Supplement to Application to Amend

Decision No. 69343 and Decision No. 65997

Pursuant to A.R.S. §40-252 and A.R.S. §40-360 et seq.

BISCUIT FLATS 500/230kV LINE RELOCATION PROJECT

Prepared for:

Arizona Power Plant and

Transmission Line Siting Committee

Submitted by:

Arizona Public Service Company

L-00000D-06-0635-00131 and

L-00000D-02-0120

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Arizona Public Service Company (APS or Company) hereby submits this Supplement to the *Application to Amend Decision No. 69343 and Decision No. 65997* in connection with proceedings before the Arizona Power Plant and Line Siting Committee (Committee) as ordered by Decision No.77987 (May 5, 2021) and Decision No. 77988 (May 5, 2021). This Supplement is made pursuant to A.R.S. §40-252 and A.R.S. §40-360 *et seq.*

INTRODUCTION

Procedural Posture.

On March 10, 2021, APS filed its *Application to Amend Decision No. 69343 and Decision No. 65997* (Application to Amend). Thereafter, the Arizona Corporation Commission (Commission) referred the Application to Amend to this Committee to conduct an evidentiary hearing and render findings that will permit the Commission to rule on the Application to Amend.

The Application to Amend relates to two prior decisions of the Commission approving certificates of environmental compatibility. Decision No. 69343 approved the Certificate of Environmental Compatibility (CEC 131) for the TS-9 (subsequently renamed Morgan) to Pinnacle Peak 500kV/230kV Transmission Line Project and Decision No. 65997 approved the Certificate of Environmental Compatibility (CEC 120) for the North Valley 230kV Facility Project.

Under the Application to Amend, APS is requesting that the Commission amend CEC 131 to permit APS to relocate an approximate 3.5-mile segment of the existing Morgan-Pinnacle Peak Lines from the approved corridor approximately 0.5 mile north and to authorize the construction of a third substation (TS22) and to amend CEC 120 to permit APS to expand the footprint of the Avery substation.

The combined changes to CEC 131 and CEC 120 are needed to support the development of a new semiconductor plant in North Phoenix as described in greater detail below. The combined changes are referred to as the Biscuit Flats 500/230kV Line Relocation Project (Project).

Project Overview.

Taiwan Semiconductor Manufacturing Company (TSMC) is constructing an advanced semiconductor manufacturing plant in Phoenix on an approximate 1,100-acre site near the northwest corner of the Loop 303 and the 43rd Avenue alignment in the City of Phoenix (Plant or Semiconductor Plant). TSMC intends to have the new Plant start preliminary operations in 2022 and ramping up to full operation by 2024. TSMC anticipates spending approximately $12 billion developing the Plant, creating approximately 1,900 new jobs and generating $38 billion in economic benefits to the state. To meet TSMC's timeline for operations of the first phases of the Semiconductor Plant, APS must work to meet an in-

service date of 2022 for the Project, with the exception of TS22, which has an anticipated in-service date of 2024.

At full build-out plant operations will require an extensive amount of electric power utilizing approximately 1,200 MW. This high load demand requires a robust 230kV system. The system requirements include expanding the size of the authorized 230kV substation (Avery) and constructing a new 500/230kV substation (see **Figure 1**). These facility changes and additions are needed to maintain reliability of the surrounding transmission system and to meet the extra high load demands of the Semiconductor Plant.

The Project is identified in APS's Supplemental Ten-Year Plan filed with the Arizona Corporation Commission (Commission) on April 16, 2021.

Why amendment of CEC 131 and CEC 120 are Necessary.

The process of fabricating semiconductors is highly sensitive to electromagnetic interference from overhead transmission lines and as a result, the Morgan-Pinnacle Peak Lines need to be relocated further north to prevent interference with the operations of the Semiconductor Plant. In addition, because of the high load demands associated with the Plant, APS needs to expand existing substation plans for the Avery Substation and add a new substation (TS22) to support the development and operation of the Plant (see Figure 1).

In order to relocate the existing Morgan-Pinnacle Peak Lines and perform the substation improvements required for the development of the Plant, APS needs to secure the amendment of CEC 131 and 120 as follows:

- *CEC 131*. APS is requesting an amendment to CEC 131 to allow for relocation of an approximate 3.5-mile segment of the Morgan-Pinnacle Peak Lines from the approved corridor approximately 0.5 mile north to prevent interference with the operations of the Plant and to build a new 500/230kV substation (TS22).
- *CEC 120.* APS is requesting an amendment to CEC 120 to allow for expansion of the Avery Substation footprint to approximately 64 acres to ensure adequate service to the Plant.

Why APS seeks approval of substation-related changes.

Construction of a new substation does not require a CEC and, similarly, changes to a substation do not generally require Commission approval. As such, APS would typically not seek approval for substation related changes. But in this case, out of an abundance of caution, APS is seeking Commission approval for the substation changes due to the nature of CEC 131 and CEC 120.

CEC 131 specifically authorized the construction of two substations, but APS now plans to add a third. Because of the specificity of CEC 131 regarding the construction of two

substations[1], APS is seeking to amend CEC 131 to authorize the construction of a third substation (TS22) which in the future will interconnect to the adjacent Morgan-Pinnacle Peak Lines. Also, while CEC 120 does not specifically authorize or specify the size of the Avery Substation[2], testimony given in Case 120 indicated that the Avery Substation would be approximately 10 acres rather than the 64 acres that are currently needed to support the load demands of the Plant. The increase in size for the Avery Substation from what was discussed and presented to the Committee and the Commission makes it appropriate to seek approval for this change.

ROUTE RELOCATION

The proposed route for the relocated section of the existing 500/230kV transmission line extend north from the point where the existing line turns from a north-south orientation to an east-west orientation (the Dove Valley Road alignment approximately 0.6 mile west of I-17). The relocated segment continues north from that point 0.5 mile, where it will turn and proceed west for approximately 2.5 miles before turning to the southwest to rejoin the existing alignment. The alignment of the relocation is referred to as the Proposed Route on **Figure 1**.

The entirety of the proposed relocation is within Arizona State Trust Land.

REQUESTED CORRIDOR

To provide appropriate and desired flexibility in the placement of specific transmission infrastructure, APS is requesting authorization to place the relocated line structures within a corridor 4,600 feet wide including the 3,000-foot previously certificated corridor plus a new 1,600-foot-wide corridor (**Figure 2** and **Figure 3**).

ENVIRONMENTAL AND PUBLIC SITING PROCESS

According to TSMC, overhead transmission lines in the vicinity of the Plant must be relocated to a minimum distance of 1,000 feet away from the Plant property lines. Using this information, APS was able to identify two preliminary potential route locations for the 500/230kV transmission line relocated segment, as well as the substation locations.

The two routes considered included a route that was 1,000 feet from the northern edge of the TSMC property, and a route that followed the half-section line in the middle between the Dove Valley Road alignment and Carefree Highway (SR 74), which was confirmed by

[1] CEC 131 Project is a double-circuit transmission line with one 500kV circuit and one 230kV circuit and two substations. Decision No 69343.
[2] CEC 120 provided that the Avery Substation area site will be located approximately 0.5 mile west of I-17 in Section 15, Township 5 North, Range 2 East. Decision No. 65997

the Arizona State Land Department to be their preferred route. With the Arizona State Land Department's stated preference and environmental factors being generally equivalent, APS identified this route as the proposed route.

APS and its consultant AECOM have planned and initiated various activities designed to engage public and agency stakeholders and to solicit input on the Project and proposed relocation. Agency engagement has occurred over the past year and included multiple meetings with City of Phoenix and Arizona State Land Department. Public engagement is ongoing at the time of filing. Planned activities to engage the public include a virtual open house (June 2021), newsletter mailing (June 2021), newspaper advertisements, a telephone information line, and a Project website. In addition, a postcard will be mailed to announce the public hearing related to the amendment proceedings (July 2021). Through these activities, APS is requesting and anticipating public and agency feedback on the Project.

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

CONCLUSION

Through the Application to Amend, APS requests amendment of Decision No. 69343 and Decision No. 65997 that provides for the following:

(1) approves CEC 131 to permit APS to relocate an approximate 3.5-mile segment of the existing Morgan-Pinnacle Peak Lines from the approved corridor approximately 0.5 mile north;
(2) authorize the construction of a third substation; and

(3) increase the size of the Avery Substation footprint.

With this Supplement and the evidentiary proceeding before the Committee, APS will establish that the requested amendments to CEC 131 and CEC 120 are in the public interest because they balance the need for an adequate, economical, and reliable supply of electric power with the desire to minimize impacts to the environment and ecology. As such, APS respectfully requests the Siting Committee grant, and the Commission approve, the requested CEC amendments for the Project.

