during periods of peak traffic.
- Truck traffic would be phased throughout construction, as much as practical.
- Carpooling or mass transportation options for construction workers would be encouraged.
- AES would obtain the applicable permits needed to transport equipment and materials (e.g., oversized transformers, etc.) and coordinate closely with Arizona Department of Transportation (ADOT) and other State transportation departments, as appropriate.

Public Health and Safety

- Proposed battery storage facility design would include an 8-foot-tall solid masonry wall, plus intrusion detection system on top, to ensure secure access along all facility boundaries.
- Proposed battery storage facility design would include a First Responder Station at the emergency access entrance, and a fire water loop with five fire hydrants and requisite isolation valves.
- Proposed battery storage facility design would include fire and gas detection and fire suppression systems in each individual battery storage cube. Each cube would be equipped with a three-zone fire detection and suppression system, incorporating photoelectric smoke detectors which would be monitored remotely 24/7. The system would utilize aerosol suppressant supplied via two canisters. The fire suppression system may also be manually activated via pull stations. Combination horn/ strobe devices would indicate that the system has been deployed. Each non-entry cube is designed to be electrically isolated to contain potential fire inside and prevent propagation to battery modules in adjacent cubes.
- The Project would be designed in accordance with all applicable Federal and industrial standards including the American Society of Mechanical Engineers, NESC, International Energy Conservation Code, International Building Code, Uniform Plumbing Code, Uniform Mechanical Code, National Fire Protection Association standards, and Occupational Safety and Health Administration regulations.
- AES would develop and maintain a Spill Prevention and Emergency Response Plan in coordination with the Fire Marshall. The Emergency Response Plan would include description of the BESS, operational states, emergency scenarios, system actions, recommendations for extinguishing, site access, and control and roles of stakeholders. A copy of the plan would be kept onsite at all times, and facility staff, First Responders, and fire personnel would be trained annually and as needed on the procedures outlined in the plan.

Wastes and Hazardous Materials

- AES would design and operate systems containing regulated materials (e.g., transformer oil) in a manner that limits the potential for their release.
- Vehicles and equipment would be kept in proper working condition to reduce the potential for leaks of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials.
- The containment and disposal of hazardous waste would be outlined in a Spill Prevention and Emergency Response Plan developed by the AES construction contractor to reduce the likelihood of substantial spills.

Visual Resources

- Reduce visual impacts during construction by minimizing areas of surface disturbance, controlling erosion, using dust suppression techniques, and, if applicable, restoring exposed soils as closely as possible to their original contour and vegetation.
- Incorporation of view-obscuring 8-foot solid masonry wall along all proposed battery storage facility boundaries.
- New artificially weathered (dulled) galvanized steel transmission poles and non-specular conductors would be used to reduce visual impacts.

2.5 No Action Alternative

Under the No Action Alternative, WAPA would not provide financing to AES for their proposed Project and the Project would not be built using financing from the United States Treasury. Under this alternative, the Project would not be built and would potentially increase grid instability without addressing storage needs at the local load center. Construction activities associated with the Proposed Action would not occur. Additionally, under this alternative, Reclamation would not enter into an LGIA with AES.

2.6 Alternatives Considered but Not Further Evaluated

Prior to submitting the request for Project financing, the Project Applicant considered multiple factors in the evaluation of potential Project locations, including proximity to the Westwing Substation, contiguous parcel(s) of private lands suitable for battery storage development and with low resource value, proximity to existing transportation and utility infrastructure, and proximity to developed areas to minimize materials transportation and workforce commute. Based on these and other development factors, the Project Applicant optioned the proposed 10-acre parcel for development.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Introduction

The information in this chapter describes the affected (existing) environment within the Project area and presents the potential effects of the Project and the No Action Alternative on the resources identified for analysis. The resource issues addressed in this EA were developed using comments received from the public, tribes, and agencies during internal and external scoping. Resource issues considered but dismissed from further analysis are described in Section 3.2.

3.2 Impact Analysis Methodology

The terms "impacts" and "effects" are used interchangeably, and the terms "increase" and "decrease" are used for comparison purposes in this EA. Direct, indirect, and cumulative impacts are described in this chapter. Potential impacts are described in terms of duration, intensity, type, and context. Definitions of impact terms are provided below.[1]

- ***Direct:*** caused by the action, same time and place.
- ***Indirect:*** caused by the action, but later in time or further in distance, but still reasonably foreseeable.
- ***Cumulative:*** caused by the incremental impact of the action, decision, or project when added to other past, present, and reasonably foreseeable future actions.

For the purposes of this analysis, duration (temporal scale) of the direct or indirect effects of the analysis is defined as follows. These durations would apply to each of the resources/uses that are analyzed in this EA but may vary slightly depending on the resource/use.

- ***Short-term*****:** impacts that would be less than 5 years in duration, includes temporary construction-related impacts.
- ***Long-term*****:** impacts that would be greater than 5 years in duration.

For the purposes of this analysis, intensity or severity of the impact is defined as follows:

- ***Negligible*****:** changes would not be detectable and/or measurable. The resource/use would be essentially unchanged or unaltered.
- ***Minor*****:** changes would be detectable and/or measurable and would have a slight change or alteration to the resource/use.

[1] Preparation of this EA commenced prior to September 14, 2020 and is proceeding pursuant to 40 CFR § 1506.13 which provides "the regulations in this subchapter apply to any NEPA process begun after September 14, 2020. An agency may apply the regulations in this subchapter to ongoing activities and environmental documents begun before September 14, 2020." Since scoping was conducted in 2019 for this Project, this EA has been prepared in accordance with the Council on Environmental Quality (CEQ) regulations implementing the provisions of NEPA as were codified in 1978.

- ***Moderate*:** changes would be clearly detectable, measurable, and/or have an appreciable effect on the resource/use. The resource/use would be notably changed or altered, and the effect is apparent. Project activities could change the indicator over a small area or to a lesser degree.
- ***Major*:** changes would be readily detectable, and/or have a severe effect on the resource. The resource/use would be substantially changed or altered over a large area or to a large degree.

For the purposes of this analysis, the type of impact is defined as follows:

- ***Adverse:*** impacts that would have a detrimental effect to a resource/use.
- ***Beneficial:*** impacts that would have a positive effect to a resource/use.

Context is the setting within which an impact is analyzed. For the purposes of this analysis, the contexts are defined as follows:

- ***Local:*** within and immediately adjacent to the Project area.
- ***Regional:*** remaining area outside of but within 15 miles of the Project area.

Table 3-1 identifies the presence or absence of resource elements or uses in the Project area, and states the rationale for the inclusion or exclusion of a detailed analysis of those resource elements in the EA.

Table 3-1. Determination and Rationale for Resources Considered/Dismissed from Further Analysis

Resource/Use	Additional Analysis Determination and Rationale
Air Quality	The Federal Clean Air Act of 1970 was the first comprehensive legislation aimed at reducing levels of air pollution throughout the country. The 1970 law required the EPA to establish National Ambient Air Quality Standards (NAAQS), which set maximum allowable concentrations for seven criteria pollutants: carbon monoxide, nitrogen dioxide, ozone, particulate matter and fine particulate matter, sulfur dioxide, and lead. The Project area meets all the NAAQS (EPA 2021), and therefore, is considered in attainment. Potential impacts from construction, O&M, and decommissioning of a battery storge facility and interconnection on local and regional air quality would result from fugitive dust emissions and vehicle exhaust emissions, primarily during the construction and decommissioning phases. The main source of fugitive dust (particulates) in the vicinity of the Project area would include vehicular traffic on unpaved roads and windblown dust from disturbed areas. Fugitive dust on unpaved roads would be reduced through watering the roads or other dust control measures as described in Section 2.4.2, including implementation of a Fugitive Dust Control Plan. With the implementation of BMPs for dust control, impacts would be minor and would not require additional measures to minimize or avoid adverse impacts. During construction and decommissioning activities, there would be short-term, localized, negligible increases in vehicle emissions and fugitive dust from ground disturbance and vehicle travel associated with the Project.

	Once these activities are completed (construction activities are estimated to take up to 12 months), operation of the unmanned battery storage facility is not expected to contribute to measurable or detectable impacts to air quality. Long-term, negligible increases in emissions from a limited amount of maintenance vehicle traffic is expected with the Project. No additional detailed analysis in the EA is warranted.
Climate Change/ Greenhouse Gas Emissions	Climate change is a global issue that results from several factors, including, but not limited to, the release of greenhouse gases (GHGs), land use management practices, and the albedo effect, or reflectivity of various surfaces (including reflectivity of clouds). Specific to the Project, GHGs are produced and emitted by various sources during the development and operational phases of transmission lines and battery energy storage. The primary sources of GHGs associated with transmission lines and substations are carbon dioxide, methane, and nitrous oxide from fuel combustion in construction and maintenance vehicles and equipment. In addition, removing vegetation may result in a small, short-term, indirect increase in GHG emissions due to the reduction in carbon uptake. Construction of the Project would result in temporary activity and minor levels of GHG emissions that would cease after the construction period. During the O&M phase, periodic O&M activities would generate negligible GHG emissions. Overall emissions from construction and operation of the Project would be minimal in comparison to global GHG emissions. Furthermore, the development of a 100-MW battery storage facility would offset the emissions of GHGs that would occur if the same amount of energy were generated by a traditional, fossil fuel powered energy facility. In addition, equipment (switches and reclosers) containing the GHG sulfur hexafluoride are not planned for this Project. The GHG emissions from the Project would result in negligible, short-term, incremental impacts to climate change and GHG emissions, and would be limited to activities during Project implementation. No additional analysis in this EA is warranted.
Cultural Resources	See Detailed Analysis in Section 3.3
Environmental Justice	There are no minority or low-income populations identified residing or working within or adjacent to the Project area in the communities of Coldwater Ranch (0.27 mile north of the Project area) or Sun City West (2.06 miles southwest of the Project area) (U.S. Census Bureau 2010). 7.5 percent of the population of the adjacent City of Peoria, 7.5 percent of the population of Sun City West, and 7.3 percent of the population of the City of Surprise (0.92 mile southwest of the Project area) are below the poverty level. These communities may experience minor beneficial socioeconomic impacts from the Project. Therefore, there are no disproportionate impacts to environmental justice populations. No additional detailed analysis in the EA is warranted.

Farmlands (Prime or Unique)	There are no U.S. Department of Agriculture designated prime or unique farmlands within the Project area (USDA 2019). No additional detailed analysis in the EA is warranted.
Floodplains	Executive Order 11988, Floodplain Management, requires an evaluation of impacts to floodplains for all Federal actions and directs Federal entities to reduce impacts to floodplains and minimize flood risks to human safety. Further, the DOE is required under 10 CFR § 1022.11 to determine if a proposed action would be located in a floodplain. The Project site is not located in a designated 100-year floodplain (FEMA 2013). The Project site would not fall within a floodplain, and thus would have no impact on existing floodplains. No additional detailed analysis in the EA is warranted.
Geology, Mineral Resources, and Energy Production	There are no geologic or mineral resources within the Project area, so no impact to these resources would result from the Project (AZGS 2021). No additional detailed analysis in the EA is warranted.
Indian Trust Assets	Indian Trust Assets are legal assets associated with rights or property held in trust by the United States for the benefit of federally recognized Indian tribes or individual tribal members. The United States, as trustee, protects and maintains the specific rights reserved by, or granted to, Indian tribes or individuals by treaties, statutes, and executive orders. There are no known Indian Trust Assets within the Project area, therefore the Project would result in no adverse effects to any Indian Trust Asset. No additional detailed analysis in the EA is warranted.
Intentional Acts of Destruction	The Project presents an unlikely target for an act of terrorism or sabotage, with an extremely low probability of attack. The DOE requires that NEPA documents explicitly address potential environmental consequences of intentional acts of destruction (DOE 2006). The purpose is to inform the decision-maker and the public about chances that reasonably foreseeable accidents associated with proposed actions and alternatives could occur, and their potential adverse consequences. Reasonably foreseeable means events that may have catastrophic consequences, even if their probability of occurrence is low, provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is with the rule of reason or reasonably foreseeable (40 CFR § 1502.22). This includes determining the appropriate level of detail for analysis based on the type of project, level of risk, and sensitivity for releasing information to the public. The addition of the proposed interconnection and associated battery storage facilities would continue to support the reliability of delivering electricity in the vicinity as it would contribute to a more flexible and resilient grid. Energy storage improves system reliability as it can meet peak capacity while supplying ancillary services to the grid. Vandalism and intentional acts of destruction (sabotage) of the proposed facility and