Figure 1. Biscuit Flats 500/230kV Project Vicinity Map

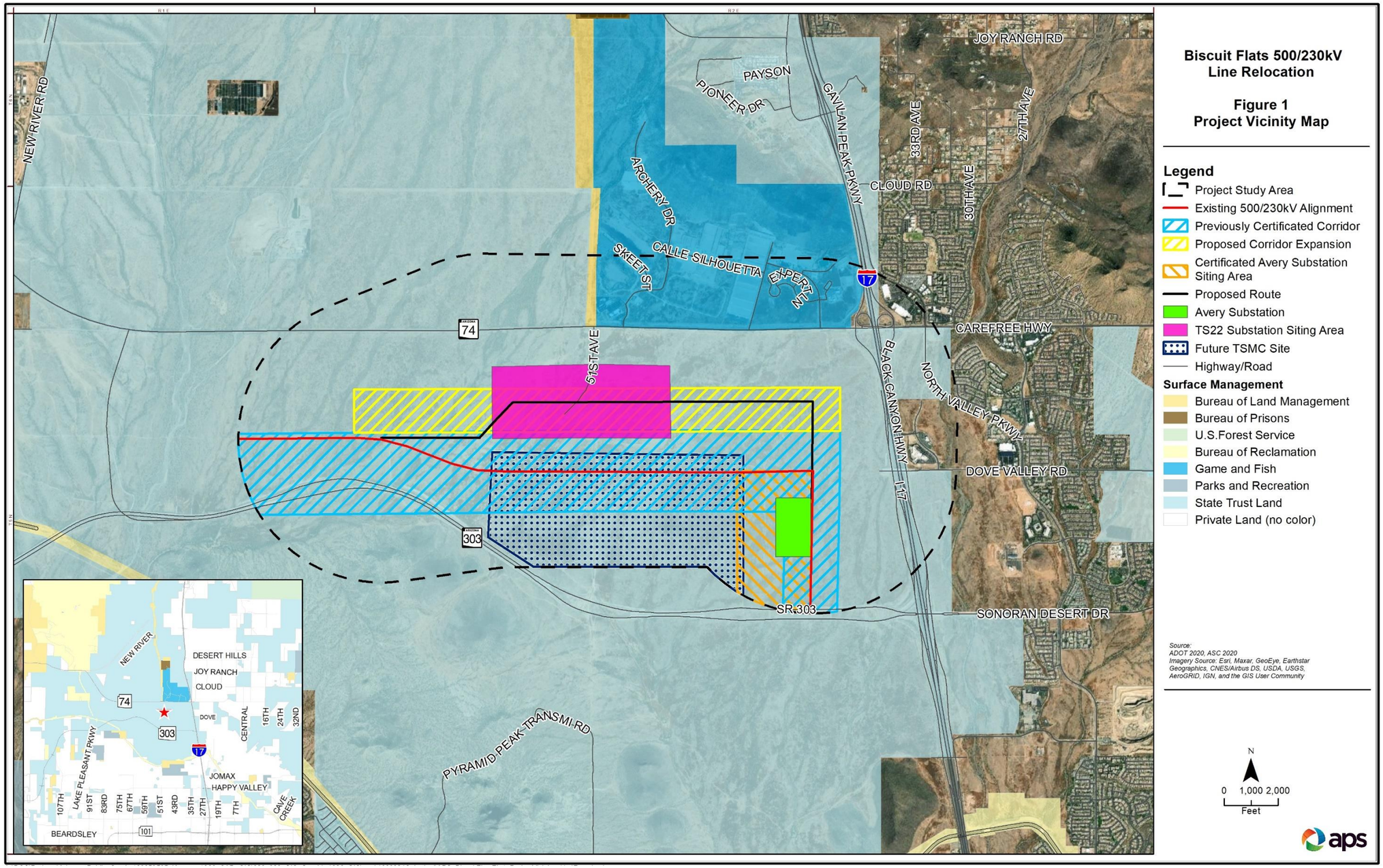


Figure 2. Biscuit Flats 500/230kV Project Requested Corridor

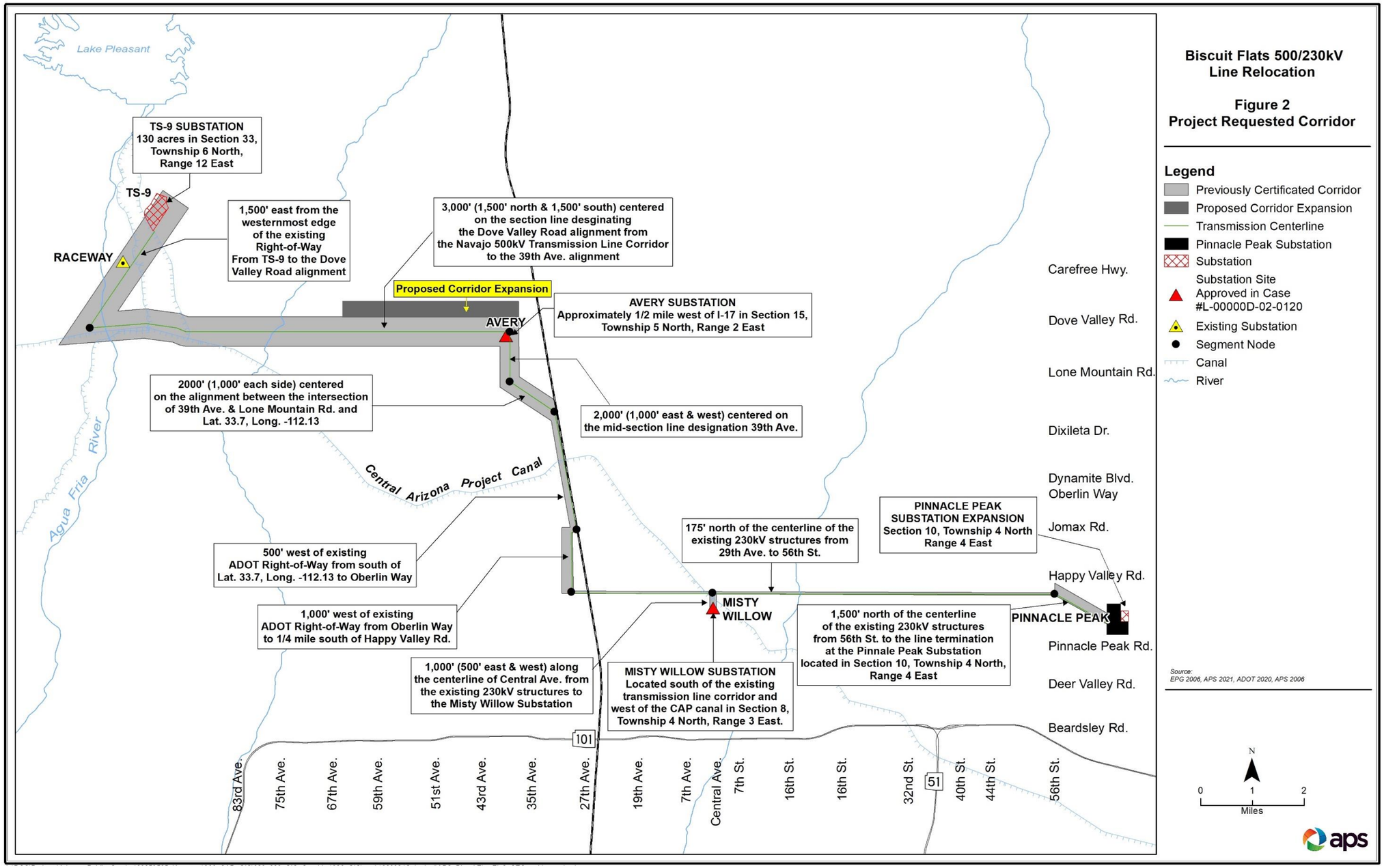
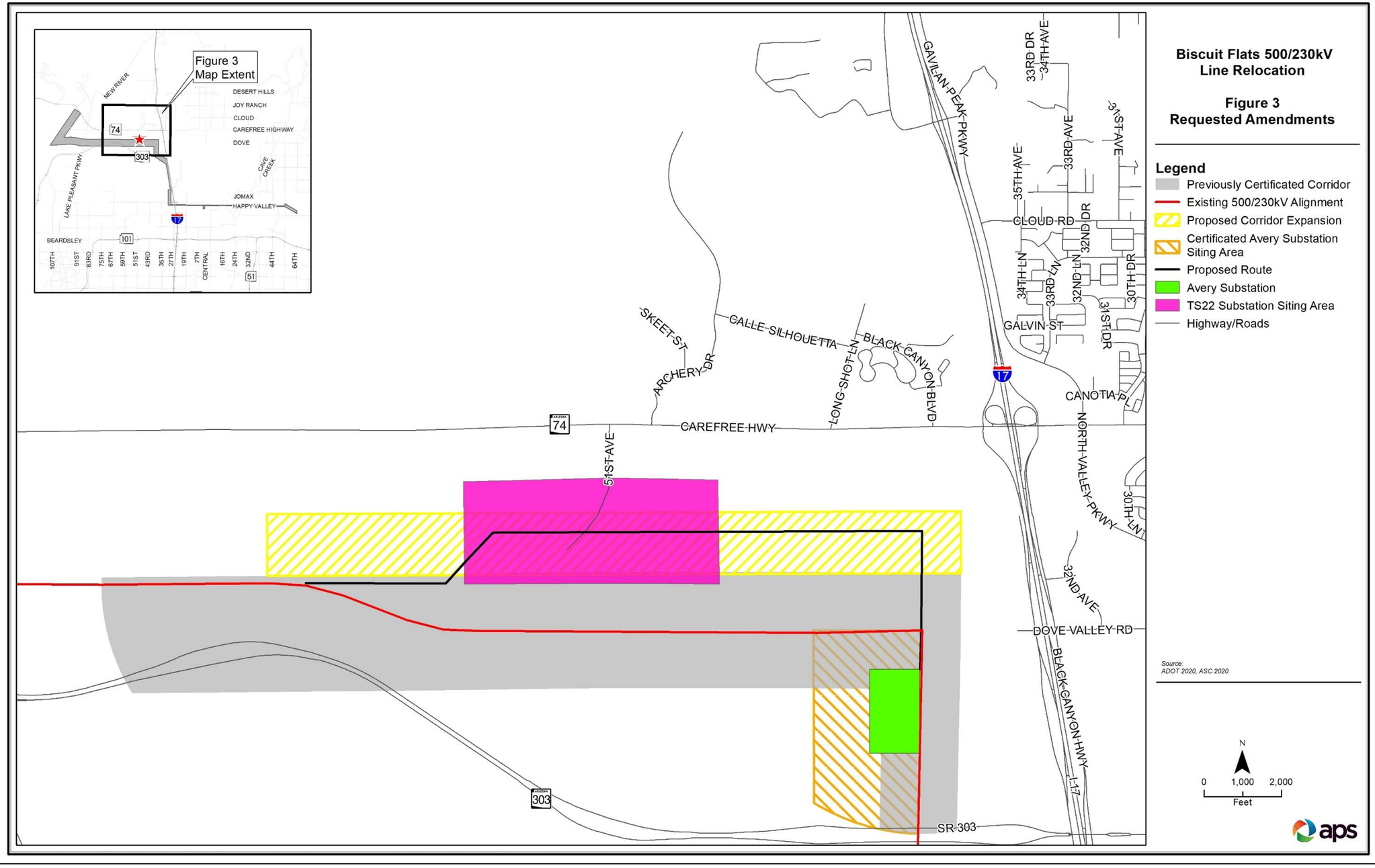


Figure 3. Biscuit Flats 500/230kV Project Requested Amendments



Supplement to Application to Amend

Decision No. 69343 and Decision No. 65997

Pursuant to A.R.S. §40-252 and A.R.S. §40-360 et seq.

Name and address of the Applicant

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

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
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Transmission and Facility Siting
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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 is included in Supplement to APS's Ten-Year Plan that was filed with the Commission on April 16, 2021.

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 voltages for the Project's transmission lines are 500kV and 230kV.

(2) Description of the proposed structures:

The transmission lines are anticipated to be constructed using steel double-circuit monopole structures similar in design and height to the existing structures on the transmission line. The structures would be approximately 165 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 800 and 1,000 feet, depending on final design. The structures will have a dulled gray or weatherized finish, and conductors will have a non-specular finish to reduce visibility. Variations may be required to achieve site-specific mitigation objectives or meet site-specific engineering requirements.

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

(3) Description of proposed switchyards and substations:

The Avery Substation, permitted through CEC 120, is intended to be approximately 64 acres in size. The TS22 Substation does not have a specific location at this time but is intended to be located within the TS22 Substation siting area. The location of both substations is shown on Figure 1.

Both the Avery Substation and the TS22 Substation, when constructed, will contain 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:

TSMC is constructing an advanced semiconductor manufacturing plant in Phoenix on an approximate 1,100-acre site near the northwest corner of the Loop 303 and the 43rd Avenue alignment in the City of Phoenix (Plant or Semiconductor Plant). TSMC intends to have the new Plant start preliminary operations in 2022 and ramping up to full operation of the first phases by 2024.

The process of fabricating semiconductors is highly sensitive to electromagnetic interference from overhead transmission lines. For this reason, the Morgan-Pinnacle Peak Lines need to be relocated further

north to prevent interference with the operations of the Plant (see **Figure 1**).

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 proposed route for the relocated section of the existing 500/230kV transmission line extend north from the point within Section 10, Township 5 North, Range 2 East, Gila & Salt River Baseline & Meridian (G&SRB&M) where the existing line turns from a north-south orientation to an east-west orientation (the Dove Valley Road alignment approximately 0.6 mile west of I-17). The relocated segment continues north from the point 0.5 mile, where it proceeds west for approximately 2.5 miles through portions of Sections 9 and 8, Township 5 North, Range 2 East G&SRB&M before turning to the southwest to rejoin the existing alignment.

(2) Straight-line distance between such points:

The straight-line distance of the segment to be relocated is approximately 3 miles.

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

The length of the proposed relocation is approximately 3.5 miles.

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

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

The right-of-way (ROW) will be up to 150 feet wide within a requested corridor of 4,600 feet including the 3,000-foot previously certificated corridor and a new 1,600-foot corridor. The 4,600-foot 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 800 to 1,000 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 165 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 29.90 feet for the 500kV circuit, and 24.70 feet for the 230kV circuit.

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 relocated segment is $8.7 million. This includes the costs for construction of the transmission line, including the conductor and the supporting structures.

The estimated cost for land required for the proposed transmission line route is approximately $50,000.

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 relocation is described generally in (ii) above and is depicted in **Figures 1** and **Figure 3.**

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 relocation is on Arizona State Trust land and totals approximately 3.5 miles.

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 Arizona State Trust land within the City of Phoenix. The proposed relocation is not contrary to the 2015 Phoenix General Plan.

Refer to Exhibit A for more information regarding Land Use.

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, existing land use plans, noise levels, and communications signals to assess the potential impacts that may result from the construction, operation, and maintenance of the Project. These evaluations are included in Exhibits A, C, D, E, F, H, and I, of this application.

Exhibit A
Location and Land Use Information

In accordance with A.A.C. R14-3-220, Ex. A Applicant provides the following location maps and land use information:

1. *"Where commercially available, a topographic map, 1:250,000 scale, showing the proposed plant site and the adjacent area within 20 miles thereof. If application is made for alternative plant sites, all sites may be shown on the same map, if practicable, designated by applicant's order of preference."*
2. *"Where commercially available, a topographic map, 1:62,500 scale, of each proposed plant site, showing the area within two miles thereof. The general land use plan within this area shall be shown on the map, which shall also show the areas of jurisdiction affected and any boundaries between such areas of jurisdiction. If the general land use plan is uniform throughout the area depicted, it may be described in the legend in lieu of an overlay."*
3. *"Where commercially available, a topographic map, 1:250,000 scale, showing any proposed transmission line route of more than 50 miles in length and the adjacent area. For routes of less than 50 miles in length, use a scale of 1:62,500. If application is made for alternative transmission line routes, all routes may be shown on the same map, if practicable, designated by applicant's order of preference."*
4. *"Where commercially available, a topographic map, 1:62,500 scale, of each proposed transmission line route of more than 50 miles in length showing that portion of the route within two miles of any subdivided area. The general land use plan within the area shall be shown on a 1:62,500 map required for Exhibit A-3, and for the map required by this Exhibit A-4, which shall also show the areas of jurisdiction affected and any boundaries between such areas of jurisdiction. If the general land use plan is uniform throughout the area depicted, it may be described in the legend in lieu of an overlay."*

Project Location

Figure A-1 Biscuit Flats 500/230kV Line Relocation Project Site on topographic map (1:62,500 scale)

Figure A-2 Biscuit Flats 500/230kV Line Relocation Existing Land Use

Figure A-3 Biscuit Flats 500/230kV Line Relocation Future Land Use

Figure A-4 North Phoenix 3,500 PUD Conceptual Land Use Plan

Land Use

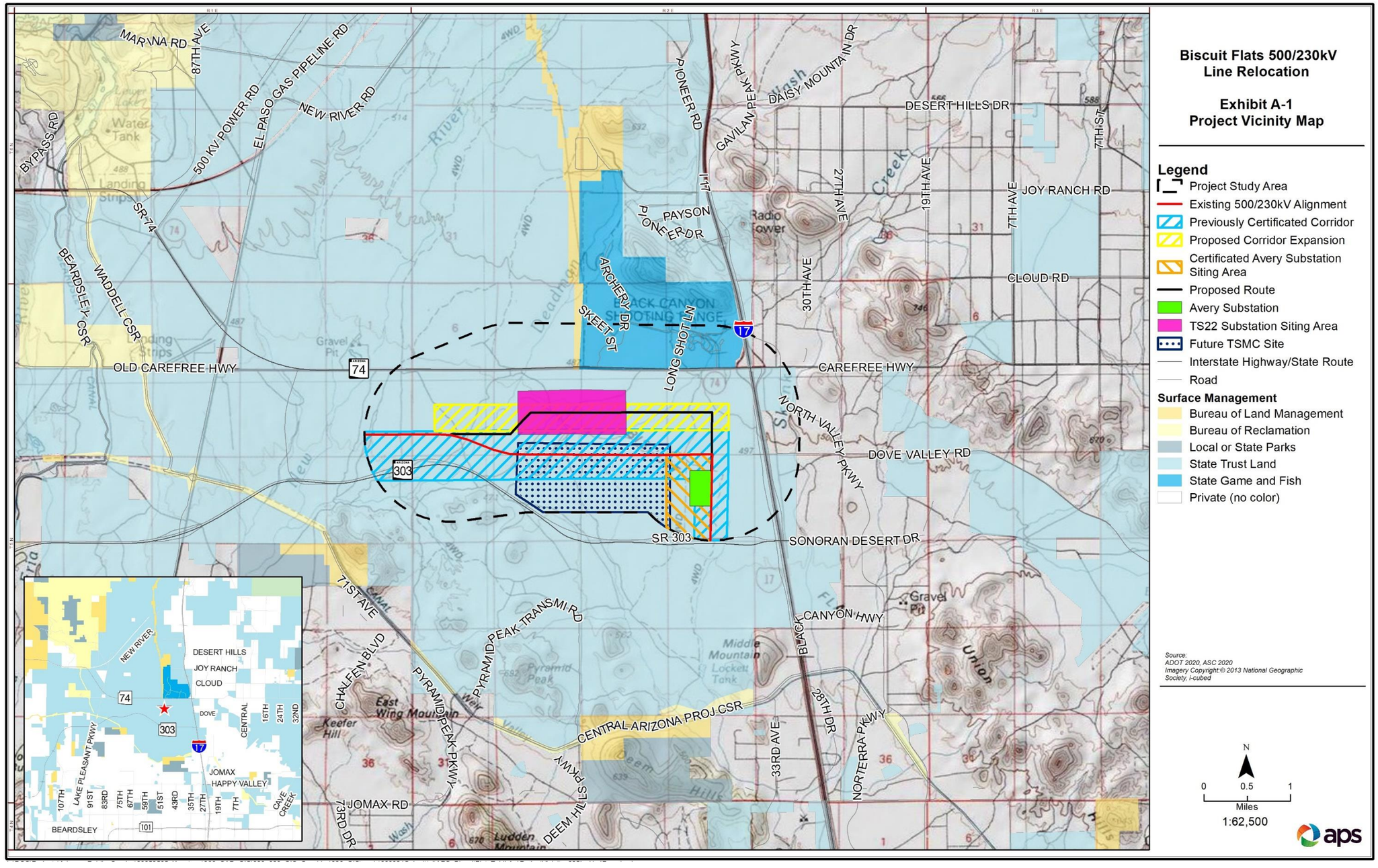
For the purposes of the Biscuit Flats 500/230kV Line Relocation Project (Project) CEC amendment, this Exhibit provides an analysis of only the segment of the transmission line to be relocated against the existing alignment, as well as the expansion of the Avery Substation and new addition of the TS22 Substation. The study area for environmental review of the proposed Project includes areas within 1 mile of the project site (including the proposed Avery and TS22 substations and connecting lines) (collectively "study area") **(Figure A-1**). Prior CEC application data was reviewed to the extent relevant.

The study area for the Project is located entirely within the municipal limits of the City of Phoenix (COP) **(Figure A-1**). The study area is generally referred to as Biscuit Flats (on USGS topographic maps) and includes land that mainly are north of Arizona Loop 303 and west of Interstate 17 (I-17). A majority of the land within the study area is State Trust land, owned by the State of Arizona and managed by the Arizona State Land Department (ASLD). Following is a discussion of the land use considerations and the analysis of existing and future land uses relevant to the Project.

Existing and future land use information was reviewed for the study area. The analysis is based on the most recently available data from various local and regional plans relevant to the study area and GIS databases including:

- Carefree Highway Scenic Corridor Study (Maricopa County 2008)
- 2015 COP General Plan (COP 2018)
- Planned Unit Development (PUD) Narrative for North Phoenix 3,500 (COP 2020a)
- North Gateway Village Annual Report (COP 2020b)
- State of Arizona Land Resource Information System (ALRIS 2007)
- City of Phoenix GIS database (COP 2021)
- U.S. Geological Survey (USGS) National Hydrography Dataset (NHD) (NHD 2020)
- Arizona Department of Transportation (ADOT) GIS database (ADOT 2020)
- Federal Emergency Management Agency (FEMA) GIS database (FEMA 2020)

Figure A-1. Biscuit Flats 500/230kV Line Relocation Project Vicinity Map



Existing Land Use

Based on review of aerial photography (Google Earth 2021) and subsequent field observations in April 2021, the majority of the study area is undeveloped land (**Figure A-2**). The western portion of the study area is dominated by undeveloped land surrounding and west of the Deadman Wash natural area. Mapped FEMA floodway and 100-year floodplain designations surround the Deadman Wash, New River tributary, and Skunk Creek areas. Developed uses are present in the northern and eastern portions of the study area. The Ben Avery Shooting Facility (BASF) and Arizona Game and Fish Department (AZGFD) headquarters lies within the northern portion of the study area, located north of SR-74 and west of I-17. The facility is currently zoned as public/quasi-public and is used as a public recreation facility. A recreational trail, the Black Canyon Trail (BCT), is located west of the BASF and north of SR-74. There are some commercial land uses to the east of I-17, as well as the HonorHealth Sonoran Crossing Medical Center, which are surrounded by undeveloped land along Skunk Creek. Residential uses are located just outside of the study area to the northeast.

A portion of the SR-74 (Carefree Highway) was designated a scenic corridor in June 1997 to help mitigate the impacts of new development in an area with unique scenic and rural character (Maricopa County 2008). Since the original designation by the County, the COP now has jurisdiction within the study area. This highway segment crosses east-west through the northeastern portion of the study area. In addition, the 2015 COP General Plan establishes 205-foot setback from the SR-74 street centerline, leaving a 135-foot tract of undisturbed land between street improvements and urban development, except in commercial areas where a 120-foot setback from the centerline is required (COP 2018). There is an existing distribution line that runs along the SR-74 alignment to the south of the roadway (Google Earth 2021).

Future Land Use

The 2015 COP General Plan identifies future land use within the study area as residential (low, medium, and high density), existing and future parks/open space, mixed use, mixed use agricultural, commercial, commerce/business park, public/quasi-public, floodplain, undesignated, and transportation corridors. Some of these areas are designated as optional future land uses or areas in transition between land uses. The BASF and AZGFD headquarters, as well as the SR-74 (Carefree Highway) scenic corridor, are expected to remain designated as public/quasi-public land use. New areas of commercial and residential development are anticipated in the western portion of the study area, and areas to the east of I-17 are expected to be further developed into commercial, residential, and parks/open space. Areas of future acquisition for the Phoenix Sonoran Preserve are designated in the General Plan as future parks/open space land uses (COP 2020a) (**Figure**).

The study area lies within the COP's planned North Gateway Village. The COP GIS data for the North Gateway Village (which includes the study area) includes several trails planned for future development, which would result in future recreational uses throughout the study area. The trails would generally be located along existing and future roadway corridors and within natural corridors designated as existing or future parks/open space, such as Deadman Wash and Skunk Creek (COP 2021).

Under the North Gateway Village proposal dated September 1, 2020 (COP 2020a), the COP proposed to rezone approximately 3,721 acres of State Trust land within the North Gateway Village to a Planned Unit Development (PUD) to allow for a mixed-use employment hub. The proposed North Phoenix 3,500 PUD comprises a large portion of the study area and is bordered by SR-74 to the north, I-17 to the east, the Loop 303 Freeway to the south, and Deadman Wash to the west (

Figure A-3).

The North Phoenix 3,500 Planned Unit Development (PUD) amended the 2015 COP General Plan to change all land use designations for the PUD area to mixed use (commercial/commerce/business park) (**Figure A-4**). The new designations would support the proposed major employment district consisting of employment, manufacturing, commerce park, commercial, and multi-family residential uses. The 2015 COP General Plan incorporates this change in future land use designations. The PUD includes three distinct mixed use land use districts: Technology Campus, Technology Park, and Freeway Mixed Use (

Figure A-3). The study area encompasses all three geographic districts, each with a unique set of development standards and permitted uses (COP 2020a).