	related interconnection are unpredictable events. The chances of such acts occurring would be reduced by the limited and secure access to the proposed battery storage facility, including an 8-foot-tall solid masonry wall, plus intrusion detection system on top, along all proposed facility boundaries. Intrusion detection system to alert the system operators of any potential intruders. In addition, the facility and transmission lines would be inspected on a regular O&M schedule for any signs of sabotage or vandalism and immediate action would be taken if a potential hazard is found. The potential for serious injury resulting from vandalism is negligible; therefore, impacts would be less than significant. No additional detailed analysis in the EA is warranted.
Lands and Realty	The proposed battery storage facility would be located entirely on privately owned lands. The proposed transmission line route would follow an existing APS 69-kV transmission line ROW across privately owned and Salt River Project land to interconnect into the existing APS Westwing Substation to the south. The AES proposed Project would need to negotiate an approximate 60-foot-wide easement for the first 0.07-mile (370-feet) span of the new transmission line ROW from the proposed battery storage facility to the existing APS transmission pole with the underlying landowner. WAPA would not participate in or have any interest regarding these ROW negotiations. Although ROWs may be present, impacts to WAPA or other entities would be negligible. No temporary or permanent access limitations or alterations are anticipated to lands outside of the Project area; therefore, there would be no impacts to privately owned lands. No additional detailed analysis in the EA is warranted.
Native American Religious Concerns	On September 25, 2019, WAPA initiated consultation with tribes that have an affiliation with the Project area (See Section 1.4.2 Tribal Consultation). WAPA provided Project information and described the cultural resources review process to tribal cultural resources specialists. WAPA also requested information from the consulting tribes on historic properties in the Project area and solicited comments from tribal representatives. The tribal comments were used to shape the Project's cultural resource field investigation. To date, the Hopi Tribe has provided input on their desire to consult when there is potential to adversely affect prehistoric sites that would be caused by the Project. In addition, the White Mountain Apache Tribe has determined the Project plans would "Not have [an] Adverse Effect" on the White Mountain Apache tribe's historic properties and/or traditional cultural properties, and no further consultation is necessary. No sacred sites were identified within the Project area during the archaeological surveys conducted in November 2019 and May 2020. Government-to-government consultation will continue with tribes through Project implementation. No additional detailed analysis in the EA is warranted.

Noise	The Project area would be located in undeveloped terrain north of Arizona State Route 303. The nearest sensitive receptors are residences in the Coldwater Ranch community across West Happy Valley Road north of the Project area. Noise would be generated by equipment and vehicles during construction, O&M, and decommissioning, similar to existing and ongoing noise levels. Noise generated by construction and decommissioning of the proposed battery storage facility and interconnection would result in short-term, temporary, adverse impacts. Noise generated during O&M would result in long-term, but negligible, adverse impacts over the life of the unmanned BESS and interconnection. No additional detailed analysis in the EA is warranted.
Noxious and invasive Weeds	Non-native species including stinknet (*Oncosiphon piluliferum*), prickly Russian thistle (*Salsola tragus*), Mediterranean grass (*Schismus* sp.), red brome (*Bromus rubens*), and buffelgrass (*Pennisetum ciliare*) have been observed in the Project area (Stantec 2020a). Of these non-native species, stinknet and buffelgrass are listed as noxious weeds by the ADA under Arizona Administrative Code R3-4-245. Ground-disturbing activities associated with the construction of the Project may create conditions that could increase the potential for introduction and/or establishment of nonnative plants, including noxious and invasive weeds. Short-term, negligible, adverse impacts would result from the BESS facility being cleared of vegetation prior to construction. During O&M, long-term, negligible, beneficial impacts would result from the ongoing site and vegetation maintenance. The Project would comply with all Federal, State, and local weed control regulations and implement noxious and invasive weed BMPs, therefore, the potential for spread of invasive and/or noxious weeds would be very low. No additional detailed analysis in the EA is warranted.
Paleontology	The Project area is located north of the Salt River and along the western bank of the Agua Fria River (Stantec 2020b). The surrounding area can be characterized as very typical of valley floor within a larger desert, without any observable granite outcrops, or any other prominent geologic features. While the entire proposed battery storage facility site is located in an undeveloped open field adjacent to the existing Westwing Substation, most of the surrounding Study Area is located along existing paved roadways within existing residential and commercial developments that have been constructed and developed in the last 25 years. Therefore, the Project area has low potential for paleontological materials. No additional detailed analysis in the EA is warranted.

Public Health and Safety	Workers would be exposed to noise and exhaust from motorized equipment and vehicles during construction, O&M, and decommissioning of the Project. The use of hearing protection and operation of equipment in well-ventilated areas would minimize effects to operator health. It is unlikely that the public would be at risk from any construction, O&M, or decommissioning activities by maintaining safety zones around active work areas. AES Energy Storage, LLC would be required to comply with all applicable design codes and implement a range of plans to minimize risks to workers and public alike, such as spill prevention and emergency response plans, hazardous materials management plans, fire management plans, and health and safety programs. Further, the proposed battery storage facility design includes fire and gas detection and fire suppression systems in each individual battery storage cube. Therefore, the potential risk to worker and public health during construction, O&M, and decommissioning would be negligible. No additional detailed analysis in the EA is warranted.
Recreation	There are no designated public recreation facilities, such as trails, known to occur within or adjacent to the Project area. Because the land where the proposed battery storage facilities would be built is privately owned, there are also no opportunities for dispersed recreation activities, such as motorized and non-motorized activities, wildlife viewing, hunting, camping, hiking, and off-highway vehicle (OHV) use. Therefore, no impact to this resource would result from the Project. No additional detailed analysis in the EA is warranted.
Biological Resources	See Detailed Analysis in Section 3.4
Socioeconomics	Within the vicinity of the Project area, the only concentrated areas of population are the Peoria (175,961 people) and Surprise (141,664 people) Census Designated Places (CDPs). 7.5 percent of people in Peoria and 7.3 percent of people in Surprise are below the poverty level (U.S. Census Bureau 2010). The Project may result in minor beneficial impacts to the socioeconomic conditions of the two CDPs during construction when workers would be onsite daily. The improvements made to vacant land would subject that land to a potentially higher tax assessment ratio, which would affect the long-term property tax revenue paid to Maricopa County. The Project's construction and decommissioning activities would have a negligible, beneficial impact to socioeconomics from onsite crews using local services. During O&M, there would be no impact on socioeconomics because they would not employ any local community members. No additional detailed analysis in the EA is warranted.
Soils	Soils in the Project area are typical warm desert soils, showing modification of the parent materials associated with aridity. Distinguishing features are the low humus content and high content of readily soluble salts (Stantec 2020). Impacts to soils from the Project, including soil compaction and soil erosion by wind and water, would mainly occur from construction and

	decommissioning activities and would result in short-term, minor, adverse impacts. During O&M activities, maintenance vehicles would be restricted to designated roads. With the implementation of BMPs, including those for stormwater, erosion, and fugitive dust control, impacts to soils would be minimized. Project long-term, adverse impacts to soil resources would be negligible. No additional detailed analysis in the EA is warranted.
Transportation	Primary access to the proposed battery storage facility site would be via West Happy Valley Road, which is a major east-west arterial. Transmission line access roads exist underneath or adjacent to the majority of the proposed transmission line ROW. An access road extension may be needed underneath or adjacent to the first approximately 0.07-mile (370-feet) AES span of the new transmission line ROW from the proposed facility to the existing APS transmission pole. Improvements to existing access roads as well as new temporary or permanent access roadway may be needed for construction and operation and maintenance of the new transmission line. All temporary roads would be restored to pre-existing conditions when they are no longer needed, and all upgraded existing roads and new permanent roads would be restored to a width of 12 feet. Maximum road grades would vary depending on the erosion potential of the soil: 6-8% on erodible soils, or 10-15% for erosion resistant soils. During construction, the Project would result in a minor, short-term increase in traffic on West Happy Valley Road in the immediate vicinity of the Project area as equipment is transported to the site. Delays may occur during delivery of large equipment, such as the substation components; however, deliveries would be directed to the laydown areas within the Project area to minimize traffic delays on local roadways or at intersections, even during peak construction. There would be no road closures required and delays are not expected to impede the existing use of West Happy Valley Road. Construction traffic would also result in a negligible impact to Arizona State Route 303. Impacts to transportation from O&M activities would be negligible and would not impact traffic flow on local roadways as the BESS facility would be primarily operated remotely and would only be visited for maintenance visits twice a month on average. No additional detailed analysis in the EA is warranted.
Water Resources and Quality (Drinking/ Surface/ Groundwater)	The Project area is located within the Phoenix AMA hydrologic subbasin (HUC 15070102). All-natural drainage features identified on the Project site are ephemeral and flow only in direct response to localized precipitation events. These natural ephemeral drainages would not be considered WOTUS by the U.S. Army Corps of Engineers (USACE) because all show poor development of bed and banks, have discontinuous or non-existent Ordinary High-Water Marks, and in most cases can be described as small erosional features or swales. This is owing to the very low gradient of the site soil characteristics, and low annual precipitation, which promotes infiltration and evaporation over long-distance stormwater runoff (Stantec 2020a).

	The results of the desktop research and field investigation indicate that there are no WOTUS in the Project area as defined by the USACE because of a lack of hydrophytic vegetation, stream hydrology, and hydric soil development. The Project area contains no relatively permanent surface water features and there are no mapped hydric soils in the Project area (Stantec 2020a). The Project would implement BMPs for stormwater and erosion control as part of the Project SWPPP to prevent runoff and sedimentation into the washes in the Project area during construction. Once operational, the proposed battery storage facility would be designed to maintain existing drainage patterns and control the rate and amount of surface water runoff through implementation of stormwater retention basins along the eastern facility boundary. The proposed battery storage facility would require limited water and wastewater utilities and services during O&M via connection to existing EPCOR Water Arizona water supply and sewer lines running in Happy Valley Road. Limited water required during the construction phase would be trucked in as necessary until water service is available. Therefore, impacts to water resources and quality from construction, O&M, and decommissioning activities would be negligible. No additional detailed analysis in the EA is warranted.
Wetland, Riparian Areas	There are no wetlands/riparian zones in the Project area, so no impact to this resource would result from the Project (USFWS 2021). No additional detailed analysis in the EA is warranted.
Wild and Scenic Rivers	There are no Congressionally designated Wild and Scenic Rivers within or immediately adjacent to the Project area, so no impact to this resource would result from the Project (NWSRS 2021). No additional detailed analysis in the EA is warranted.
Wilderness Area	There are no known Wilderness Areas, Wilderness Study Areas, or Lands with Wilderness Characteristics within or immediately adjacent to the Project area, so no impact to this resource would result from the Project. No additional detailed analysis in the EA is warranted.

3.2.1 Cumulative Impacts

The determination of what past, present, and reasonably foreseeable future actions to consider in the impact analysis is based on the resources being affected by the Project. A cumulative effect is defined under NEPA as "the change in the environment which results from the incremental impact of the action, decision, or project when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such other action. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR Part 1508.7). Past, present, and reasonably foreseeable future actions that

incrementally add to the potential cumulative impacts of the Project and the No Action alternatives are considered in this EA. The intent of this analysis is to capture the total effects of several actions over time that would be missed by evaluating each action individually.