Figure A-2. Biscuit Flats 500/230kV Line Relocation Existing Land Use

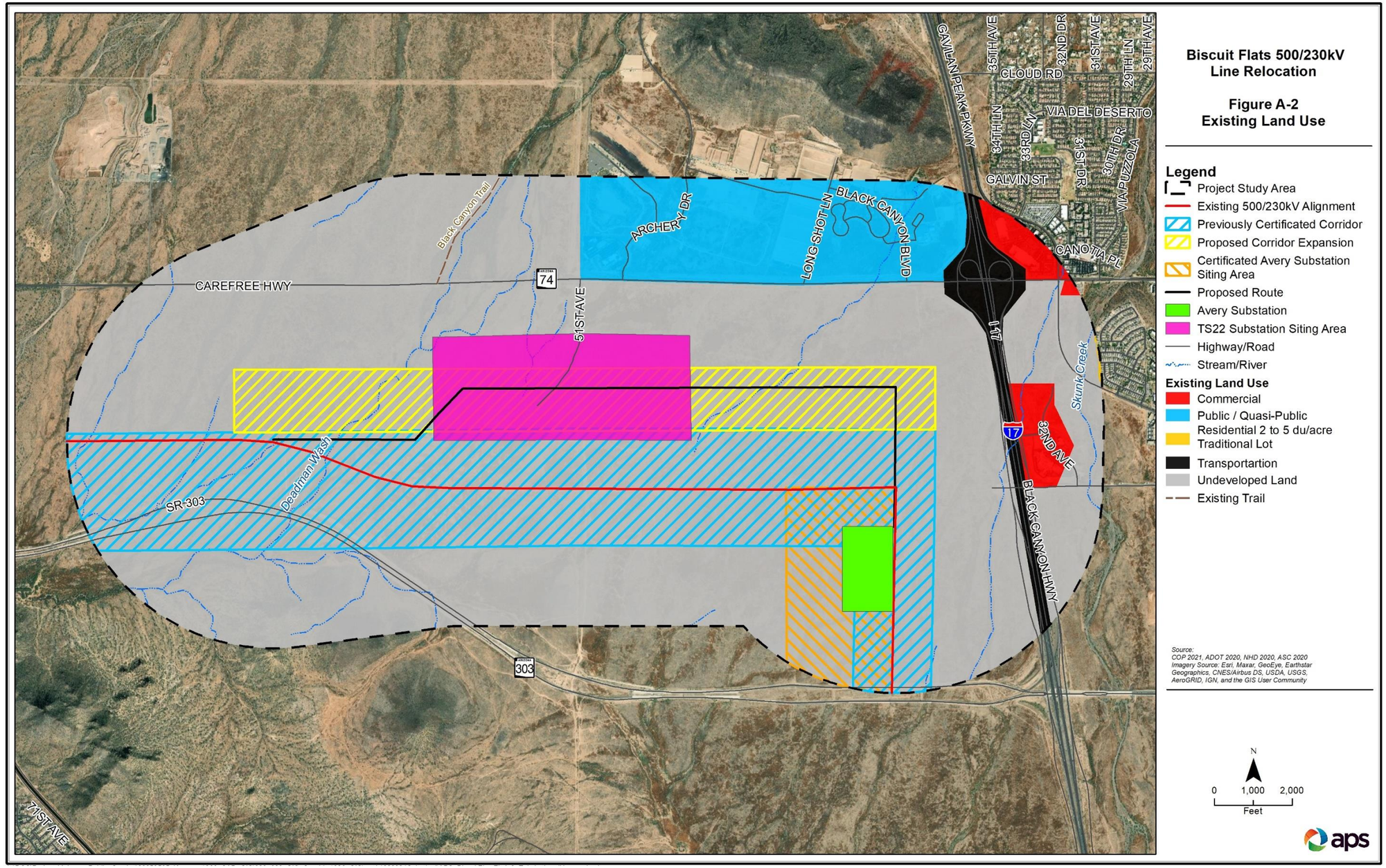


Figure A-3. Biscuit Flats 500/230kV Line Relocation Future Land Use

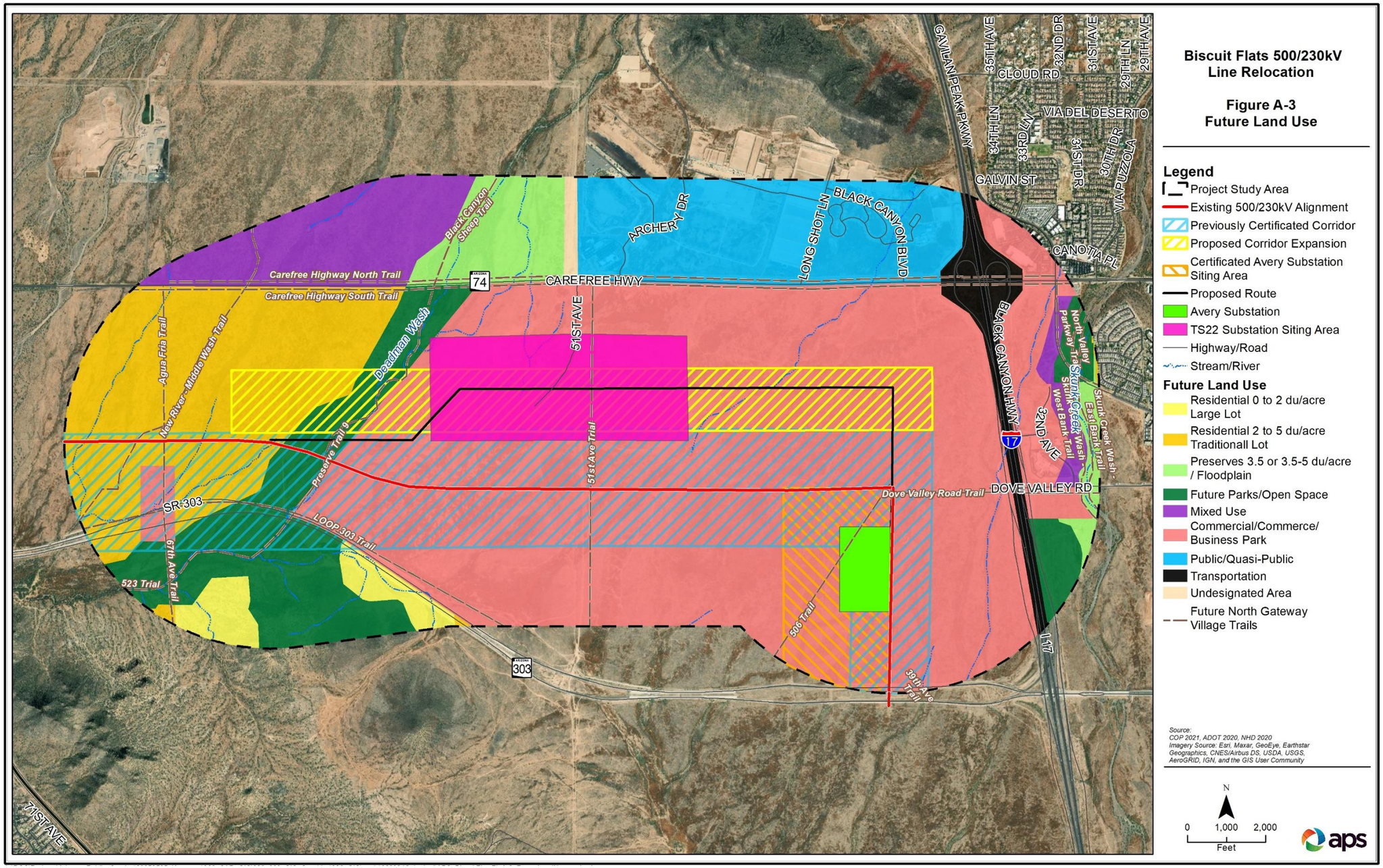
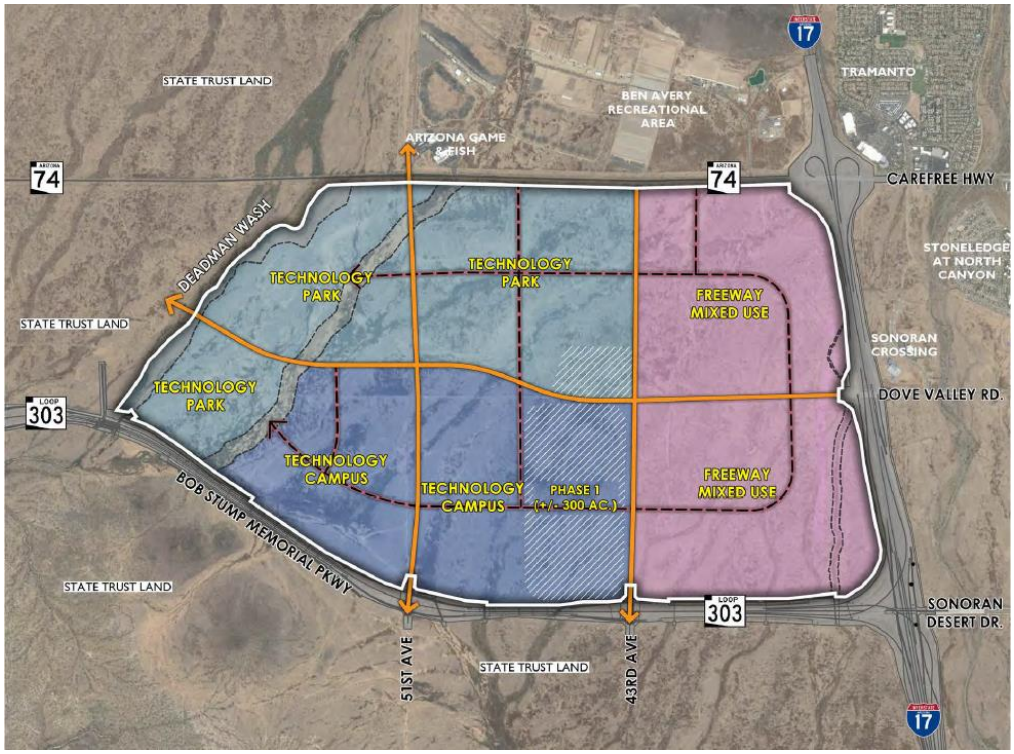


Figure A-4. North Phoenix 3,500 PUD Conceptual Land Use Plan



Source: COP 2020a

Analysis

500/230kV Transmission Line Relocation

The proposed route would result in relocating the transmission line approximately 0.5 mile to the north of the existing transmission line. The transmission line would be relocated from undeveloped areas and open space surrounding Deadman Wash to a route that crosses the same types of existing land uses. In the Deadman Wash area, the transmission line would cross through FEMA 100-year floodplains and a floodway.

The 2015 COP General Plan (as amended by the PUD) identifies future land use within the study area as residential, parks/open space, mixed use, mixed use agricultural, commercial, commerce/business park, public/quasi-public, floodplain, undesignated, and transportation. Direct impacts to existing land use from the transmission line right-of-way would take place on undeveloped or open space land uses, as well as within a FEMA floodway and 100-year floodplains, *which are the same land uses currently impacted by the existing transmission line*. Direct impacts to future land use would take place in mixed use (commercial/commerce/business park), open space, FEMA floodway and 100-year floodplains, or residential land use, *which are the same planned land uses currently impacted by the existing transmission line*. The transmission line would be relocated to accommodate future planned land uses in the North Phoenix 3,500 PUD area, including

the TSMC facilities. The relocation of the existing transmission line segment on undeveloped land and open space would be consistent with the 2015 COP General Plan, and, therefore, compatible with current and future land uses.

The proposed route would not have direct impacts on BASF or the SR-74 corridor, as the alignment would be at least 0.5 mile away (note: visual impacts are described in Exhibit E).

Avery Substation

The authorized Avery Substation siting area would remain the same, but the substation size would increase to approximately 64 acres. Direct impacts from construction of the Avery Substation would occur on existing areas of undeveloped land. The 2015 COP General Plan designates future land use as mixed use (commercial/commerce/business park) for the Avery Substation location. The construction of the 64-acre Avery Substation on currently undeveloped land planned for mixed uses would be compatible with current and future land uses.

TS22 Substation

The TS22 Substation would be new construction that was not previously sited in the prior CEC applications. The exact footprint has yet to be developed, but it is expected to be located on existing areas of undeveloped land. TS22 substation will be approximately 80-100 acres and is planned to occur within the larger 408 acres TS22 substation siting area. The 2015 COP General Plan designates future land use as mixed use (commercial/commerce/business park) for the TS22 Substation location. The construction of the TS22 Substation on currently undeveloped land planned for mixed uses would be compatible with current and future land uses.

Conclusion

Relocating the transmission line and constructing the Avery Substation will accommodate planned future development, including the TSMC facility. Construction of the TS22 Substation is needed for future development within the North Phoenix 3,500 PUD and regional growth. The proposed route is consistent with current and planned land uses within the study area. Additionally, the relocated segment would move from currently undeveloped land to the same land use, resulting in similar overall impacts to land use as previously contemplated and approved. The BASF recreational uses and SR74 (Carefree Highway) scenic corridor located more than half mile north are not expected to be impacted by the Project. For these reasons, the Project is consistent with land use plans for this area and would not conflict with existing or future land uses.

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Exhibit B
Environmental Studies

As stated in 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 part of this Exhibit.

The results of the environmental studies associated with the Biscuit Flats 500/230kV Line Relocation Project are discussed in previous and subsequent exhibits: **Exhibit A** describes land use; **Exhibit C** addresses potential impacts to sensitive biological resources on the Project site; **Exhibit D** discusses potential impacts to sensitive biological resources on the Project site; **Exhibit E** summaries the potential effects on the area's scenic quality and cultural resources; **Exhibit F** summarizes the potential effects on recreation resources; **Exhibit H** describes how the Project could affect local plans: and **Exhibit I** discusses the noise and interference impacts that are expected.

There is no federal land, nexus, or involvement associated with this Project that would require National Environmental Policy Act (NEPA) documents be developed for this Application to Amend.

Exhibit C
Areas of Biological Wealth

As stated in 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 or endangered species Describe the biological wealth or species involved and state effects, if any, the proposed facilities will have thereon."

Overview

The U.S. Fish and Wildlife Service (USFWS) lists species as endangered, threatened, candidate, or proposed for listing, under the Endangered Species Act (1973 as amended); all these categories are identified as special status species. The endangered classification is provided to an animal or plant in danger of extinction within the foreseeable future throughout all or a significant portion of its range. A threatened classification is provided to an animal or plant likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Candidate species are "those species for which the USFWS has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposed rule to list but issuance of the proposed rule is precluded." A proposed species is any species of animal or plant that is proposed in the Federal Register to be listed under Section 4 of the Endangered Species Act. The Endangered Species Act was designed to protect critically imperiled species from extinction as a "consequence of economic growth and development untendered by adequate concern and conservation."

Biological Resources Information

For the purposes of the Biscuit Flats 500/230kV Line Relocation Project (Project) CEC amendment, this Exhibit provides an analysis of only the segment of the transmission line to be relocated against the existing alignment, as well as the expansion of the Avery Substation and new addition of the TS22 Substation. The study area for environmental review of the proposed Project includes areas within 1 mile of the project site (including the proposed Avery and TS22 substations and connecting lines) (collectively "study area") (**Figure A-1**). Prior CEC application data was reviewed to the extent relevant.

Data were gathered from the USFWS Information for Planning and Conservation (IPaC) (USFWS 2021) and AZGFD Online Environmental Review (AZGFD 2021) to develop a list of special status species that could occur within the study area. A biological

reconnaissance of the proposed Project was conducted on April 6, 2021 to assess habitats suitable for special status species. The list of special status species with potential to occur within the study area is provided in Table C-1. There are no critical habitats within the study area (USFWS 2021).

AZGFD has identified two special designation areas within 3 miles of the study area: Black Canyon Trail Wildlife Movement Area and Important Connectivity Zone. The Black Canyon Trail Wildlife Movement Area connects the Bradshaw Mountain to Lake Pleasant is located approximately 3 miles north of the study area. The Project would have no impact on the Black Canyon Trail Wildlife Movement Area. The Important Connectivity Zone is located south of the study area and extends from Loop 303 and Deem Hills to the west across Interstate 10 to the Union Hills. The project would have no impact on this Important Connectivity Zone.

Potential effects of the Project on special status species include vegetation clearing and associated habitat loss, as well as disturbance, injury, or mortality of wildlife due to construction activities. The proposed route is located on Arizona State Trust land that has had past cattle grazing which has diminished habitat quality for some special status species. Very few drainages are located within the study area. Within the study area there are several livestock ponds including Gibson Tank and Escondido Tank.

Table C-1: Special Status Species Potentially Occurring in the Study Area

Species	Status	Habitat Requirements	Habitat Suitability
INSECTS			
Monarch butterfly *Danaus plexippus*	ESA-C	Breeding and migratory monarch butterfly populations occur throughout Arizona and small overwintering population were found to spend the winter in the greater Phoenix area including two sites were along the Salt River (Rio Salado Habitat Restoration Area and Tempe Marsh) and one was at Desert Botanical Garden in Phoenix. Habitats include riparian areas and urban habitats concentrated on parks.	**Limited suitable** habitat in the study area. Riparian habitat in study area includes Deadman's Wash and livestock ponds.
REPTILES			
Sonoran desert tortoise *Gopherus morafkia*	ESA-C	Found in bajadas and rocky slopes of Sonoran desertscrub at elevations up to 5,330 feet.	**Suitable habitat** in study area.

Species	Status	Habitat Requirements	Habitat Suitability
BIRDS			
California least tern *Sterna antillarum browni*	ESA-LE	Primarily in California, may occur in different parts of Arizona where habitat components are adequate for nesting or feeding such as large lakes, recharge basins, or wetland areas. Breeding documented in Maricopa County.	**No suitable habitat** in study area.
Yellow-billed cuckoo *Coccyzus americanus*	ESA-LT	Occurs in large blocks of riparian woodlands (cottonwood, willow, or tamarisk galleries). Found at elevations less than 6,500 feet.	**No suitable habitat** in study area.
MAMMALS			
Jaguar *Panthera onca*	ESA-LE	Individuals in Arizona have been found in Sonoran desertscrub up through subalpine conifer forest. Current range includes Cochise County, Arizona. AZGFD predicted range models includes Maricopa County.	**Limited suitable habitat** is predicted by AZGFD models. The study area is outside the current known range.
Ocelot *Leopardus pardalis*	ESA-LE	Ocelot occurs in dense desertscrub vegetation. In Arizona, this species is known from southeastern Arizona from the Mexican border to Superior/Globe. AZGFD predicted range models includes areas most desertscrub habitat in Arizona.	**Limited suitable habitat** is predicted by AZGFD models. The study area is outside the current known range.
FISH			
Gila topminnow *Poeciliopsis occidentalis occidentalis*	ESA-LE	Occurs in small streams, springs, and cienegas in vegetated shallows. Found at elevations below 4,500 feet.	**No suitable habitat** in the study area.

NOTES: Agency or Law: ESA = Endangered Species Act; Status Definitions: **ESA:** LE = listed endangered; LT = listed threatened; P = proposed endangered; C = candidate

Analysis

500/230kV Transmission Line Relocation

Potential effects of the transmission line relocation on special status species include loss of habitat for wildlife and potential disturbance of foraging or breeding activities. Special

status species may be disturbed by noise from construction activities along the transmission line alignment; however, impacts resulting from construction activities are expected to be low. Vehicles and heavy equipment could displace or cause mortality in some fossorial species, particularly the desert tortoise.

Riparian areas along Deadman's Wash and livestock ponds could be impacted by vegetation removal or direct disturbance to streambeds from construction of access roads. The major xeroriparian habitats that would be crossed by alternative, including the Deadman's Wash, may be spanned by the proposed transmission line structures, resulting in low impacts on such habitats. If vegetation or soil disturbance in riparian areas is anticipated, surveys for special status species should be completed prior to disturbance.

Avery Substation

Impacts to special status species would be similar to impacts along the transmission line relocation. However, no riparian vegetation is in the Avery Substation area. The Escondido Tank is located 300 feet east of the substation area and would not be impacted during construction and operation.

TS22 Substation

Impacts to special status species would be similar to the impacts along transmission line relocation and Avery Substation. Riparian vegetation is present at the Gibson Tank. Riparian vegetation and the livestock pond could be impacted by construction resulting in loss of habitat.

Conclusion

Overall impacts to special status species are anticipated to be low. Very few drainages are located within the study area. As discussed in Table C-1, only habitat for the Sonoran Desert Tortoise, a USFWS ESA Candidate species, exists within the study area. Vehicles and heavy equipment could displace or cause mortality in some fossorial species, particularly the desert tortoise.

References

Arizona Game and Fish Department (AZGFD). 2021. Online Environmental Review. https://www.azgfd.com/ (accessed April 2021).

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Exhibit D
Biological Resources

As stated in 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, other proposed facilities will have thereon."

Overview

For the purposes of the Biscuit Flats 500/230kV Line Relocation Project (Project), this Exhibit provides an analysis of only the segment of the transmission line to be relocated against the existing alignment, as well as the expansion of the Avery Substation and new addition of the TS22 Substation. The study area for environmental review of the proposed Project includes areas within 1 mile of the project site (including the proposed Avery and TS22 substations and connecting lines) (collectively study area) (**Figure A-1**). Prior CEC application data was reviewed to the extent relevant.

The study area is in the northern Sonoran Desert biotic region and southern portion of the Basin and Range physiographic province. Despite the scarce, erratic, and unreliable precipitation patterns and the high summer temperatures, this region supports one of the most diverse floras and faunas in the United States and is the most biologically diverse of the North American deserts. The study area has the potential to support about 60 species of reptiles, 50 species of mammals, and more than 150 species of birds. The plant diversity is equally high and includes numerous regional endemic taxa. The biodiversity is structured, in part, because of the juxtaposition of highlands and lowlands that differ in the types of substrates and plant communities that create a patchwork of ecological communities across the landscape. Additionally, riparian areas provide mesic conditions for other species that would otherwise not exist in this desert environment.

Overall, the biotic environment is relatively undisturbed throughout much of the study area. Human disturbances are concentrated primarily around industrial developments, roads, and livestock grazing. The predominant native vegetation communities in the study area include desertscrub in lowlands and riparian scrub in ephemeral drainages.

Biological Resources Information

General species publications, Arizona Game and Fish Department (AZGFD) Wildlife Action Plan and Heritage Data Management System, aerial photographs, Southwest ReGAP landcover data, and NatureServe Explorer (Nature Serve 2021) were consulted to

develop a characterization of the biological resources in the study area. The impact analysis focused on vegetation communities, the quality of vegetation, existing human disturbance, the presence of riparian or xeroriparian habitat, and habitats for special status species and species of concern.

A biological reconnaissance of the study area was conducted on April 6, 2021 to assess the plant communities and associated fauna that could be affected by the Project. Plants and animals were identified and noted along with major geographic features. Lists of potentially occurring species of animals were assembled from standard references for the state, and plant species observed were recorded.

The elevation at the TS22 substation siting area is approximately 1,580 feet. Elevation gradually decreases from west to east along the proposed transmission line route and alternative alignments. The elevation at the Avery Substation site is approximately 1,600 feet. The topographic setting is characterized as flat. The Deem Hills are located approximately two miles south of the study area. The Aqua Fria River is located approximately one mile west of the study area. The study area is identified as Biscuit Flat on the Biscuit Flat, Arizona, U.S. Geological Survey 7.5minute topographic quadrangle. Three livestock ponds are located in- the area: Gibson Tank, Pepe Tank, and Escondido Tank. The study area is not located within an Arizona Wildlife Linkages zone (Arizona Wildlife Linkages Workgroup 2006).

The native vegetation communities in the study area includes the Lower Colorado River subdivision of the Sonoran desertscrub ecological community and Warm Desert Riparian Scrubland. The vegetation communities are described below, followed by description of wildlife typically associated with each.

Potential effects of the Project on general wildlife species include vegetation clearing and associated habitat loss, as well as disturbance, injury, or mortality of wildlife due to construction activities. The proposed route is located on Arizona State Trust land that has had past cattle grazing which has diminished habitat quality for some species. Very few drainages are located within the study area. Within the study area there are several livestock ponds including Gibson Tank and Escondido Tank.

Lower Colorado River Subdivision/Sonoran Desertscrub Vegetation Community

This is the most arid portion of the Sonoran Desert. Vegetation is dominated by low, open stands of creosotebush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*). Cacti including saguaro (*Carnegiea gigantea*) and fishhook barrel cactus (*Ferocactus wislizenii*), though present, are less abundant than in the neighboring upland desertscrub areas. Trees and taller vegetation are largely confined to washes and other drainages. Smaller areas of low, undrained and salt-affected soils commonly are dominated by four-wing saltbush (*Atriplex canescens*), catclaw acacia (*Acacia greggii*), and velvet mesquites (*Prosopis velutina*). Other conspicuous species include: desertbroom (*Baccharis sarothroides*), chuparosa (*Justicia californica*), jumping cholla (*Cylindropuntia fulgida*), ironwood

(*Olneya tesota*), and blue paloverde (*Parkinsonia florida*) (Turner 1994, Southwest ReGAP 2021, Southwest ReGAP 2005).

Wildlife of the Lower Colorado River Subdivision/Sonoran Desertscrub Community

Amphibians

Amphibians typically occurring in this community include the Arizona toad (*Bufo microscaphus)* and Couch's spadefoot toad (*Scaphiopus couchii*). The number of species is limited because of the lack of surface water in this vegetation type (AZGFD 2012, Brennan and Holycross 2006).

Reptiles

A number of reptiles typically inhabit this vegetation community. Typical species include the long-nosed leopard lizard (*Gambelia wislizenii*), desert iguana (*Dipososaurus dorsalis*), desert spiny lizard (*Sceloporus magister*), tiger whiptail lizard (*Aspidoscelis tigris*), desert horned lizard (*Phrynosoma platyrhinos*) the glossy snake (*Arizona elegans*), nightsnake (*Hypsiglena torquata*), common king snake (*Lampropeltis getula*), Sonoran whipsnake (*Masticophis bilineatus*), gopher snake (*Pituophis catenifer*), sidewinder (*Crotalus cerastes*), and Mojave rattlesnake (*Crotalus scutulatus*). The desert tortoise (*Gopherus agassizi*) can be found in these habitats, but the Arizona Upland subdivision vegetation community is its preferred habitat in Arizona (AZGFD 2012, Brennan and Holycross 2006).

Birds

Widespread generalist birds like the turkey vulture (*Cathartes aura*), golden eagle (*Aquila chrysaetos*), red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), common ground dove (*Columbina passerina*), common raven (*Corvus corax*), northern mockingbird (*Mimus polyglottos*), and western meadowlark (*Sturnella neglecta*) could be found in this vegetation type as well as arid habitat specialists that would include the white-winged dove (*Zenaida asiatica*), greater roadrunner (*Geococcyx californianus*), western kingbird (*Tyrannus verticalis*), Say's phoebe (*Sayornis saya*), and black-throated sparrow (*Amphispiza bilineata*) (AZGFD 2012, Birds of North America, accessed 2021).

Mammals

Typical mammals in these habitats include the desert cottontail (*Sylvilagus audubonii*), black-tailed jackrabbit (*Lepus californicus*), Botta's pocket gopher (*Thomomys bottae*), little pocket mouse (*Perognathus longimembris*), Sonoran desert pocket mouse (*Chaetodipus penicillatus*) desert kangaroo rat (*Dipodomys deserti*), desert woodrat (*Neotoma lepida*), cactus mouse (*Peromyscus eremicus*), collared peccary (*Tayassu tajacu*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), kit fox (*Vulpes macrotis*), and badger (*Taxidea taxus*). Between 17 and 21 species of bat could forage in this habitat, but roost sites other than human dwellings are not available in creosotebush dominated vegetation (summary derived from Hoffmeister 1986, AZGFD 2012).

Warm Desert Riparian Scrub Vegetation Community

This ecological system is restricted to ephemeral washes and livestock ponds. Although often dry, the intermittent surface water flows define this system, which are often associated with rapid sheet and gully flow. This system occurs as linear or braided strips within the study area. The vegetation of desert washes is quite variable ranging from sparse and patchy to moderately dense and typically occurs along the banks but may occur within the channel. The woody layer is typically intermittent to open and are dominated by shrubs and small trees such as catclaw acacia, velvet mesquite, blue paloverde, ironwood, desertbroom, desert willow (*Chilopsis linearis*), burrowbush (Hymenoclea salsola), and spiny hackberry (*Celtis ehrenbergiana*) (Turner 1994, Southwest ReGAP 2021, Southwest ReGAP 2005).