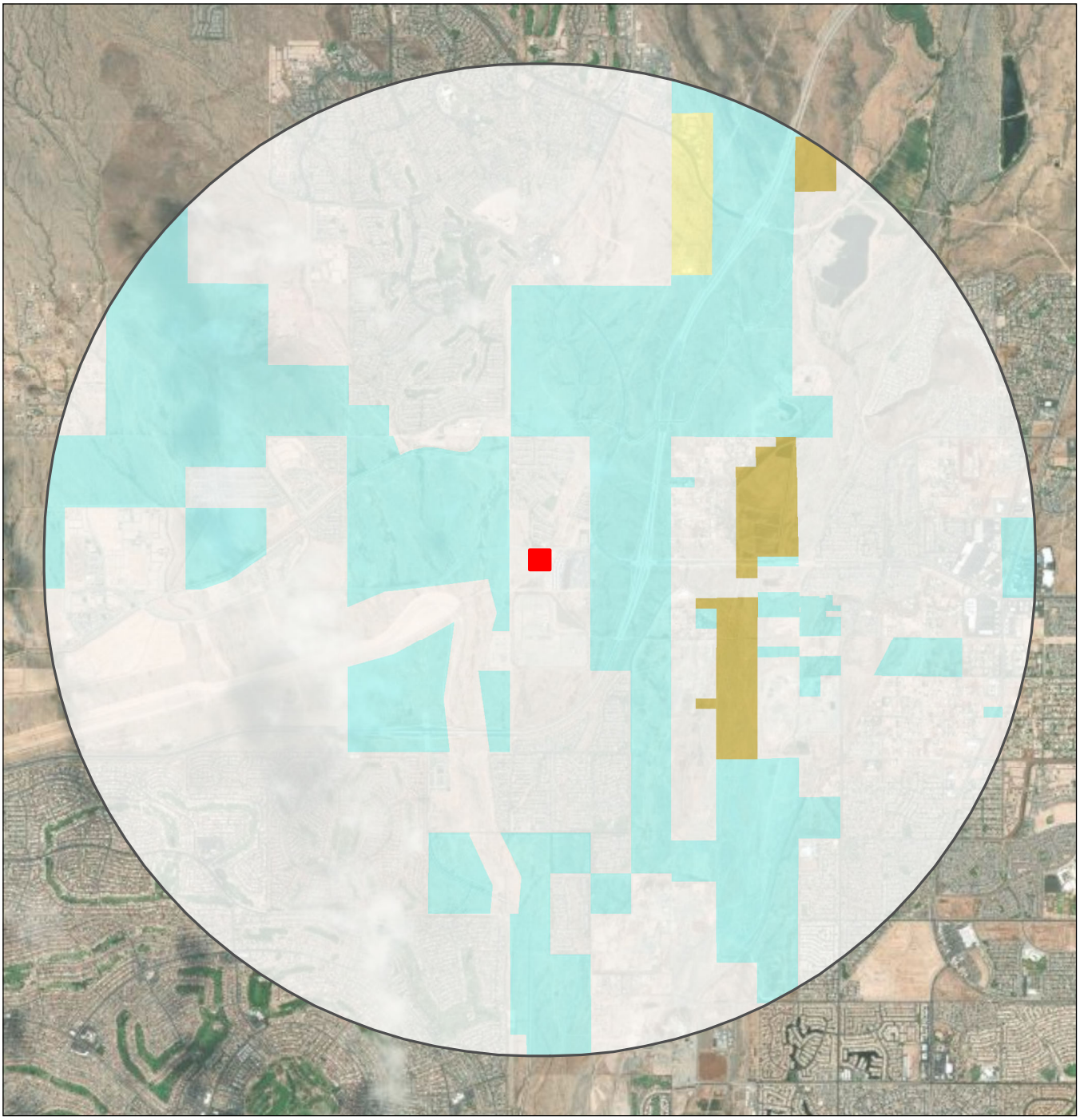
3.2.2 Cumulative Effects Analysis Area and Timeframe of Effects

Geographic (spatial) and time (temporal) boundaries have been established for the cumulative effects analysis. Each resource that may have a minor, moderate, or major impact from the Project has a defined cumulative effects study area (CESA). The geographic area of the CESA for visual resources would include the area within 3 miles of the Project, which is the roughly the maximum distance from which a casual observer could distinguish the elements of the Proposed Action. The cultural resources CESA would be the same 3-mile radius and would encompass the area of indirect impacts for any cultural property based with the discernible view of the Project area. For general wildlife and special status wildlife species, the CESA is also 3 miles from the Project area and is based on the distance that Arizona Game and Fish Department (AGFD) uses to identify species that may be present in the landscape.

The Project CESA represents 19,050 acres and the Project area is 5.23 percent of this CESA. The BLM manages 2 percent of the CESA, Reclamation manages 1 percent, 30 percent consists of State-managed lands, and 67 percent is privately owned. Figure 3-1 shows the 3-mile CESA boundary in relationship to the Project area. A 20- to 25-year timeframe is considered for the cumulative effects analysis, which would be the operational life of the Project.

3.2.3 Past and Present Actions

In order to understand the contribution of past actions to the cumulative effects of the Project and the No Action alternative, this analysis relies on current environmental conditions as a proxy for the impacts of past actions. Existing conditions reflect the aggregate impact of prior human actions and natural events that have affected the environment and could contribute to cumulative effects. The cumulative effects analysis does not attempt to quantify the effects of past human actions by adding up all prior actions on an action-by-action basis. By looking at current conditions, the residual effects of past human actions and natural events are captured, regardless of which particular action or event contributed those effects. The Council on Environmental Quality issued an interpretive memorandum on June 24, 2005 regarding analysis of past actions, which states, “agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions.”



Project Parcel
Cumulative Effects Study Area (3 Miles)

Ownership

Bureau of Land Management
Bureau of Reclamation
Private
State

0 2,500 5,000 Feet

(At original document size of 8.5x11)
1:60,000

N

Figure No.
3-1

Title
Arizona Peaking Capacity Energy Storage Project Visual and Cultural Resources, and Wildlife Species CESA

Notes
1. Coordinate System: NAD 1983 StatePlane Arizona Central FIPS 0202 Feet
2. Data Sources: Stantec 2021. Parcels From Maricopa County 2021.
3. Background: © OpenStreetMap (and) contributors, CC-BY-SA
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

3.2.4 Reasonably Foreseeable Future Actions

WAPA developed a list of reasonably foreseeable future actions that, when combined with impacts from the Proposed Action, would have a potential for impacts resulting in cumulative effects (Table 3-2). Specific projects by land managers within the CESA have been reviewed, including the BLM, Reclamation, ADOT, Maricopa County, APS, and WAPA. Arizona State Land Department was contacted but did not respond with information regarding their current projects. Other reasonably foreseeable future actions and management activities occurring in the CESA which are highly probably include range improvements, vegetation management, recreation (e.g., OHV use, hiking), road improvements, utility projects, and potentially the addition of special designation areas and Special Recreation Permit. Other disturbances that are ongoing include wildland fire and establishment and spread of noxious weeds and invasive plant species.

Table 3-2. Reasonably Foreseeable Future Actions

Project Name	Proximity to Project Area	Description
Commercial Alteration (Maricopa County)	0.32 mile	Convert recreational amenities to natural gas service instead of propane at Christopher Todd Communities on Happy Valley
Residential Alternations (Maricopa County)	0.32 - 3 miles	Various minor residential alterations (e.g., construction and installation of fences, canopies, pools with gas lines, electric panels, and underground propane tanks)
Outside of 3-mile buffer		
69-kV Power Line Siting Project (APS)	4.58 miles	The proposed APS 69-kV line would cross Reclamation land along the Central Arizona Project canal.
West Valley Central 230-kV Connection Project (APS)	10.05 miles	APS is in the process of identifying appropriate routes for new 230-kV powerlines that will connect the Contrail Substation two miles to the east into the existing 230-kV transmission line or directly into the El Sol Substation, and approximately 5 miles to the west into the planned TS-2 Substation.
Co. Ltd Project (APS)	At least 13.22 miles away	APS will be relocating 3 to 4 miles of an existing 500/230-kV transmission line approximately 0.5 mile to the north and expanding a planned (but unbuilt) 230-kV substation that will serve the plant, and consideration of an additional 500/230-kV substation that may also serve the plant. The location is currently undisclosed.

3.2.5 Cumulative Impacts on Resources

For this analysis, cumulative resource impacts for the CESA are the combined direct and indirect effects of the present and reasonably foreseeable future actions, in addition to the direct and indirect impacts of the Project and the No Action alternatives, respectively. The levels of direct and cumulative impacts are categorized as major, moderate, or minor based on the same thresholds defined in Section 3.1. If the results of the analysis of direct or indirect impacts were considered to be none or negligible as a result of the Project and the No Action alternative, there would be no measurable contribution to a cumulative effect and, therefore, no cumulative effects analysis for the respective resource/use has been done.

Based on the analysis of direct and indirect impacts provided in Chapter 3.0, neither the Project nor the No Action Alternative would have long-term, minor, moderate, or major direct effects to the following resources: air quality; climate change/ greenhouse gas emissions; environmental justice; prime or unique farmlands; floodplains; geology, mineral resources and energy production; intentional acts of destruction; lands and realty; Native American religious concerns; noise; noxious and invasive weeds; paleontology; public health and safety; recreation; socioeconomics; soils; transportation; water resources and quality; wetlands and riparian areas; Wild and Scenic Rivers; or Wilderness Areas within the Project area. There would be no measurable contribution to these resources's/ use's respective cumulative impacts; therefore, there is no cumulative effects analysis for these resources/uses. Refer to Table 3-1 for detailed information regarding the potential impacts to these resources/uses. Potential short- and long-term, minor to major, direct effects to cultural, biological, and visual resources associated with the Project are analyzed in further detail in Sections 3.3 through 3.5.

3.3 Cultural Resources

For the purposes of the Project, the term "cultural resource" refers to buildings, districts, sites, and objects that have historical or cultural value. A historic property is defined in 36 CFR § 800.16 as: "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places." The term "eligible for inclusion in" refers to properties that meet the criteria for listing in the National Register are not listed in the National Register but do meet the criteria for listing in the National Register. This section of the EA describes cultural resources, historic properties, and the impacts that the Project and the No Action Alternative would have on those resources. This analysis is based on the Archaeological Survey of 51.0 Acres of Land for the Project (Stantec 2020b).

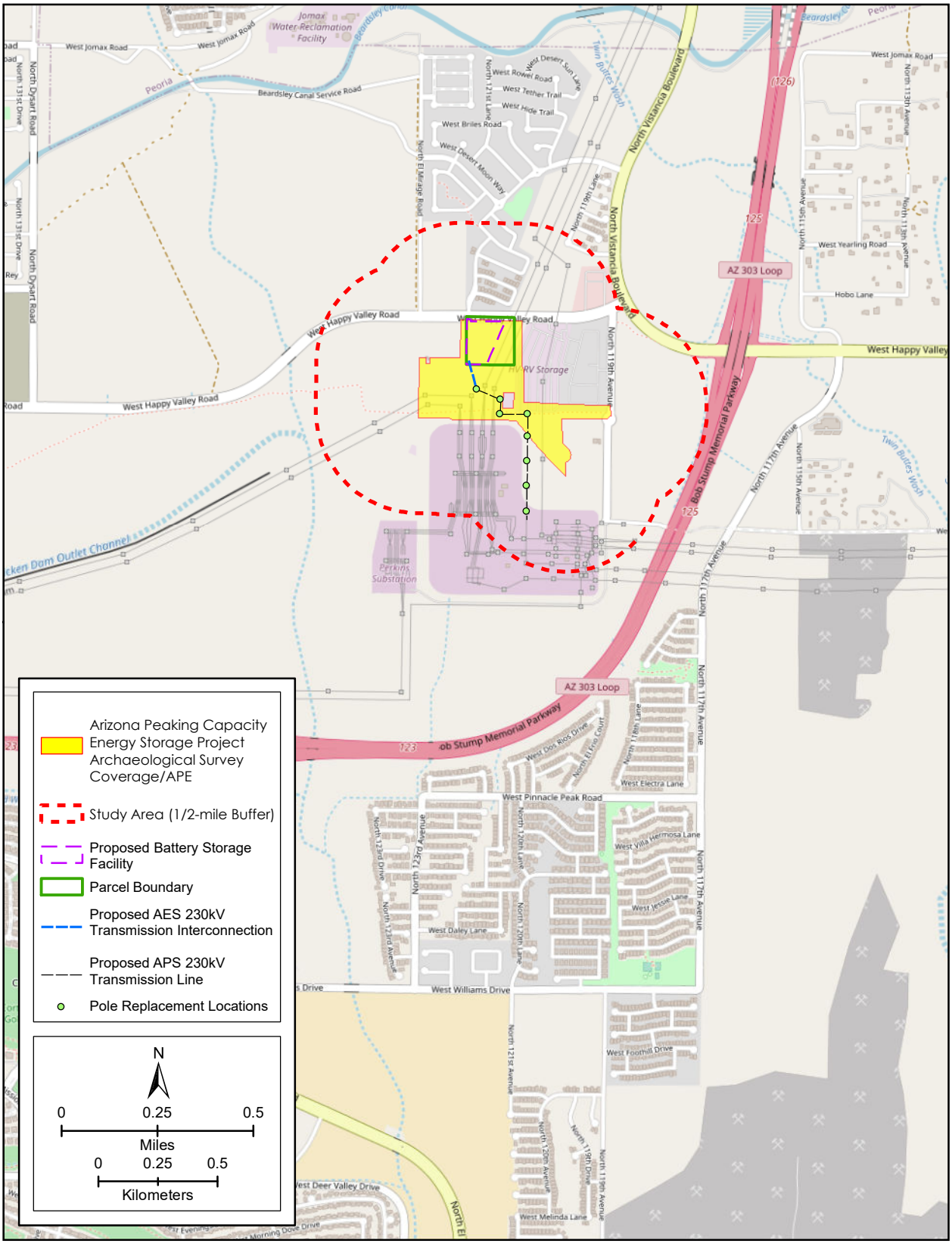
The Archaeological Survey Area of Potential Effects (APE) includes the footprint of the proposed battery storage facility, alignment of the 0.6-mile long 230-kV transmission line, additional project alternatives, and any proposed Project staging areas, including a 30-meter buffer surrounding each area, for the total of 51.0 acres. The 0.47-mile-long portion of the existing transmission corridor, which would be rebuilt, was not surveyed as it lies within the existing Westwing Substation property boundary walls on previously disturbed (leveled and graded) land. The Study Area includes the APE and the ½-mile radius surrounding the APE (Figure 3-2). The Study Area is examined in the archaeological analysis to account for Project surroundings. The CESA was also examined to account for how the impacts of the Project would interact with surrounding land uses and development.