Wildlife of Warm Desert Riparian Scrub

Although riparian communities are limited in the study area, these have highly productive habitats that support a high diversity of mammals, birds, insects, and reptiles that make use of the abundant shade, water, and food resources. These areas are important ecological centers for wildlife and are particularly critical during periods of drought, which are frequent in the region. Due to the available water resources, moderated temperature, and abundant food resources, both plant and animal species diversity tends to be highest in riparian habitats in the desert environments of Arizona.

Amphibians

Riparian habitats in the study area could be the only places to find many of the potential amphibian species like the Arizona toad (*Bufo microscaphus)* and lowland leopard frog (*Rana yavapaiensis*) (AZGFD 2012, Brennan and Holycross 2006).

Reptiles

Reptile species presence would be similar to species found in adjacent desertscrub but could occur in higher density within riparian scrub habitat (AZGFD 2012, Brennan and Holycross 2006).

Birds

Bird species presence would be similar to species found in adjacent desertscrub but could occur in higher density within riparian scrub habitat (AZGFD 2012, Birds of North America, accessed 2021).

Mammals

Riparian habitats in the study area could be a place of concentrated bat activity. Larger game mammals that likely frequent riparian habitat include the coyote (*Canis latrans*), bobcat (*Lynx rufus*), striped-skunk (*Mephitis mephitis*), and possibly the mule deer (*Odocoileus hemionus*) (summary derived from Hoffmeister 1986, AZGFD 2012).

Native Plants

Arizona Native Plant Law (ANPL) (ARS § 3-901 to 3-916) is administered by the Arizona Department of Agriculture (ADA), who manages native plant resources and impacts to protected native plant species. Arizona Native Plant Law-listed plants include four protection categories: Highly Safeguarded, Salvage Restricted, Salvage Assessed, and Harvest Restricted. Landowners have the right to destroy or remove native plants growing on their land, but at least 60 days prior to the destruction of any protected native plants, landowners are required to notify the ADA. At the time of the notification the landowner can state if they would allow salvage companies an opportunity to salvage the plants or if they intend to destroy the plants. Removal of protected native plants from the site would require tags/permits from ADA. The landowner is allowed to transplant healthy native trees within the site without a permit or notification.

Analysis

500/230kV Transmission Line Relocation

Areas along the 500/230kV transmission line corridor are dominated by Lower Colorado River subdivision vegetation community. Species diversity of plants and animals is relatively low in these areas and is dominated by burrowing mammals, reptiles, and birds that are desert generalists. Food resources are typically limited, and habitats tend to be simple in these areas. These two factors contribute to the relatively lower species diversity in this vegetation type. Disturbance-related impacts associated with clearing of vegetation for construction in these areas would be low. The 500/230kV transmission line corridor would cross Deadman's Wash with areas of dense riparian vegetation and moderate species diversity.

In areas where native vegetation is cleared, there will be a permanent loss of habitat for wildlife species. Construction activities may result in temporary disturbance of wildlife due to the presence of construction equipment and human activity. Construction-related impact includes the potential for incidental injury or mortality to wildlife in the construction zone. These impacts are anticipated to be low and short-term in duration and would be limited to the construction phase of development. Impacts to Deadman's Wash would be limited to a construction access road. Transmission line poles would span the wash channel.

Avery Substation

Avery Substation is located in Lower Colorado River subdivision vegetation community. Impacts would be similar to the 500/230kV transmission line. However, no riparian vegetation is located within the Avery Substation site. The Escondido Tank is located 300 feet east of the substation study area and would not be impacted construction. Overall, low impacts to vegetation and wildlife resources would be anticipated.

TS22 Substation

Similar to the Avery Substation, the TS22 substation siting area is located in Lower Colorado River subdivision vegetation community. Impacts to vegetation and wildlife in this vegetation community would be similar to the 500/230kV transmission line and Avery Substation. Riparian vegetation is present at the Gibson Tank. Riparian vegetation and the livestock pond could be impacted by construction resulting in loss of wildlife habitat. Overall, low impacts to vegetation and wildlife resources are anticipated as the result of the development of the TS22 substation.

Conclusion

Potential effects of the Project on wildlife and plants include vegetation clearing and associated habitat loss, as well as disturbance, injury, or mortality of wildlife due to construction activities. Overall impacts to biological resource are anticipated to be low. The proposed route is located on Arizona State Trust land that has had past cattle grazing which has diminished the biological diversity. Very few drainages are located within the study area.

One result of construction of this Project is the potential removal of protected plant species. Velvet mesquite and ironwood trees are classified as harvest restricted under the Arizona Native Plant Law. If these trees require removal, over an area of one acre or more but less than 40 acres, Arizona Department of Agriculture (ADA) should be notified 30 days before the plants are removed or destroyed. If these plants are to be removed or destroyed over an area of 40 acres or more, the ADA notification should be 60 days.

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Exhibit E

Scenic Areas, Historic Sites and Structures, and Archaeological Sites

As stated in 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."

A discussion of the existing historic sites and structures, and archaeological sites and associated impacts follows the discussion on scenic areas.

Scenic Areas

The study area for the Biscuit Flats 500/230kV Line Relocation project (Project) (including land within a mile of the existing transmission line and proposed relocation route) is located in the northern Phoenix metropolitan area in Maricopa County, Arizona. Deadman Wash is a large area of ephemeral washes located in the western portion of the study area, and Skunk Creek is located within the eastern portion of the study area. Most of the landscape setting can be characterized as relatively flat with expansive views. General views within and around the study area feature mostly undeveloped land, with residential and commercial development to the east of the I-17 corridor. In addition to the study area, locations up to approximately 2.5 miles are characterized to evaluate potential impacts on scenic resources and views.

Inventory data for visual resources within the study area were collected from aerial photography, previous studies, and field review. The inventory focused on landscape character, determination of scenic quality, identification of sensitive viewers, and viewing conditions (e.g., distance zones, viewer orientation, and screening).

The landscape character within the study area generally includes open expanses with ephemeral washes meandering through Sonoran uplands and is flanked to the south by desert foothills (e.g., Pyramid Peak and Deem Hills). Vegetation in this area includes saguaro cactus, cholla cactus, barrel cactus, paloverde trees, creosote bush, and seasonal grasses, which are found in higher densities along the riverbeds, washes, and foothills in this area. Modifications to the landscape setting includes existing transmission line and transportation corridors, dispersed residences, and the AZGFD Headquarters and BASF.

Scenic quality within the study area includes Class A, Class B, and Class C landscapes. Class A landscapes include mountainous areas, such as those north of the Central Arizona

Project (CAP) Canal. Class B landscapes include undisturbed desert foothills and wash corridors, such as those associated with the New River to the west of the study area and Skunk Creek in the east of the study area. Class C landscapes include relatively flat terrain comprised of generally homogenous vegetation, such as desert scrub, which dominates the study area.

Current views from the existing transmission line in the study area to the west include undeveloped land with expansive views of the natural landscape with Deadman Wash and New River in the foreground (0 to 0.25 mile) and middle ground (0.25 to 1 mile) (Google Earth 2021). The North Lake Pleasant Parkway traverses north-south in the middle ground (1 to 2 miles), with undeveloped land and natural vegetation surrounding with the Agua Fria River in the background (2 or more miles). The Loop 303 Freeway traverses through the southern portion of the study area for several miles. Foreground views to the south include an undeveloped natural landscape and an existing transmission line along the 51st Avenue alignment, with the Pyramid Peak and Deem Hills desert foothills in the middle ground and background. Views to the Central Arizona Project (CAP) Canal, located approximately 2.5 miles to the south of the study area, are screened by vegetation and desert foothills. Foreground views to the east of the study area include undeveloped land and the natural landscape surrounding Skunk Creek as well as residential and commercial developments east of I-17. Residential and commercial developments and roadways dominate middle ground views to the east, with undeveloped land and desert foothills in the background. The BASF and undeveloped land with expansive views of the natural landscape dominate foreground views to the north. Middle ground and background views to the north are dominated by undeveloped land, natural vegetation, and desert foothills.

In consideration of the sensitivity of viewers, existing residential neighborhoods are typically considered to be of high sensitivity. Residential development within the study area is located to the east of I-17, approximately one mile from the nearest project components or proposed relocated or additional components. SR-74 (Carefree Highway) has been designated as a scenic corridor and represents an area of moderate to high sensitivity viewers. The nearest project components would be located approximately 0.5 mile to the south of the highway.

Visual simulations were prepared to show views from key observation points and assist with the evaluation of potential impacts on scenic resources. Existing condition photographs and simulations are presented following the analysis and include views along the Dove Valley Road alignment west of I-17 looking west (**Figures E-1 and E-2**), views at the I-17 and SR-74 interchange looking southwest (**Figures E-3 and E-4**), and views along SR-74 at the 51st Avenue alignment looking south (**Figures E-5 and E-6**).

Analysis

500/230kV Transmission Line Relocation

Relocating the existing 500/230kV line would not substantially block or alter views within the study area and would be primarily within Class C scenic quality landscape, with some Class B areas around the washes. The transmission line would be located closer to the SR-74 scenic corridor compared to the existing alignment; the line would be located approximately 0.5 mile from SR-74. Visual simulations were prepared for the proposed route. As shown in Figures E-3 and E-4, the transmission line would become more dominant in views from SR-74 to the south due to the relocation of the line toward the north (**Figure E-4**). This increased visibility on sensitive viewers along SR-74 would result in increased impacts compared to the existing alignment. However, future uses are anticipated to include large office and commercial buildings that are anticipated to minimize the visibility of the transmission line either by screening or backdropping by larger vertical features.

Avery Substation

The Avery Substation would be located within Class C scenic quality landscape and would not substantially block or alter views within the study area. As shown on the simulation representing the appearance of the substation, the substation would be partially screened by natural vegetation and terrain and backdropped by desert foothills (**Figures E-1 and E-2**), limiting impacts on sensitive viewers from residential areas, which are more than 0.5 mile away. The substation would be most visible to travelers along the I-17 (approximately 0.7 mile) and Loop 303 Freeway (approximately 0.4 mile) corridors, neither which carry a scenic designation.

TS22 Substation

The TS22 Substation would be located primarily within Class C scenic quality landscape and would not substantially block or alter views within the study area. The substation would be partially or fully screened by natural vegetation, potential commercial development, and backdropped by desert foothills (**Figures E-5 and E-6**). The substation would be most visible to travelers along SR-74 Carefree Highway, and depending on its final location, would be a dominant feature visible from viewers traveling along the highway. This could be a moderate to high impact on viewers, which also may depend on timing of other commercial development that may provide screening of the substation.

Conclusion

Existing conditions within the study area include generally expansive views of undeveloped land and natural terrain and vegetation, backdropped by mountains and foothills. Residential development is located to the east of I-17, and views of the project facilities from these areas would be partially or fully screened by the I-17 corridor and

natural terrain and vegetation. Relocating the existing 500/230kV line would bring the alignment closer to SR-74 than the existing alignment resulting in increased impact on viewers traveling along the highway. Views from SR-74 can be partially screened by intervening vegetation, resulting in moderate impacts. The Avery Substation is not anticipated to impact sensitive views or viewers given its location and distance from sensitive viewers. The TS22 Substation would have potentially moderate to high impacts on viewers traveling along SR-74, depending on its final site placement.

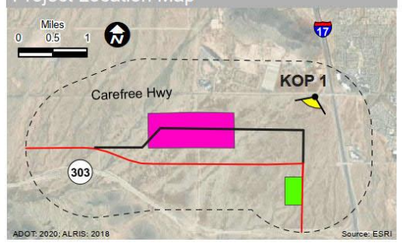
Future views within the study area also will include the development of the North Phoenix 3,500 PUD, which will further block views of the transmission line and substations from views along I-17, SR-74, and Loop 303 Freeway.

Figure E-1 KOP #1 Existing Conditions Looking Southwest from I-17 & SR74 towards Proposed Avery 230kV Substation

Biscuit Flats 500/230kV
Line Relocation
Figure E-1

KOP 1
Existing Conditions
Looking Southwest from
I-17 & SR74 towards Proposed Avery
230kV Substation

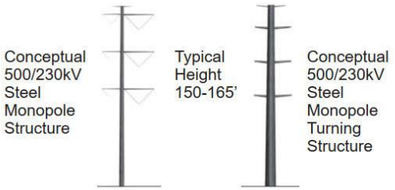
Project Location Map



Legend

- Key Observation Point
- Morgan-Pinnacle Peak Transmission Line
- Proposed Route
- Proposed Avery 230kV Substation
- Proposed TS22 500kV Substation Siting Area
- Project Study Boundary

Typical Structures



Photograph Information

Time of photograph:	12:40 PM
Date of photograph:	3-24-2021
Weather condition:	Partly Cloudy
Viewing direction:	Southwest
Latitude:	33°47'52.494" N
Longitude:	112°8'24.66" W
Distance to Avery Sub:	1.18 Miles

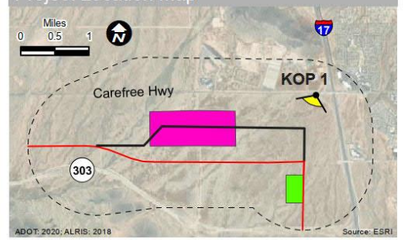
June 2021

Figure E-2 KOP #1 Simulated Conditions Looking Southwest from I-17 & SR74 towards Proposed Avery 230kV Substation

Biscuit Flats 500/230kV
Line Relocation
Figure E-2

KOP 1
Simulated Conditions
Looking Southwest from
I-17 & SR74 towards Proposed Avery
230kV Substation

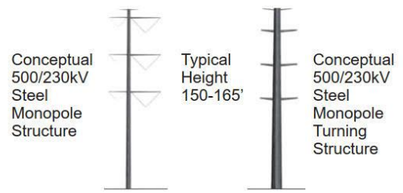
Project Location Map



Legend

- Key Observation Point
- Morgan-Pinnacle Peak Transmission Line
- Proposed Route
- Proposed Avery 230kV Substation
- Proposed TS22 500kV Substation Siting Area
- Project Study Boundary

Typical Structures



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Date of photograph:	3-24-2021
Weather condition:	Partly Cloudy
Viewing direction:	Southwest
Latitude:	33°47'52.494" N
Longitude:	112°8'24.66" W
Distance to Avery Sub:	1.18 Miles

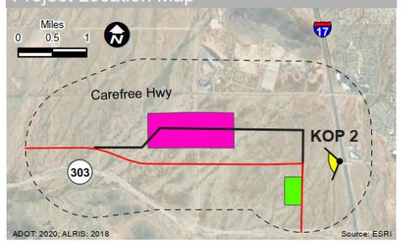
June 2021

Figure E-3 KOP #2 Existing Conditions Looking West from I-17 & Dove Valley Road towards Proposed Avery 230kV Substation

Biscuit Flats 500/230kV Line Relocation
Figure E-3

KOP 2 Existing Conditions Looking West from I-17 & Dove Valley Road towards Proposed Avery 230kV Substation

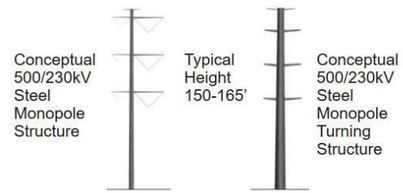
Project Location Map



Legend

- Key Observation Point
- Morgan-Pinnacle Peak Transmission Line
- Proposed Route
- Proposed Avery 230kV Substation
- Proposed TS22 500kV Substation Siting Area
- Project Study Boundary

Typical Structures



Photograph Information

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Date of photograph:	3-24-2021
Weather condition:	Partly Cloudy
Viewing direction:	Southwest
Latitude:	33°47'0.78" N
Longitude:	112°8'3.822" W
Distance to Avery Sub:	2821 Feet

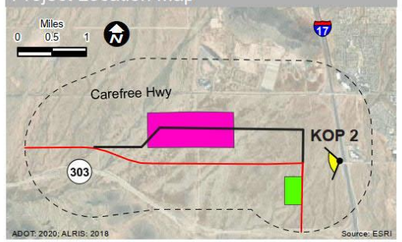
June 2021

Figure E-4 KOP #2 Simulated Conditions Looking West from I-17 & Dove Valley Road towards Proposed Avery 230kV Substation

Biscuit Flats 500/230kV
Line Relocation
Figure E-4

KOP 2
Simulated Conditions
Looking West from
I-17 & Dove Valley Road
towards Proposed
Avery 230kV Substation

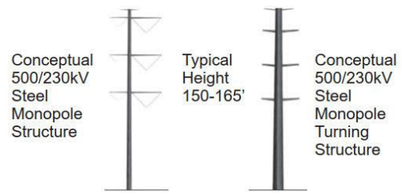
Project Location Map



Legend

- Key Observation Point
- Morgan-Pinnacle Peak Transmission Line
- Proposed Route
- Proposed Avery 230kV Substation
- Proposed TS22 500kV Substation Siting Area
- Project Study Boundary

Typical Structures



Photograph Information

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Date of photograph:	3-24-2021
Weather condition:	Partly Cloudy
Viewing direction:	Southwest
Latitude:	33°47'0.78" N
Longitude:	112°8'3.822" W
Distance to Avery Sub:	2821 Feet

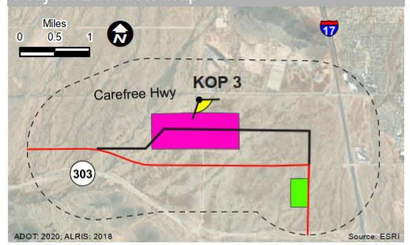
June 2021

Figure E-5 KOP #3 Existing Conditions Looking Southeast from SR74 just East of 51st Ave towards Proposed Avery 230kV Substation

Biscuit Flats 500/230kV
Line Relocation
Figure E-5

KOP 3
Existing Conditions
Looking Southeast from
SR74 just East of 51st Ave
towards Proposed
Avery 230kV Substation

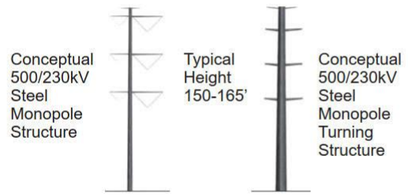
Project Location Map



Legend

- Key Observation Point
- Morgan-Pinnacle Peak Transmission Line
- Proposed Route
- Proposed Avery 230kV Substation
- Proposed TS22 500kV Substation Siting Area
- Project Study Boundary

Typical Structures



Photograph Information

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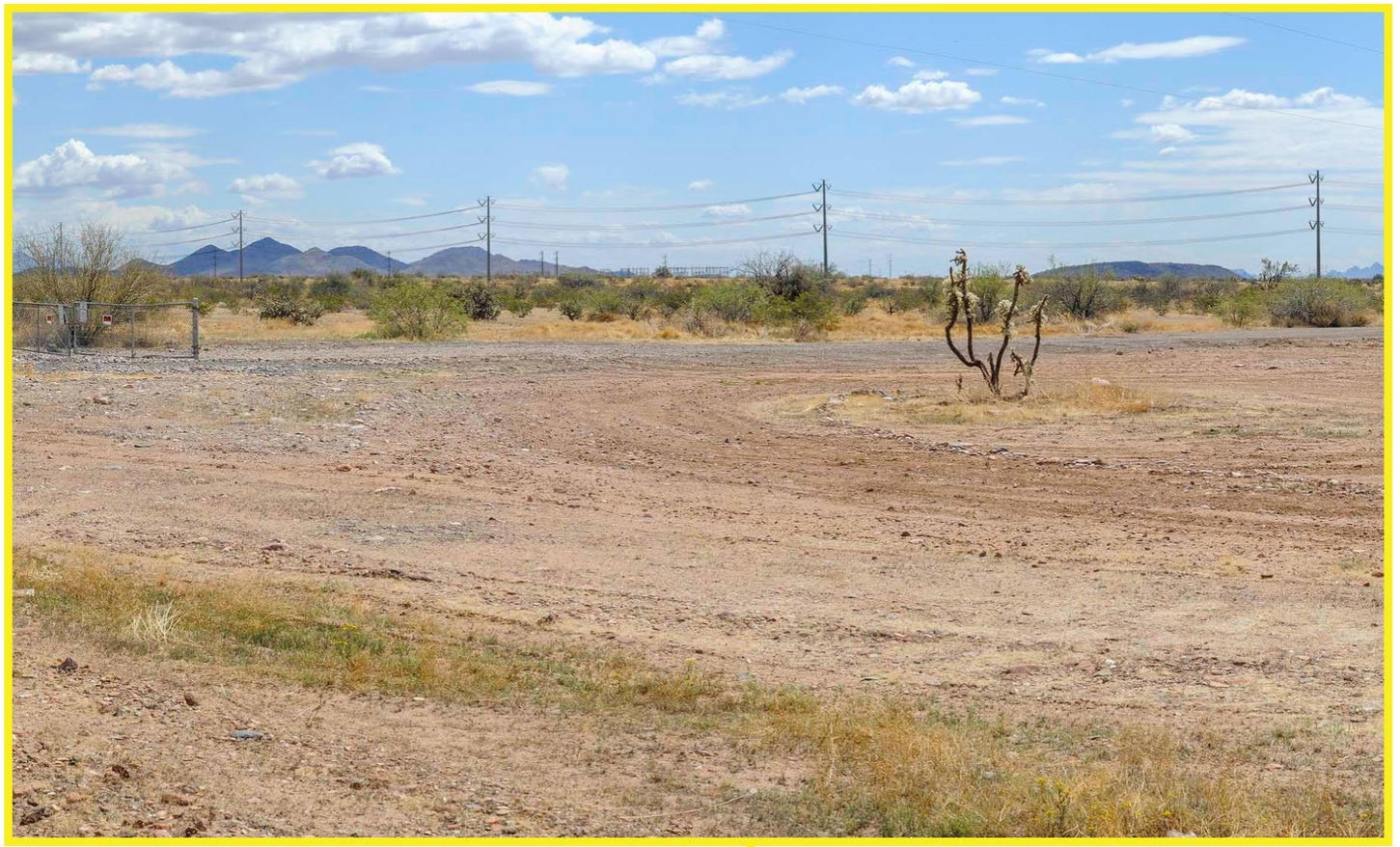
Date of photograph:	3-24-2021
Weather condition:	Partly Cloudy
Viewing direction:	Southeast
Latitude:	33°47'51.648" N
Longitude:	112°9'14.826" W
Distance to Avery Sub:	1.75 Miles

June 2021

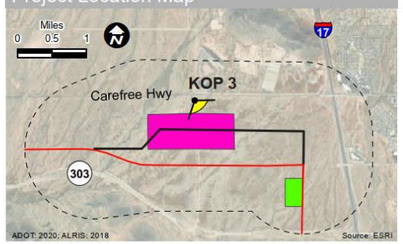
Figure E-6 KOP #3 Simulated Conditions Looking Southeast from SR74 just East of 51st Ave towards Proposed Avery 230kV Substation



Biscuit Flats 500/230kV
Line Relocation
Figure E-6

KOP 3
Simulated Conditions
Looking Southeast from
SR74 just East of 51st Ave
towards Proposed
Avery 230kV Substation

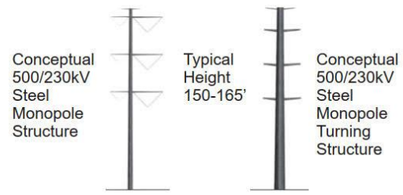
Project Location Map



Legend

- Key Observation Point
- Morgan-Pinnacle Peak Transmission Line
- Proposed Route
- Proposed Avery 230kV Substation
- Proposed TS22 500kV Substation Siting Area
- Project Study Boundary

Typical Structures



Photograph Information

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Date of photograph:	3-24-2021
Weather condition:	Partly Cloudy
Viewing direction:	Southeast
Latitude:	33°47'51.648" N
Longitude:	112°9'14.826" W
Distance to Avery Sub:	1.75 Miles

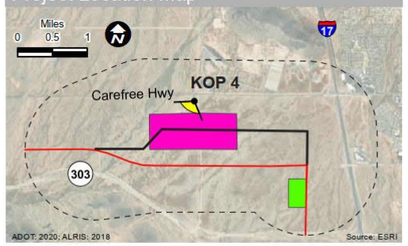
June 2021

Figure E-7 KOP #4 Existing Conditions Looking Southwest from SR74 just East of 51st Ave towards Proposed TS-22 500kV Substation

Biscuit Flats 500/230kV Line Relocation
Figure E-7

KOP 4 Existing Conditions Looking Southwest from SR74 just East of 51st Ave towards Proposed TS22 500kV Substation

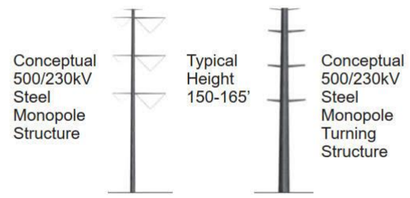
Project Location Map



Legend

- Key Observation Point
- Morgan-Pinnacle Peak Transmission Line
- Proposed Route
- Proposed Avery 230kV Substation
- Proposed TS22 500kV Substation Siting Area
- Project Study Boundary