3.3.1 Affected Environment

3.3.1.1 Cultural Setting

ARCHAIC PERIOD

The end of the Pleistocene witnessed the retreat of the continental glaciers and initiated a trend of increasing temperatures and aridity resulting in vegetation shifts and desiccation of pluvial lakes in the Great Basin (Stone 1986). As a result, to the changing conditions, many large mammal species became extinct and in western Arizona there appears to have been a rapid retreat of the juniper woodlands. Furthermore, the end of the Pleistocene was also accompanied by shifts in human subsistence strategies include reliance on a broad range of plants and fauna with much less emphasis on the hunting of large game (Stone 1986).


Arizona Peaking Capacity Energy Storage Project Archaeological Survey Coverage/APE
Study Area (1/2-mile Buffer)
Proposed Battery Storage Facility
Parcel Boundary
Proposed AES 230kV Transmission Interconnection
Proposed APS 230kV Transmission Line
Pole Replacement Locations
N
0
0.25
0.5
Miles
0
0.25
0.5
Kilometers
West Happy Valley Road
North Vistancia Boulevard
AZ 303 Loop
Bob Stump Memorial Parkway
West Jomax Road
Beardsley Canal Service Road
West Pinnacle Peak Road
West Williams Drive
North 119th Avenue
North 117th Avenue
North 123rd Avenue
North 121st Avenue
West Yearling Road
Hobo Lane
West Electra Lane
West Daley Lane
West Foothill Drive
West Melinda Lane
West Deer Valley Drive
Twin Buttes Wash
Peoria
Jomax Water Reclamation Facility
Perkins Substation
RV/RV Storage

Cultural developments of the Archaic Period in the region have been variously categorized as the San Dieguito-Pinto Complex (Cordell 1984), San Dieguito-Amargosa (Haury 1975), or the Western tradition of the Picosa Culture (Irwin-Williams 1979), or treated as separate cultural phenomena as the Amargos tradition and the Pinto complex (Ezzo 1994; Sterner 1992). Rogers (1939) who defined the Amargosa tradition believed that an Amargosan incursion resulted in the displacement or absorption of San Dieguits groups in western Arizona (Rogers 1958). In general, this time period witnessed the addition of grinding implements and various projectile points reminiscent of the early San Dieguito tradition, which included scrapers, scraper planes, and flake choppers. Some late Archaic groups in the region began to focus on agriculture or horticulture as part of their subsistence and had adopted more sedentary agriculture-based lifestyle. Generally, the Archaic Period, including the various subdivisions and phases extends roughly from 6,000 B.C. to A.D 1.

PATAYAN AND HOHOKAM CULTURAL CHRONOLOGY

Stone (1986) points out that by definition, the Archaic Period in the Southwest ended with the introduction of ceramics and the practice of agriculture. While this transition took place over a long period of time, however, the events and processes that caused this transformation are unclear. Wilcox (1979) argues that near the end of the Archaic Period increasing population densities and decline in average effective precipitation may have reduced the efficiency of small hunting groups and favored the adoption of farming, and thus, increasing the reliance on storage, and caused a major shift towards rivers and perennial streams. Regional cultures continued to diverge, with the Patayan in the west and the Hohokam in the east.

As with most studies based on surface evidence, pottery is one of the most useful indicators of the temporal and cultural affiliation of the Native Americans who occupied the general Study Area. Based on observations and collections from several sites along the Colorado River, Rogers (1929) and Ezell (1954) concluded that the ceramic evidence points overwhelmingly toward Patayan or Yuman use during the latest prehistoric period and into historical times. Rogers emphasized differences in surface treatments and vessels and rim forms and proposed three periods of Patayan prehistory, which he coined Yuman I, II and III; however, this terminology was changed by Colton (1939), who rejected the terms, claiming it was a reference to an ethnographic culture and therefore not appropriate for prehistoric assemblages and replaced the term Yuman with Patayan, and renamed Rogers' phases accordingly to Patayan I, II, and III. Patayan (also known as Yuman or Hakataya) groups are thought to have occupied the Lower Gila River east to Gila Bend by A.D 900-1000.

PATAYAN (YUMAN) CHRONOLOGY

Rogers (1945) argued that the Patayan sequence, which started at A.D. 900 and lasted until A.D. 1050, began with immigration by either Hokan (Yuman) people from southern California or non-Hokan people from Papaqueria or Sonora. He defined Pataya I phase ceramics as polished red ware and vessels with the Colorado shoulder. Additional ceramic types characteristic of this period as defined by Rogers (1945) include Black Mesa Buff, Black Mesa Red-on-buff, Colorado Beige, Colorado Red-on-beige, and Colorado Red.

The subsequent Patayan II Period, which lasted between A.D. 1050 to 1500, witnessed a greater variation in ceramics and the spread of these forms from the Colorado Basin into the California and Arizona Deserts. This also coincides with at least two of the major Lake Cahuilla filling episodes with settlements occurring primarily along the shores of the lake and the Colorado River. Habitation camps

and sites tended to be relatively short-term, with temporary camps being established away from known and reliable water sources. Ceramics characteristic of this period seem to change forms, including the disappearance of the Colorado shoulder, and the introduction of recurved rims and flaring margins (Schaefer 1988).

The Patayan III (Protohistoric Period A.D. 1500 +) is a period of ceramic continuity, increasing population size, and changing settlement patters. Wasley and Johnson (1965) point to an increase and movement of human population to the Lower Gila River and its displacement of the Hohokam people. It is believed that a desiccation of the Salton Trough may have caused local populations reliant on lake resources, to migrate further south towards the Colorado River delta or farther west to inland mountains of California. This period is characterized by an increase and spread of buff wares and the introduction of smaller-sized projectile points such as the Desert side-notched and Cottonwood Triangular type points.

HOHOKAM CHRONOLOGY

While the Patayan pattern has not been well studied, the more dominant cultural tradition of the Hohokam has been the subjected to revisions of dates and phases in every conceivable manner (Gumerman and Haury 1979:76). In the Early Formative Period, between A.D. 1 and 800, the Hohokam developed pottery and increased their use agriculture. While population size of this period tended to be relatively small, they had large enough population to construct long, wide canals and to produce large quantities of luxury goods. These canals were used to irrigate fields of useful plants, predominantly maize; however, in some areas cotton and common bean were cultivated as well. Seasonal collecting beans, saguaro fruit and mesquite beans provided additional supplementary calories. Ceramics of the Early Formative Period while simple, were technically well constructed and ranged in color from brown to gray (Gumerman and Haury 1979:68).

The Late Formative Period, which lasted between A.D 800 and 1100, was characterize by change in land use and village patterns. Implementation of agriculture resulted in the subsequent increase in population and village sizes. Ritual and ceremonial ball courts, such as platform mounds, were specifically constructed for religious functions (Wasley and Johnson 1965). There was also a considerable change in ceramic design and form change with large storage vessels and many, small thick-walled vessels produced during this period. The end of the Formative Period was marked by a movement of peoples from sites that have been occupied for hundreds of years, most likely a result of dramatic change within the desert environment (Gumerman and Haury 1979:90).

The Classic Period (A.D. 1100-1500) marks a time of change within the Hohokam population where village organization and settlement patterns witnessed restructuring, and departure from earlier Hohokam traditions due to increased interactions with other peoples. Gumerman and Haury (1979:86) suggest that there is so much change in the Classic Hohokam Period that it may no longer be truly Hohokam and are ascribed to the Salado peoples who moved into the Gila and Salt River basin from the north. The presence of the Salado culture within the Hohokam territory includes multistoried structures, polychrome pottery, inhumations, and tools such as hoes and adzes. Evidence of village abandonment and the construction of elevated settlements, suggesting hostilities with other groups or threat from other groups were also evident within the Classic Period. Some have argued (Schroeder 1961) that by the early Classic Period, the Hohokam culture had been replaced by the Hakataya (Patayan) tradition as suggested by the presence of mixed ceramic ware assemblages in the Gila Bend area. However, some have maintained that the peoples occupying the Gila Bend area may have maintained close relationship

with the Hohokam and the Patayan. The Classic Period ended by A.D. 1500 and saw great territorial contraction of the earlier, core territory of the Hohokam. Areas away from the Gila and Salt River valley, such as the Upper Verde or Agua Fria Valley show no evidence of Hohokam occupation during the Classic, which also marks the end of the Hohokam culture.

PROTOHISTORIC CULTURE

When the Spanish arrived in the Gila and Salt River basin, they encountered several distinct native groups. The Yuman speaking peoples, including the Maricopa, Mohave, and Yavapai, among others, occupied the Lower Colorado and Lower Gila areas, while the speakers of the Piman (O'odham) language occupied the Salt-Gila River confluence and the arid areas further to the south. It is believed that the Pima, who most likely lived within the Study Area are the probable descendants of the Hohokam were practicing canal irrigation at the time of the European contact.

INDIGENOUS HISTORIC CULTURE

The Study Area encompasses lands that ethnographically may have been occupied by the Pima Indians, with the neighboring Yuman speaking tribes located further to the west and south. The Pima speak a Piman language of the Uto-Aztecan language family and were referred to as Pima Altos by the Spaniards, meaning Upper Pima to distinguish them from the Pima Bajo (Lower Pima), which lived further south in the lower Sonora (Fontana 1983:126). All Pima Indians call themselves O'odham, meaning the people, and they further separate themselves into Akimel O'odham and Tohono O'odham, meaning the 'river people' and the 'desert people', respectively. As the Study Area is located approximately 15 miles north of the Gila River and along the Aqua Fria River, it is very likely the overall Study Area was occupied by the Akimel O'odham, who found an abundance of floral and faunal resources along the river and within its floodplain (Fontana 1983:125-126).

EURO-AMERICAN CULTURE:

The Euro-American history of the area, including early Spanish contact, is described in detail by Ezell (1983). By the time of the Euro-American contact in the early 1700s, the Pima occupied at least seven rancherias separated from each other by distances of seven to nearly 40 miles, which were clustered along Santa Cruz and Gila Rivers (Ezell 1983:150). Gathering of wild plant foods was an important source of supplementary or emergency food. While hunting was of less importance, with the deer being the largest game taken, the mountain sheep may have been important in pre-Hispanic times. However, rabbits seemed to be the animal most frequently sought (Ezell 1983:151-152). The focus of the Pima subsistence was the reliance on irrigation with the waters of the Gila, the Salt, and Santa Cruz rivers, and an extensive system of canals and irrigation ditches distributed to water the field.

By the beginning of the Hispanic Period (1694-1853), the Pima, who lived beyond the Hispanic frontier, seemed to be preoccupied with the growth of the Apache and Quechan raiding, rather than with the Spanish settlements further south. As the Spanish seemed to favor the Pima and their possession of land that no Spanish presidio nor Spanish or Mexican settlement was ever founded on the Gila (Ezell 1983:151-153).

During the American Period (1853-), the Pima enjoyed an expanding economy of the first 15 years of the American rule. However, in 1867, a construction of a canal intended to reclaim 4,000 acres of land using the water from the Salt River and completed in 1868, caused many settlers to occupy lands above the

Pima reservation. Subsequently, the introduction of new settlers, government agents and teachers, started an irreversible and pervasive process of change within the Pima society (Ezell 1983:157-160).

3.3.1.2 Cultural Resources Study Area and Area of Potential Effects

The Cultural Resources Study Area includes the APE and the ½-mile radius surrounding the APE. The APE for direct and indirect effects includes the footprint of the proposed battery storage facility, alignment of the transmission line, and any proposed staging areas, including a 30-meter buffer surrounding each area. The APE comprises 51.0 acres. It is anticipated that any potential impacts from the Project would be contained within this acreage.

The APE is located west and north of the small community of Peoria and Sun City West, adjacent to the existing APS Westwing Substation. The APE is situated immediately south of West Happy Valley Road and North 119th Avenue, and it is surrounded by residential developments to the north and east.

3.3.1.3 Identification of Historic Properties

As part of the Archaeological Survey of 51.0 Acres of Land for the Project (Stantec 2020b), the background records search conducted at the ASM (ASM Job No. 1851) revealed that six archaeological surveys (Fangmeier 2002; Finney and Slawson 2001; Gicacobbe and Geller 2000; Keller 1983; Luhnow *et al.* 2003; Schmidt and Mitchell 2003) were previously conducted within portions of the current APE, and 24 archaeological surveys were conducted within the ½-mile surrounding the APE. All the surveys were conducted within the last 36 years, including two projects for the construction and expansion of the APS Westwing Substation. While the Study Area is located less than 1 mile west of the Aqua Fria River, only five archaeological sites were recorded north and west of the current APE, with the remaining site recorded on the western bank of the Aqua Fria River. One of the resources, the McMicken Dam Outlet Channel (AZ T:7:353 ASM), was documented as an in-use historic site. All of these resources were previously documented outside of the current APE.

Two Class III cultural resources surveys were completed in 2019 and 2020. Cultural resources surveys consisted of parallel transects space 10 to 15 meters apart and were conducted over the entirety of the 51.0-acre APE. During the survey, several water valves and sewer manhole covers were observed within the western portion of the APE, suggesting that at least portion of the APE has been disturbed during previous installation of underground utilities. A small cellular phone tower facility surrounded by a concrete wall, a small storage facility, and six steel lattice transmission towers were observed within the APE as well. No historic or prehistoric historic properties were identified (Stantec 2020b).

3.3.1.4 Traditional Cultural Properties

WAPA reached out to six federally recognized tribes regarding the identification of historic properties including traditional cultural properties (TCPs). No TCPs were identified by the tribes.

3.3.2 Environmental Consequences

This section discusses the impacts on cultural resources that would result from construction, O&M, and decommissioning of the Project. While no historic properties were identified within the 51-acre APE, 20 cultural resources were identified within the ½-mile study area. Impacts to historic properties involve resources listed in the NRHP, NRHP-eligible, or potentially NRHP-eligible (i.e., sites for which NRHP-

eligibility determinations have not been made). Cultural resources of undefined NRHP-eligibility are treated as NRHP-eligible.

The analysis of potential impacts to historic properties utilized the criteria defined by the regulations for Protection of Historic Properties (36 CFR Part 800), which implement Section 106 of the National Historic Preservation Act (NHPA). An effect is defined as a direct or indirect alteration to the characteristic(s) of a cultural resource that qualifies it for inclusion in the NRHP. Effects are adverse when the alterations diminish the integrity of a cultural resource's location, design, setting, materials, workmanship, feeling, or association. For historic properties, effects could be the result of ground disturbances; visual or audible disturbances; increased erosion; or changes in public access, traffic patterns, or land use. For this EA, there would be effects on historic properties when a site 1) falls within the temporary disturbance footprint of the Project, and/or 2) lies within a 30-meter buffer of the temporary/permanent disturbance footprint of the Project.

3.3.2.1 Direct and Indirect Impacts of the Project

Construction activities that disturb or excavate soils may impact unidentified historic properties by destroying intact archaeological features of deposits. Construction activities that modify the slope of the natural terrain or compact soils have potential to increase erosion, which might affect the integrity of historic properties. Because construction activities would comply with regulations regarding the control of stormwater discharges, there is only minor potential for increased soil erosion to damage historic properties. Such secondary impacts would likely be confined to the immediate vicinity of construction zones. There are no known cultural resource sites that would fall within the temporary and/or permanent disturbance footprint and/or the 30-meter buffer of the temporary/permanent disturbance footprint of the Project.

Ground disturbance activities associated with construction of the Project would be limited to temporary disturbance associated with staging areas for the installation of the proposed battery storage facility pulling sites for the overhead transmission line, and replacement of existing AES transmission poles with eight new steel monopole structures. Ground disturbing activities associated with O&M and decommissioning of the Project would be confined to areas in the disturbance footprint within the ROW created during construction of the Project. No additional impacts on historic properties are expected from O&M or decommissioning activities. Therefore, no impacts on NRHP-eligible, or indeterminate historic properties are expected from construction, O&M, or decommissioning activities associated with the Project.

3.3.2.2 Additional Measures to Avoid and/or Minimize Impacts

The implementation of the design elements and conservation measures described in Section 2.4.2 would minimize impacts to historic properties during construction, O&M, and decommissioning of the Project. Therefore, no additional measures to avoid and/or minimize impacts are required.

3.3.2.3 Cumulative Impacts of the Project

In addition to the identified reasonably foreseeable projects that could contribute impacts to historic properties, other developments such as community development and other renewable energy development may also affect historic properties in the vicinity. Although the extent of these disturbances is not readily quantifiable, much of the CESA remains undeveloped, and there is the

potential for it to contain historic properties that have yet to be discovered and recorded. The majority of the identified reasonably foreseeable future projects and actions in the area has provided or could provide occasions to conduct studies that would likely not occur otherwise. Potential impacts to public land managed by Federal and State agencies would be considered for projects proposed in the future, and measures to avoid, reduce, or mitigate impacts on important historic properties are likely to be implemented.

Generally, construction in the Project area has the potential to affect previously unidentified historic properties. If disturbance to any unidentified cultural resource is unavoidable, recovery and preservation of artifacts and information and other potential mitigation measures would be implemented in accordance with Section 106 consultation. The Project, in combination with other highly probable reasonably foreseeable projects could result in cumulative indirect impacts to historic properties. Cumulative impacts resulting from most types of development projects are likely to be long-term because those facilities probably would be present for decades. The construction, O&M, and decommissioning of the Project would have a negligible contribution to cumulative effects to historic properties.

3.3.2.4 Direct, Indirect, and Cumulative Impacts of the No Action Alternative

Under the No Action Alternative, WAPA would not provide financing to AES for their proposed Project, Reclamation would not enter into an LGIA with AES, and the Project would not be constructed; no impacts on historic properties within the APE would occur. There would be no contribution to cumulative impacts to historic properties because the No Action Alternative would not result in any impacts. As such, the No Action Alternative is not analyzed for cumulative impacts to historic properties.

3.4 Biological Resources

This section discusses effects on biological resources that may occur with the implementation of the Project, and the No Action Alternative. This analysis is based on the Biological Overview/Technical Memorandum prepared for the Project (Stantec 2020a), including field reconnaissance and pedestrian survey of the Project area to evaluate vegetation and landscape features considered important to the potential occurrence of special-status plant and animal species.

3.4.1 Affected Environment

The Project is located in a previously disturbed area in the Lower Colorado River Valley subdivision of the Sonoran Desert biome (Brown 1994). The Project area is located south of West Happy Valley Road and west of State Route 303 on unincorporated land in Maricopa County, Arizona. The Project vicinity consists of the Westwing Substation, paved roads, private residences, the Agua Fria River channel to the east, and undeveloped land to the west. The elevation within the Project area is approximately 1,142 feet above mean sea level. The topography of the Project area is generally flat open desert with some trees and shrubs.

3.4.1.1 Vegetation

Native plant species observed during the site visit include saguaro (*Carnegiea gigantea*), creosote (*Larrea tridentata*), ragweed (*Ambrosia sp.*), triangle bur ragweed (*A. deltoidea*), desert globemallow (*Sphaeralcea ambigua*), fourwing saltbush (*Atriplex canescens*), scarlet spiderling (*Boerhavia coccinea*),

red barberry (*Mahonia haematocarpa*), brittlebush (*Encelia farinosa*), desert Indianwheat (*Plantago ovata*), yellow paloverde (*Parkinsonia microphylla*), velvet mesquite (*Prosopis velutina*), sweetbush (*Bebbia juncea*), Coues' cassia (*Senna covesii*), and Jerusalem thorn (*Parkinsonia aculeata*). Saguaro, velvet mesquite, and yellow paloverde are protected under the Arizona Native Plant Law (Arizona State Legislature 2021) as administered by the ADA (ADA 2015).

Non-native species observed during the site visit are found throughout the site and include stinknet (*Oncosiphon piluliferum*), prickly Russian thistle (*Salsola tragus*), Mediterranean grass (*Schismus* sp.), red brome (*Bromus rubens*), and buffelgrass (*Pennisetum ciliare*). Of these non-native species, stinknet and buffelgrass are listed as noxious weeds by the ADA under Arizona Administrative Code R3-4-245 (Arizona Secretary of State 2020).

3.4.1.2 Wildlife

Five avian species were documented within the Project area during the site visit: house finch (*Haemorhous mexicanus*); verdin (*Auriparus flaviceps*); black-throated sparrow (*Amphispiza bilineata*), house wren (*Troglodytes aedon*); mourning dove (*Zenaida macroura*); Gambel's quail (*Callipepla gambelii*); and northern mockingbird (*Mimus polyglottos*). All avian species observed in the Project area, with the exception of Gambel's quail, are protected under the Migratory Bird Treaty Act (MBTA) (USHR 2021b), which provides Federal protection to all migratory birds, including active nests and eggs. In order to relocate or alter any MBTA-protected nests, a permit would have to be obtained from the U.S. Fish and Wildlife Service USFWS to maintain compliance with the MBTA. However, Section 1 of the Interim Empty Nest Policy of the USFWS, Region 2, states that if the nest is completely inactive at the time of destruction or movement, a permit is not required to comply with the MBTA. If trees within the Project area are thought to potentially have nesting birds, they can be cleared prior to commencement of construction outside the nesting season to avoid take of migratory birds. If an active nest is observed before or during construction, measures should be taken to buffer work from around the nest, protect the nest from destruction, and to avoid a violation of the MBTA. If the active nest cannot not be avoided, construction would be delayed until the nest fledges.

Multiple, active, migratory bird nests were observed within the Project area during the field reconnaissance. No small-mammal burrows were observed in the project area during the field reconnaissance.

3.4.1.3 USFWS Federally Listed Species

The USFWS maintains a list of federally protected species and designated critical habitat occurring within each Arizona county and the USFWS online database was accessed to obtain information for the Project area. The species are currently listed or are proposed for listing as endangered or threatened under the Endangered Species Act of 1973 (USHR 2021a) (ESA). The list also includes candidate species proposed as threatened or endangered. The ESA specifically prohibits the "take" of a listed species. Take is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to engage in any such conduct." Search results included two candidate species and three migratory birds. The attached Information Planning and Conservation System (IPaC) Resource List describes each of the species potentially affected by activities in the Project location (Appendix A).

None of the five species listed by the USFWS as endangered, threatened, or non-essential experimental population for Maricopa County are likely to occur in the Project area. The Sonoran Desert Tortoise, a USFWS candidate species listed in the IPaC Resource List, was not detected during field reconnaissance.

No designated critical habitat occurs in the Project area. The Project area is clearly beyond the known geographic or elevational range of these species, nor it does not contain vegetation or landscape features known to support these species, or both.

3.4.1.4 Arizona Game and Fish Department Database

AGFD maintains a statewide database, known as the Heritage Data Management System (HDMS), which tracks records for federally listed species and other species of special concern. The database provides information such as special-status species information, presence or absence of designated critical habitat, special handling guidelines for wildlife, and preliminary project-type recommendations as given by the AGFD.

The HDMS-generated response for the Project reported that no special-status species have been documented within three miles. The HDMS-generated response did report that the White Tank Flood Retainment Structures are present within three miles of the Project area. This special area is part of the Maricopa County Wildlife Movement Area – Landscape.

3.4.2 Environmental Consequences

3.4.2.1 Direct and Indirect Impacts of the Project

Vegetation

Under the Project, construction of a new battery storage facility, HV substation, transmission line, and access roads would cause approximately 7.01 acres of ground disturbance, with 5.18 acres being permanent disturbance. Activities associated with O&M would be infrequent and may cause ground disturbance or vegetation removal. Decommissioning would be confined to areas already disturbed during construction and would not lead to any additional ground disturbance. Temporary disturbance areas would be reclaimed by regrading so that surfaces drain naturally, blend with the natural terrain, and are left in a condition that would facilitate natural revegetation. A detailed description of proposed facilities and all construction, O&M, and decommissioning activities is provided in Section 2.4.1.

Terrestrial Wildlife

Ground-disturbing activities associated with construction are potential sources of direct mortality and injury to terrestrial wildlife. Impacts from equipment and vehicles can occur for slower moving species and species that have subsurface burrows. Mammals and reptiles are susceptible to visual and noise disturbances caused by the presence of humans and construction equipment and the generation of dust. Loss of burrows due to construction, ground vibration, or avoidance behavior would cause wildlife to search for and/or dig new burrows. Increased noise as a result of construction could result in wildlife temporarily avoiding the general area surrounding the Project. If trash is left out, wildlife could be attracted to the area. Predators may be attracted to elevated structures associated with the Project such as perimeter fencing and gen-tie line poles. Such disturbances could cause wildlife to alter foraging and breeding behavior and avoid suitable habitat.

Terrestrial wildlife occurring in and around the Project area would also be indirectly impacted. The removal and/or modification of natural vegetation communities would reduce forage, shelter, and nesting opportunities to wildlife. The long-term loss and/or degradation of approximately 5.18 acres of wildlife habitat could cause wildlife to rely more on habitat in surrounding areas.

However, measures would be taken to minimize the availability of perches of predators in the Project area (refer to Section 2.4.2). The vegetation within the Project area is common to the region and the area does not contain any sensitive, unique, or notable areas of ecological importance to terrestrial species.

Ground-disturbing activities during construction, O&M, and decommissioning could increase the spread of noxious/invasive weeds, which could potentially out-compete existing annual vegetation and therefore, could indirectly and adversely affect the quality of terrestrial wildlife habitat and forage. Compliance with weed control regulations and implementation of construction standards would reduce the potential spread of noxious/invasive weeds.

During construction and decommissioning, hazardous waste (e.g., motor oil, antifreeze, hydraulic fluid, and grease) could be generated at the site. Exposure to hazardous waste could be a direct source of wildlife mortality and/or injury through the poisoning of individuals. Spills of hazardous material could also indirectly adversely impact wildlife if the spill of the hazardous material results in the loss of natural vegetation community. The containment and disposal of hazardous waste as outlined in a Spill Prevention and Emergency Response Plan developed by the construction contractor for the Project would reduce the likelihood that substantial spills would adversely affect wildlife species or habitat.

In summary, there would be negligible localized, short- and long-term, direct and indirect, adverse impacts to general and special status terrestrial species due to the construction, O&M, and decommissioning of the Project. There would be a temporary loss of approximately 7.01 acres and permanent loss of approximately 5.18 acres of wildlife habitat as a result of the development of the Project. The loss of wildlife habitat would result in the potential localized loss of shelter, nesting habitat, and forage for terrestrial species from the Project.

Avian Species

The Project site is not located in a sensitive, unique, or notable areas of ecological importance to avian species. Vulnerability to collision with overhead transmission lines depends on many factors including flight behavior and maneuverability, topography, weather, and power line design and placement. Bird collision with power lines has been documented for decades and risk of collision is considered highest in areas where birds congregate, such as power lines that bisect daily flight paths to meadows, wetlands, and river valleys (APLIC 2012). Transmission lines are the Project components that present the greatest risk of collision. Given that the Westwing Substation is located in a utility corridor with numerous existing transmission lines, and the Project would add a single, short stretch of overhead line, it is unlikely to increase in-air collisions. The existing lines have been in place for many years and foraging flight patterns have most likely adapted to the vast size of the utility infrastructure. To further reduce the risk of avian collisions, line marking devices would be installed, as needed, on the transmission lines to make the wires more visible to flying birds (APLIC 2012; refer to Section 2.4.2).

Power lines are present in many avian habitats and may result in the electrocution of raptors and other bird species (APLIC 2006; Lehman *et al.* 2010; and references therein). The potential for electrocutions depends on the arrangement and spacing of energized and grounded components of poles and towers that are sometimes used for perching, nesting, and other activities (APLIC 2006). However, nearly all electrocutions occur on smaller, more tightly spaced residential and commercial electrical distribution lines that are less than 69-kV (APLIC 2006). To protect avian species from electrocution, APLIC (2006)

established guidelines for electric line design. Incorporating appropriate measures into the transmission line interconnection would minimize electrocution risk (refer to Section 2.4.2).

There is the potential for bird species to use the Project area for foraging and for nesting for some bird species. Ground-disturbing activities associated with construction and decommissioning are potential sources of direct mortality and injury to ground-nesting birds, particularly the western burrowing owl. However, the western burrowing owl, a BLM listed species included in the IPaC Resource List, was not detected during field reconnaissance. Vehicles and equipment can also impact any subsurface burrows. Loss of burrows due to construction, ground vibration, or avoidance behavior would cause owls or other ground-nesting birds to search for new burrows. Other birds would be susceptible to noise disturbance, potentially resulting in alteration of foraging and/or nesting behaviors.

There is potential for nest disturbance of birds during the construction and decommissioning phase of the Project due to noise, removal of vegetation, and leveling the ground. However, the proposed battery storage facility would occupy a very small area (approximately 5.18 acres), and the vegetation is common to the region. Impacts to vegetation and presence of humans and machinery would deter most birds from the Project area. However, most bird species would return to the area after construction if substantial habitat and foraging opportunities exist.

Direct habitat loss would occur from the Project, and habitat fragmentation may reduce the functionality of this area for birds. An abundance of similar lands is available in the vicinity to provide habitat for any individuals displaced from the Project site. In addition, this Project site is not located in a sensitive, unique, or notable area of ecological importance to bird species. Impacts from the Project are likely to be minor and have no substantial population level effects on any bird species in the area.

Noise and activity disturbance would occur as a result of the O&M activities from the Project described in Section 2.4.1. The impacts would be minor and intermittent in nature and are expected to have little or no added impacts to birds in the area.

Additional light sources at the proposed battery storage facility could result in concentrated foraging locations of avian species that feed on insects nocturnally since the artificial lighting could attract insects. Artificial lighting also has the potential to adversely affect migration patterns of birds that move through the area.

In summary, there would be negligible to minor, localized, short- and long-term, direct and indirect, adverse impacts to avian species due to the construction, O&M, and decommissioning of the Project. The Project would result in the temporary loss of 7.01 acres of habitat and permanent loss of approximately 5.18 acres of habitat. Disturbance from human activity and the loss of wildlife habitat would result in a loss of shelter, nesting habitat, and forage for avian species and would result in wildlife having to rely more on habitat outside of the Project footprint.

3.4.2.2 Additional Measures to Avoid and/or Minimize Impacts

The implementation of the design elements and conservation measures described in Section 2.4.2 would minimize impacts to biological resources during construction, O&M, and decommissioning of the AES Project. Therefore, no additional measures to avoid and/or minimize impacts are required.

3.4.2.3 Cumulative Impacts of the Project

The types of projects or actions within the CESA that could contribute to impacts to biological resources include community development and vegetation management in addition to the identified reasonably foreseeable future actions. Wildlife movement may spread invasive plants and alter the cover and composition of plant communities used by wildlife. Community development and infrastructure development would potentially consume useable habitat and fragment large blocks of habitats into smaller isolated ones. Approximately 32 percent of the lands within the 19,050-acre CESA are Federally or State managed. In combination, past, present, and reasonably foreseeable future actions would result in long-term, direct and indirect, minor impacts to biological resources because a third of the CESA would have measures implemented by the BLM, Reclamation, and State to minimize potential effects to biological resources.

In the long-term, the Project would have adverse, localized, direct and indirect, minor effects to biological resources. These long-term effects would be reduced gradually over time as natural reclamation of plant composition and cover occurs following construction and decommissioning activities. Cumulatively, the effects of the Project, when combined with past, present, and reasonably foreseeable future actions, would result in minor to moderate cumulative impacts to wildlife within the 3-mile CESA due to the potential for further habitat loss, degradation, and fragmentation. The Project would have a minor contribution to the cumulative effect on biological resources.

3.4.2.4 Direct, Indirect, and Cumulative Impacts of the No Action Alternative

Under the No Action Alternative, the Project would not be constructed, and no impacts on biological resources within the APE would occur. There would be no contribution to cumulative impacts to biological resources because the No Action Alternative would not result in any impacts. As such, the No Action Alternative is not analyzed for cumulative impacts to biological resources.

3.5 Visual Resources

The term “visual resources” refers to the composite of basic terrain, geologic, and hydrologic features; vegetative patterns; and built features that influence the visual appeal of a landscape. Visual impacts are defined as the change to the visual environment resulting from the introduction of modifications to the landscape. This section describes the existing context of the visual environment and assesses the potential impacts from the Project and the No Action Alternative within the visual resource impact analysis area, including impacts to residential areas near the Project area and impacts to views from public roadways.

The analysis of aesthetics and visual resources utilizes resource-specific, qualitative and quantitative terminology. The following defines terms utilized within this analysis:

- **Key Observation Point (KOP):** Points on a transportation corridor or at a public/private use area, where the view of a proposed activity would be most revealing or considered sensitive.
- **Viewshed:** The landscape that can be directly seen under favorable atmospheric conditions, from a KOP or along a transportation corridor.
    - Foreground View: 0-1 mile

- Middleground View: 1-3 miles
- Background View: 3-5 miles, and beyond

- **Visual Contrast:** Opposition or unlikeness of different forms, lines, colors, or textures in a landscape. Generally, increased visual contrast within foreground distances would be more noticeable to viewers than increased visual contrast within middleground and background view distances.

- **Visual Quality:** The relative worth of the overall impression or appeal of an area created by the physical features of the landscape, such as natural features (landforms, vegetation, water, color, adjacent scenery and scarcity), and built features (roads, buildings, agricultural patterns, and utility lines). These features create the distinguishable form, line, color, and texture of the landscape composition that can be judged for scenic quality using criteria such as contrast.

3.5.1 Affected Environment

The existing landscape character and condition of the visual resource impact analysis area is evaluated in terms of general landforms, vegetation, built features, and land use. The visual resource impact analysis area lies within the valley floor (Deer Valley) within the Lower Colorado River Valley of the northern portion of the Sonoran Desert. The Sonoran Desert is part of the Great American Desert of western North America, extending from the northern part of the United States deep into Mexico. This portion of south-central Arizona is within the Basin and Range Geologic Province, which stretches from southeastern Oregon and southward through Nevada into southern Arizona and is characterized by elongated mountain ranges which are separated by broad, nearly flat valleys (Stantec 2020b). The northern extension of the Sonoran Desert is largely determined by cold temperatures while the eastern boundary is delimited biologically, physically, and geographically by high mountain ranges to the south.

In the Sonoran Desert many craggy low to mid elevation mountain ranges rise above vast basins. These ranges generally trend northwest-southeast and parallel one another. With limited vegetative cover, there is a discrete break between the bedrock of the range and the eroded sands and gravel which form the relatively smooth skirt at their base. These alluvial fans form as rain washes weathered rock down into the valley from the slopes of the mountains above. A major period of volcanic activity occurred in southern Arizona about 25 million years ago leaving many volcanic deposits from this period.

The Project area can be characterized as very typical of valley floor within a larger desert, without any observable granite outcrops, or any other prominent geologic features, with White Tank Mountains and Hieroglyphics Mountains situated to the southwest and north, respectively.

The Project area is flat and expansive and composed largely of olive green creosotebush and scattered yellow grasses. Views to the northeast and southwest are backdropped by mountains in the distant background. In general, the overall scenic quality of the Project area has low scenic value because of the lack of variety and distinctiveness of the vegetation, landform, and adjacent scenery to the region. The existing cultural modifications present in the foreground view (Westwing Substation and associated transmission lines and towers) are notable disturbances that attract attention away from the natural landscape.

The built environment of the Project area consists of existing paved roadways and residential and commercial developments, including the community of Coldwater Ranch and West Happy Velley Road adjacent to the north, the existing Westwing Substation and associated transmission lines adjacent to the south, and the State Route 303 corridor to the south and east (refer to Figure 1-2).

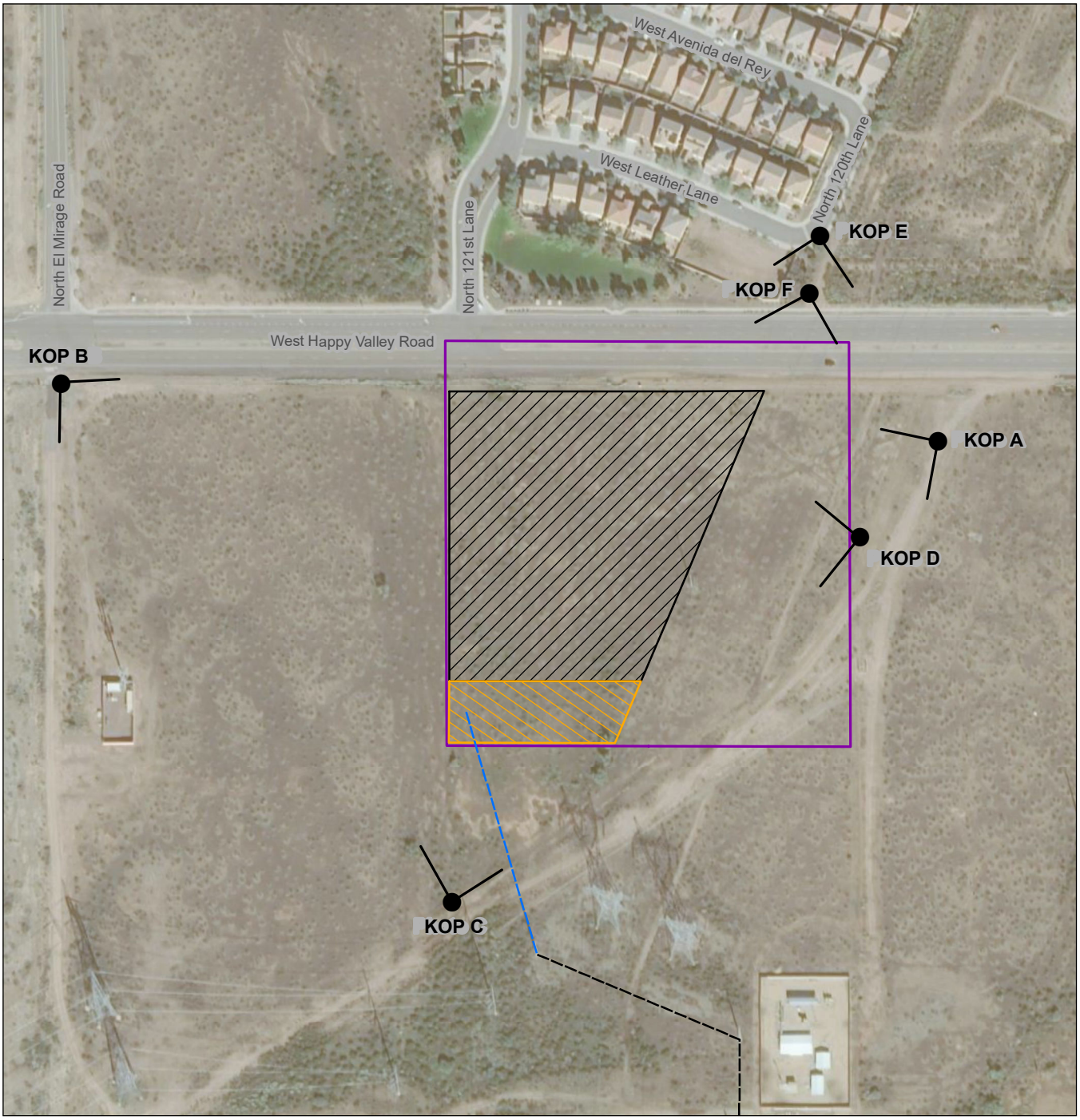
3.5.2 Key Observation Points

The primary views of the Project area are from West Happy Valley Road and the adjacent Coldwater Ranch residential community. Primary viewers would be traveling through the area by vehicle or are residents of the nearby communities. Key Observation Points (KOPs) were selected which would best represent these primary viewing locations, as well as others from adjacent properties where the public would potentially view the proposed battery storage facility and interconnection (Figure 3-3).

- **Key Observation Point A (KOP A) – View Looking Southwest from Adjacent Property Towards Project.** Figure 3-4, Existing Conditions, shows the current view from KOP A. This KOP is located east of the Project area from within an adjacent private parcel. When looking southwest, the level topography and limited natural features allow for views across the Project site to the mountains in the distant background which defines the horizon. Sparse vegetation and the adjacent Westwing Substation are dominant within the foreground views, with existing transmission lines and towers visible in the middleground. An adjacent wireless communications facility is also visible beyond the Project site. While these industrial-appearing forms are pronounced against the clear sky backdrop along the horizon, the view's immediate foreground is characterized by natural landscape and muted color tones.

- **Key Observation Point B (KOP B) – View Looking Southeast from West Happy Valley Road Towards Project.** Figure 3-5, Existing Conditions, shows the current view from KOP B. The KOP B view looks southeast towards the Project site as seen while traveling east on West Happy Valley Road. Similar to KOP A, from this location, foreground and middleground views are dominated by sparse vegetation with Westwing Substation and numerous existing transmission lines and towers punctuating the horizon. Views of a small cluster of white and tan residential structures can also be seen in the low horizontal form along the horizon. As shown, the KOP 2 viewshed is characterized by natural landscape and muted colors.

- **Key Observation Point C (KOP C) – View Looking North from Adjacent Property Towards Project.** Figure 3-6, Existing Conditions, shows the current view from KOP C. This KOP is located south of the Project site from an existing transmission line corridor on adjacent private parcel. Again, the level topography and limited natural features allow for views across the Project site to the mountains in the very distant background. Vegetation in the foreground consists of olive green creosotebush and yellow and brown grasses. Adjacent residential and commercial development can be seen in low horizontal forms along the horizon in the middleground. From this direction, the adjacent Westwing Substation is not visible; however, several associated towers and transmission lines are in view extending across the skyline into the background.



- Project Parcel
- AES Proposed Battery Storage Facility
- AES Proposed Facility Substation
- Proposed AES 230kV Transmission Interconnection
- Proposed APS 230kV Transmission Line
- Key Observation Point (KOP)

0 125 250 Feet

(At original document size of 8.5x11)
1:3,000

N

Notes

1. Coordinate System: NAD 1983 StatePlane Arizona Central FIPS 0202 Feet
2. Data Sources: Stantec 2021. Parcels From Maricopa County 2021.
3. Background: © OpenStreetMap (and) contributors, CC-BY-SA
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure No.
3-3

Title
Arizona Peaking Capacity Energy Storage Project Key Observation Points (KOPs)

Existing Conditions

Simulated View

Figure 3-4. KOP A: Existing Conditions and Simulated View

Existing Conditions

Simulated View

Figure 3-5. KOP B: Existing Conditions and Simulated View

Existing Conditions

Simulated View

Figure 3-6. KOP C: Existing Conditions and Simulated View

- **Key Observation Point D (KOP D) – View Looking West from Property Boundary Towards Project.** Figure 3-7, Existing Conditions, shows the current view from KOP D. This KOP is located on the eastern boundary of the Project. This KOP is oriented towards a less developed area which generally consists of State-owned land. Views across the level topography of the Project site show mountains in the distant background, while a few transmission towers and the adjacent wireless communications facility can be seen among the sparse vegetation in the foreground an middleground. Some smaller hills can also be seen in the middleground views. While the few transmission and communications towers stand out against the daytime sky along the horizon, the view is characterized by natural landscape and muted color tones.

- **Key Observation Points E and F (KOPs E and F) – Views Looking South from Coldwater Ranch Community Towards Project.** Figures 3-8 and 3-9, Existing Conditions, shows the current view from KOPs E and F. These KOPs are located north of the Project site from the adjacent Coldwater Ranch residential community across West Happy Valley Road. Level topography and limited natural features allow for views from these KOPs across the Project site of the existing Westwing Substation and numerous associated transmission lines and towers. Although the view from KOP E from within the community is largely blocked by existing border trees, the view from KOP F shows that open views of the Project site from this location are dominated by the existing towering structures from the middleground to the background. Mountains in the distant background can been seen faintly through gaps low on the horizon between structures. West Happy Valley Road occupies a substantial portion of the foreground in view from KOP F. In this view, the industrial shapes of the substation, transmission lines, and towers stand out against the daytime sky along the horizon and dominate this view.

3.5.3 Environmental Consequences

An analysis of visual dominance, scale, and contrast was used to determine the degree that the Project would attract attention and to assess the relative change in character as compared to the existing characteristic landscape and its inherent scenic quality. The amount of visual contrast created is directly related to the amount of attention that is drawn to a feature in the landscape. Changes in the viewsheds from sensitive viewing locations were also evaluated and characterized.

3.5.3.1 Direct and Indirect Impacts of the Project

Project construction, O&M, and decommissioning activities would take place in, and directly adjacent to, areas already disturbed by the existing Westwing Substation and associated transmission line corridors. During construction, approximately 7.01 acres of ground disturbance would occur, with 5.18 acres being permanent disturbance. The existing visual character and scenic quality would be affected during construction by the generation of fugitive dust; movement of equipment and vehicles in and out of the Project area; and the presence of a scraper, excavators, dump trucks, a drum roller, forklifts, a crane, pump trucks, concrete trucks, manlifts, a boom truck, and temporary staging areas. The construction activities would introduce forms, lines, colors, and textures that would temporarily attract attention and create a noticeable contrast with the existing setting of the Project area. However, implementation of design elements would minimize these temporary impacts to visual resources during construction by minimizing areas of surface disturbance, controlling erosion, using dust suppression techniques, and, if applicable, restoring exposed soils as closely as possible to their original contour and vegetation.

Existing Conditions

Simulated View

Figure 3-7. KOP D: Existing Conditions and Simulated View

Existing Conditions

Simulated View

Figure 3-8. KOP E: Existing Conditions and Simulated View

Existing Conditions

Simulated View

Figure 3-9. KOP F: Existing Conditions and Simulated View

The new BESS facility would represent a long-term, permanent change in the visual landscape. However, the landscape already consists of large-scale utility facilities within an existing transmission line corridor; installation of a lower-profile BESS facility and associated interconnection among this cluster of towers and facilities would result in a minor change in the visual landscape. The addition of eight new steel monopole structures with 230-kV circuit to replace existing 69-kV transmission line (from single to double circuit) in the transmission line ROW would also represent a long-term, permanent change in the visual landscape. The approximately 80- to 100-foot-high solid structures would be more visible features in the landscape in terms of form and color in comparison to the existing transmission structures. However, as the new transmission line would be replacing an existing line among dense backdrop of numerous utility structures, it would represent a noticeable but minor change to the overall visual landscape, consistent with existing visual character.

Activities associated with O&M would be infrequent and would not draw attention from KOPs. Decommissioning would be confined to areas already disturbed during construction and would not have any additional impacts. These activities would be visible from the Coldwater Ranch community and West Happy Valley Road and would attract some attention from the casual observer due to notable color and form contrast with the existing cultural modifications.

- **Effects on Views from KOPs A, C, and D – Adjacent Private Property.** The new BESS facility and associated transmission line replacement structures would be visible in the foreground of KOPs A, D, and C from adjacent private parcels (Figures 3-4, 3-6, and 3-7, Simulated Views). The potential magnitude of impacts to these views from the KOPs would vary depending primarily on the distance from the Project site. The proposed structures would draw attention in the visible landscape from these KOPs; however, the landscape already consists of large-scale utility facilities within an existing transmission line corridor. In addition, a design element to incorporate a view-obscuring 8-foot solid masonry wall along all proposed battery storage facility boundaries would be implemented to minimize impacts to visual resources by reducing additional visual clutter from BESS facilities. Overall, installation of a lower-profile BESS facility and associated interconnection among the existing backdrop of towers and utility facilities would result in a minor change in the visual landscape.

- **Effects on Views from KOPs E and F – Coldwater Ranch Residential Community.** The proposed BESS facility and associated transmission line replacement structures would be visible in the foreground of KOPs E and F from the Coldwater Ranch community to the north (Figures 3-8 and 3-9, Simulated Views). The proposed BESS facility would draw attention in the visible landscape from these KOPs. The landscape from this viewpoint would appear to be notably altered because of the dominance of the proposed BESS facility in color, line, texture, and form, which would create moderate level of contrast in the setting. However, the BESS facility would be a low-profile installation appearing in these views in front of existing large-scale utility facilities within an existing transmission line corridor. The facility would be consistent with the existing scenic character of the visual landscape. In addition, incorporation of the view-obscuring 8-foot solid masonry wall would minimize impacts to visual resources.

- **Effects on Views from KOP B – West Happy Valley Road.** Within the foreground distance zone of KOP B, a majority of the proposed BESS facility and associated transmission line replacement structures would be visible to eastbound motorists on West Happy Valley Road (Figure 3-5,

Simulated View). However, from this distance, the low profile of the BESS facility would result in a minor change in the visual landscape. The transmission line replacement structures would be more visible features in the landscape in terms of form and color in comparison to the existing transmission structures. However, amongst the dense backdrop of the numerous existing utility structures, it would represent a noticeable but minor change to the overall visual landscape, consistent with existing visual character.

In summary, the new BESS facility and transmission line replacement would represent a long-term, permanent change in the local visual landscape; however, it would be a minor change in the overall characteristic landscape and in the scenic quality of the Project area from the construction, O&M, and decommissioning of the Project.

3.5.3.2 Additional Measure to Minimize Adverse Effects

The implementation of the design elements and conservation measures described in Section 2.4.2 would minimize impacts to visual resources during construction, O&M, and decommissioning of the Project. Therefore, no additional measures to avoid and/or minimize impacts are required.

3.5.3.3 Cumulative Impacts of the Project

In addition to the identified reasonably foreseeable future actions, the types of projects or actions that could contribute to impacts to visual resources include overhead transmission lines, communication towers, wind and solar energy facilities, and community development. These actions generally result in a transformation of the natural landscape to a more developed setting when viewed during both day and night conditions over the long-term. The reasonably foreseeable future actions that have been identified may contribute to overall cumulative impacts to visual resources, though at this time there is not sufficient documentation to evaluate the level of impact associated with these identified projects. In addition, wildland fire would also create a substantial change in the characteristic landscape for decades depending on the scale and intensity of the wildfire. The expansion of residential areas would expand the footprint of developed areas through the addition of structures, roads, and electrical distribution lines. The expanded developed area would be particularly evident during nighttime conditions, when lighting would extend for a substantial distance from the developed area. Impacts of the combined actions would be perceived as strongest where viewed from KOPs and traditional areas identified by Native American tribes. In combination, past, present, and reasonably foreseeable future actions would result in long- term, direct and indirect, minor to moderate, impacts to visual resources that overall would reduce scenic quality and notably transform the characteristic landscape.

Cumulatively, effects of the Project, when combined with past, present, and reasonably foreseeable future actions, would result in long-term, direct and indirect, minor, cumulative impacts to the visual resources within the visual resources CESA. The Project would have a minor contribution to the cumulative effects to visual resources because of the low-profile BESS facility and associated transmission line replacement among a dense backdrop of numerous existing utility towers and structures. Further, visual resource impacts created by the Project would be largely reversible with decommissioning of the Project at the end of its useful life and restoration of the landscape.

3.5.3.4 Direct, Indirect, and Cumulative Impacts of the No Action Alternative

Under the No Action Alternative, WAPA would not provide financing to AES for their proposed Project, Reclamation would not enter into an LGIA with AES, and AES would not construct the BESS facility or the associated transmission line replacement. Therefore, no new disturbance to the characteristic landscape would occur, and no new elements or patterns would be introduced to the Project area. Therefore, there would be no impact on the casual viewer from KOPs. There would be no contribution to cumulative impacts to visual resources because the No Action Alternative would not result in any impacts. As such, the No Action Alternative is not analyzed for cumulative impacts to visual resources.

4.0 COORDINATION AND CONSULTATION

For this Project, WAPA and/or AES contacted the Federal, State, county, and tribal agencies listed below.

4.1 Federal Agencies

- U.S. Army Corps of Engineers, Arizona Field Office
- U.S. Bureau of Land Management, Phoenix District Office
- U.S. Bureau of Reclamation, Phoenix Area Office
- U.S. Department of Defense, Siting Clearinghouse
- U.S. Environmental Protection Agency, Region 9 Environmental Review Office
- U.S. Fish and Wildlife Service, Arizona Ecological Services

4.2 State Agencies

- Arizona Game and Fish Department
- Arizona Department of Environmental Quality
- Arizona State Parks, Arizona State Historic Preservation Office
- Arizona Corporation Commission / Arizona Power Plant and Transmission Line Siting Commission

4.3 County Government

- Maricopa County

4.4 Tribal

WAPA is the lead Federal agency in the NHPA Section 106 process. The following section describes WAPA's tribal consultation activities completed to date.

WAPA initiated tribal consultation with the following tribes in a letter dated September 25, 2019:

- Fort McDowell Yavapai Nation
- Salt River Pima-Maricopa Indian Community
- Hopi Tribe
- White Mountain Apache Tribe
- Yavapai-Prescott Indian Tribe
- Pascua Yaqui Tribe

5.0 APPLICABLE LAWS, REGULATIONS, AND OTHER REQUIREMENTS

Federal, State, and local agencies have jurisdiction over certain aspects of the Project. Major Federal, State, and local agencies and their respective permit/authorizing responsibilities are summarized in Table 5-1.

Table 5-1. Permit/Authorizing/Consultation Responsibilities

Permit/Authorization	Agency with Jurisdiction
Transmission Infrastructure Program Funding	WAPA
NEPA	WAPA; Reclamation (Cooperating Agency)
NSTS LGIA	Reclamation
Interconnection/CEC	ACC
APS ROW Grant	APS
Zoning Change/Development Permits	Maricopa County
Building/Grading Permits	Maricopa County
Dust Control Permit	Maricopa County
Easement Grants and Transportation Permits	Maricopa County
Stormwater Quality Permit	Maricopa County
NHPA	WAPA; SHPO
Native American Graves Protection and Repatriation Act	WAPA
American Indian Religious Freedom Act	WAPA
Construction Stormwater Permit	Arizona Department of Environmental Quality (AZDEQ)
Safety Plan	APS
Migratory Bird Treaty Act	USFWS; WAPA
Bald and Golden Eagle Protection Act	USFWS; WAPA

6.0 ENVIRONMENTAL ASSESSMENT PREPARERS AND CONTRIBUTORS

The following individuals were involved in the preparation of this EA:

6.1 Western Area Power Administration

Headquarters Office:

Andrew M. Montaño, NEPA Project Manager

Tim Langer, Ph.D., Biologist

6.2 U.S. Bureau of Reclamation

Phoenix Area Office:

Sean Heath, Manager, Environmental Division

Kelly Bergin, Environmental Protection Specialist

6.3 Stantec

Shruti Ramaker, Project Manager

Linn Zukor, Senior Environmental Planner

Emily Ramos, Environmental Planner

Mitch Marken, Principal Scientist, Cultural Resources/ Indigenous Services

Dave Cubberly, Visual Resource Specialist

Danny Law, GIS Analyst

Meggan Dugan and Tyler Loomis, SWCA Environmental Consulting Biologists

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APPENDIX A: IPaC Resource List

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

http://www.fws.gov/southwest/es/arizona/
http://www.fws.gov/southwest/es/EndangeredSpecies_Main.html

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.

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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 — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/8104

Yellow-billed Cuckoo Coccyzus americanus — Threatened
There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/3911

Reptiles

NAME	STATUS
Sonoran Desert Tortoise Gopherus morafkai	Candidate

Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/9289

Fishes

NAME	STATUS
Gila Topminnow (incl. Yaqui) Poeciliopsis occidentalis	Endangered

Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/1116

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus	Candidate

Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/9743

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].

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.

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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 http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.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 (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES

THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

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
Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Dec 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.

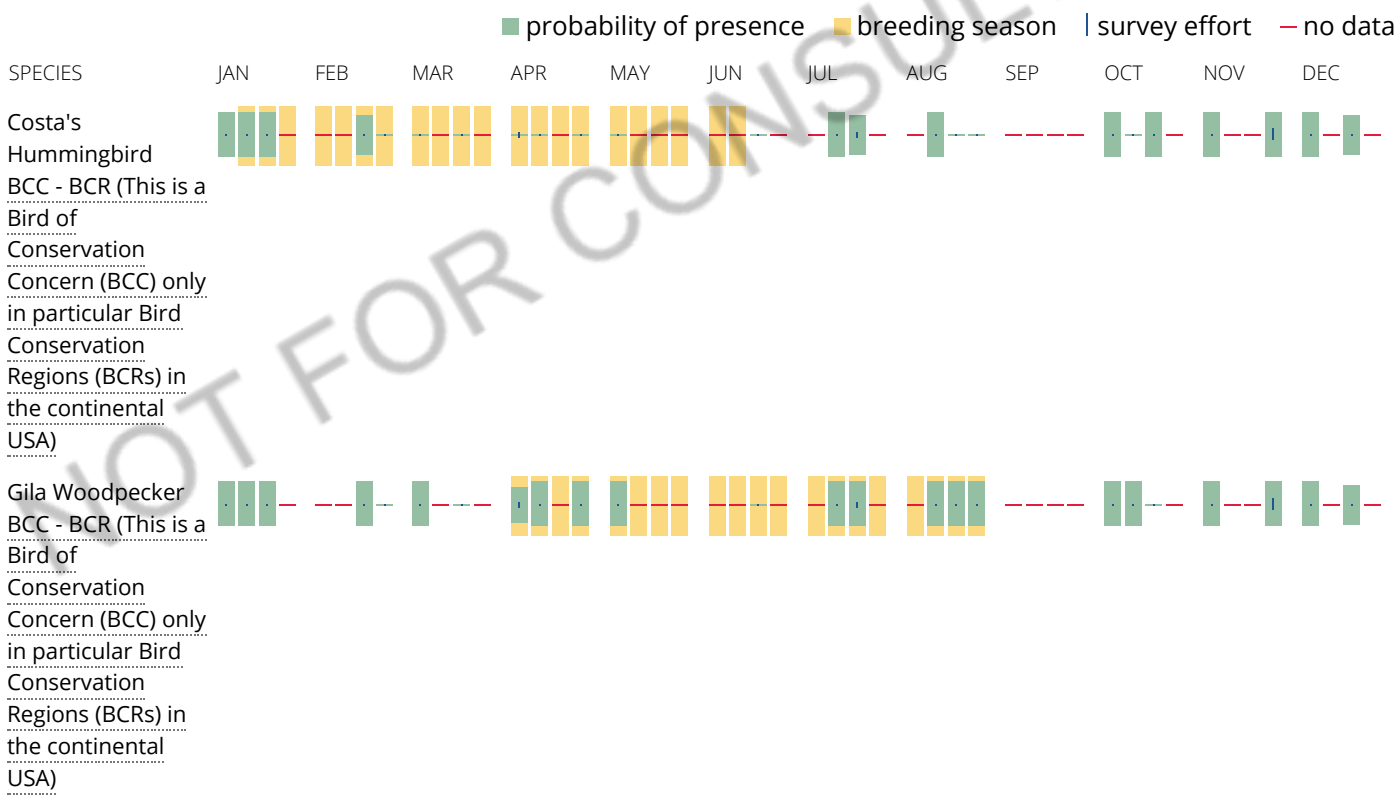
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

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.



Golden Eagle Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

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 migratory birds potentially occurring 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 AKN Phenology 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, migrating or present year-round in my project 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 refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. 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

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

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.

THERE ARE NO KNOWN 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

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.