Typical Structures



Photograph Information

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Date of photograph:	3-24-2021
Weather condition:	Partly Cloudy
Viewing direction:	Southwest
Latitude:	33°47'51.648" N
Longitude:	112°9'14.826" W
Distance to Avery Sub:	3493 Feet

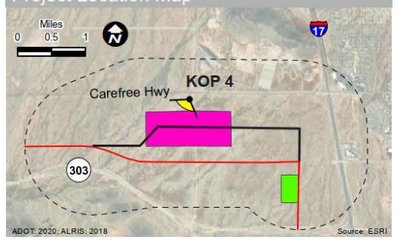
June 2021

Figure E-8 KOP #4 Simulated Conditions Looking Southwest from SR74 just East of 51st Ave towards Proposed TS-22 500kV Substation

Biscuit Flats 500/230kV Line Relocation
Figure E-8

KOP 4
Simulated Conditions Looking Southwest from SR74 just East of 51st Ave towards Proposed TS22 500kV Substation

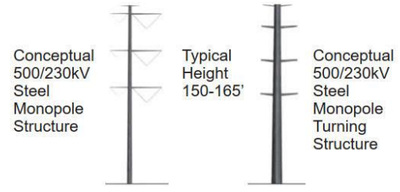
Project Location Map



Legend

- Key Observation Point
- Morgan-Pinnacle Peak Transmission Line
- Proposed Route
- Proposed Avery 230kV Substation
- Proposed TS22 500kV Substation Siting Area
- Project Study Boundary

Typical Structures



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Weather condition:	Partly Cloudy
Viewing direction:	Southwest
Latitude:	33°47'51.648" N
Longitude:	112°9'14.826" W
Distance to Avery Sub:	3493 Feet

June 2021

Historic Sites and Structures, and Archaeological Sites

A cultural resource assessment of the Project was conducted. The assessment was based on a review of prior cultural resource studies within or overlapping the study area and a surrounding buffer 0.5 mile wide. The study area was defined as the locations of the proposed route being considered for relocation of a segment of the Morgan to Pinnacle 500/230kV transmission line, (2) the proposed enlarged Avery Substation, and (3) the siting area for the proposed TS22 Substation.

The assessment determined that more than 90 percent of the review area and more than 95 percent of the study area was previously surveyed for cultural resources. Few properties eligible for the Arizona Register of Historic Places (ARHP) have been recorded in the review area, and only one archaeological site, a historic corral complex designated AZ T:4:545(ASM), has been recorded in the study area. The Arizona State Land Department is continuing to evaluate whether the corral complex is associated with the historically significant Black Canyon Stock Driveway, which was used for moving flocks of sheep between winter pastures in the Phoenix Basin and summer pastures in mountains to the north. The trail was used at least as early as the 1890s but probably most intensively from the 1920s through the 1940s. Association with the stock driveway could make site AZ T:4:545(ASM) eligible for inclusion in the ARHP.

Site AZ T:4:545(ASM) is within the 408 acres delineated as a siting area for the TS22 Substation, which would require approximately 80-100 acres. The precise location for the substation would not be determined until final engineering designs are prepared, and it might or might not be feasible to avoid site AZ T:4:545(ASM).

In summary, the review documented that archaeological site AZ T:4:545(ASM) is in the study area, and it is unlikely that there are unrecorded historic sites and structures or archaeological sites in the limited parts of the study area that have not been inventoried for cultural resources. If ongoing evaluation determines that site AZ T:4:545(ASM) is eligible for the ARHP, APS will work to avoid the site. Pursuant to conditions issued with CECs 120 and 131. APS would coordinate with the State Historic Preservation Office to undertake additional cultural resource survey if warranted, to assess potential impacts on properties eligible for the ARHP, and to avoid or mitigate any substantial alteration or demolition of ARHP-eligible properties. In conjunction with applying for easements or leases to construct, operate, and maintain authorized facilities on State Trust land, APS will also support the Arizona State Land Department in complying with the State Historic Preservation Act and Arizona Antiquities Act.

Exhibit F

Recreation Resources Information

As stated in 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."

There are several transmission line service roads located throughout the study area that are currently used for ad hoc recreational activities such as hiking, mountain biking, horseback riding, and all-terrain vehicle use. As the North Phoenix 3,500 PUD is further developed these recreation opportunities will be restricted.

The North Gateway Village has several future recreational trails that are planned for construction within the study area. Many of these trails follow the alignment of existing roadway corridors such as SR-74 (Carefree Highway), Loop 303 Freeway, 51st Avenue, and Dove Valley Road. Other future planned trails are located in natural areas such as Deadman Wash and Skunk Creek or serve as connectors to other trails and transportation corridors throughout North Gateway Village (COP 2021).

The 500/230kV transmission line relocation will not be proposed as a designated trail system. No recreational uses will be allowed in or around the substations.

References

City of Phoenix. 2021. City of Phoenix GIS data. Available: https://mapping-phoenix.opendata.arcgis.com/search?tags=PDZ. Downloaded March 19, 2021.

Exhibit G
Conceptual Drawings of Transmission Facilities

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

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

The illustrations on the following pages represent conceptual design information for the transmission line structures and substation.

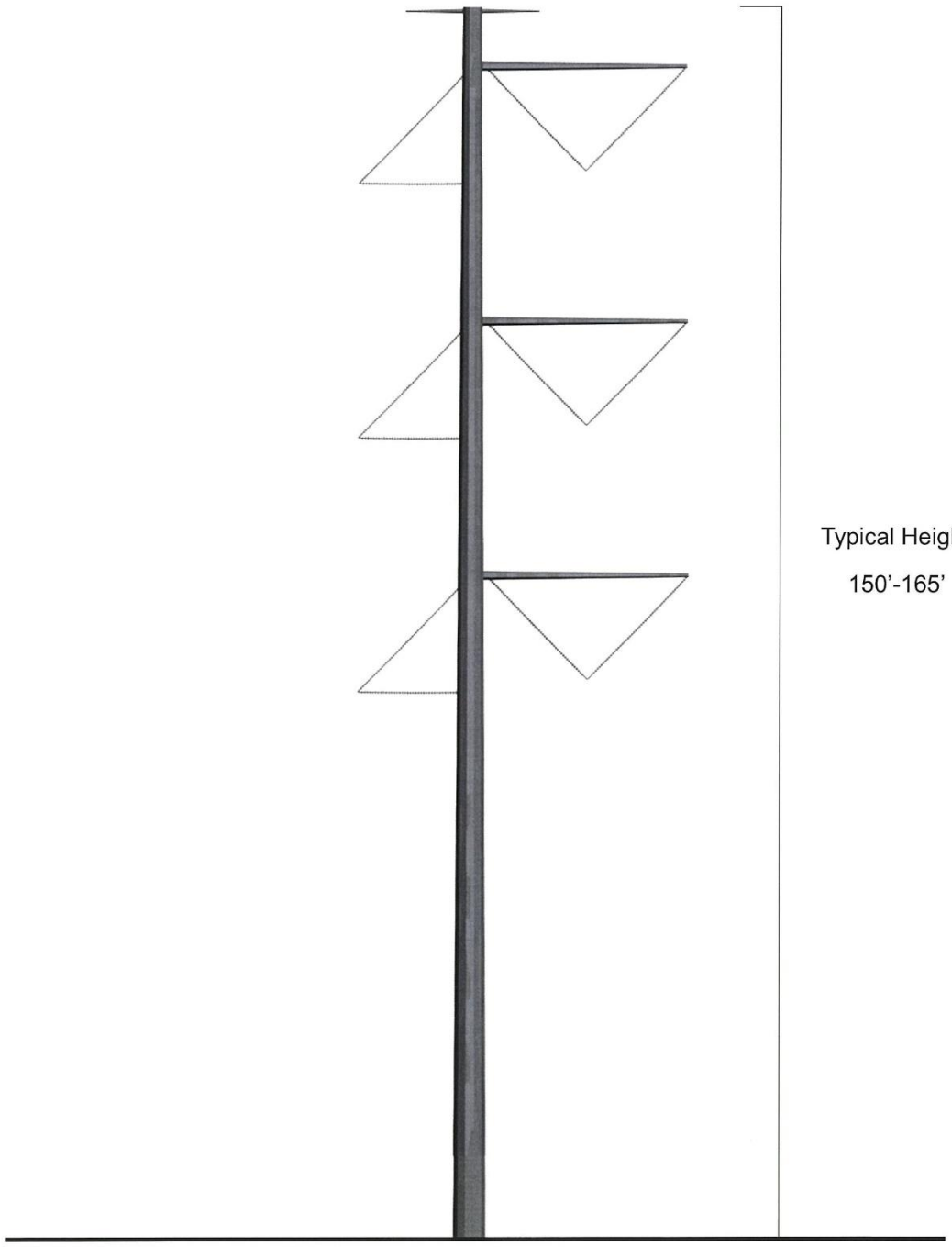


EXHIBIT G-1
Conceptual 500/230kV Steel Monopole Structure
(Design Configuration #1)

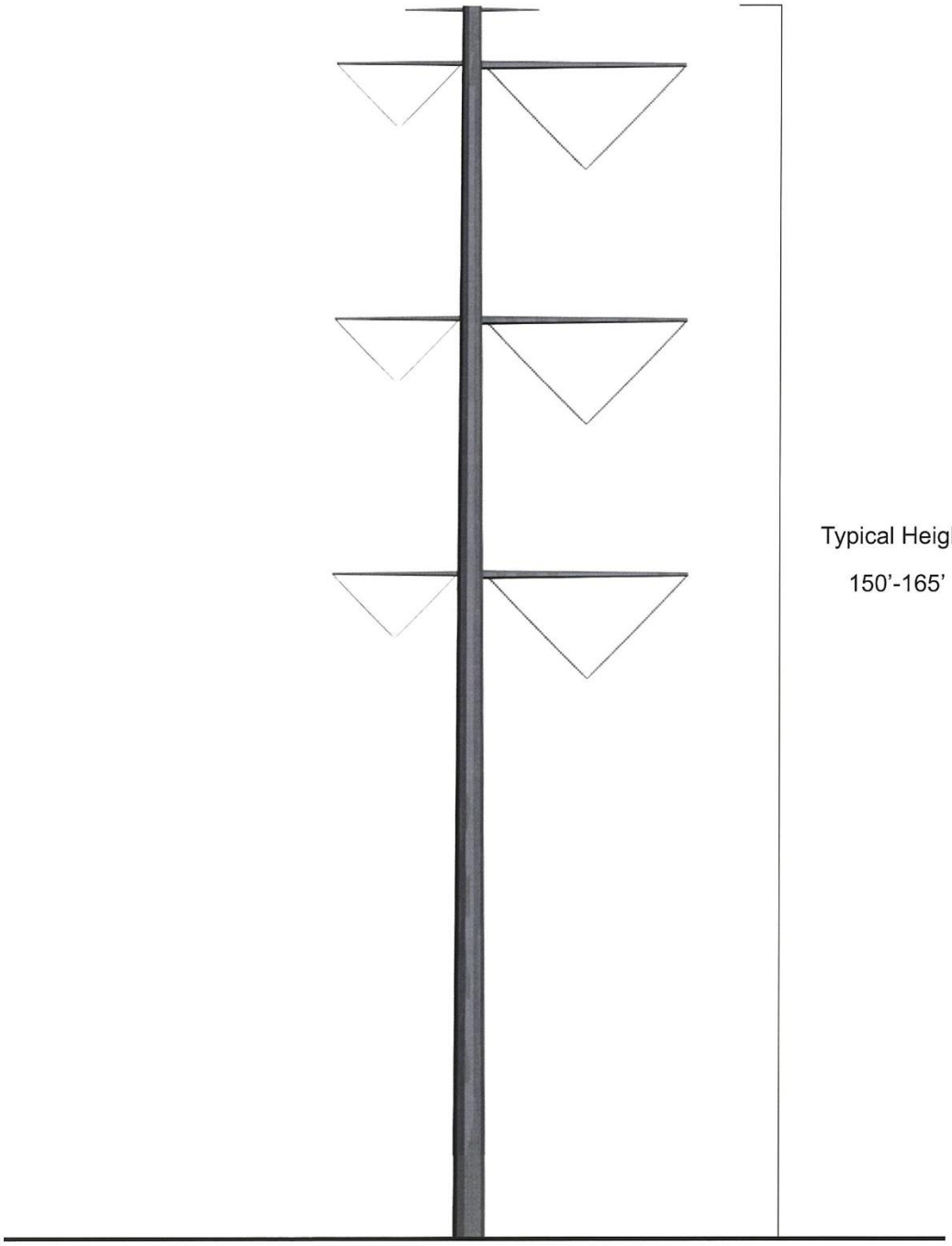


EXHIBIT G-2

Conceptual 500/230kV Steel Monopole Structure
(Design Configuration #2)

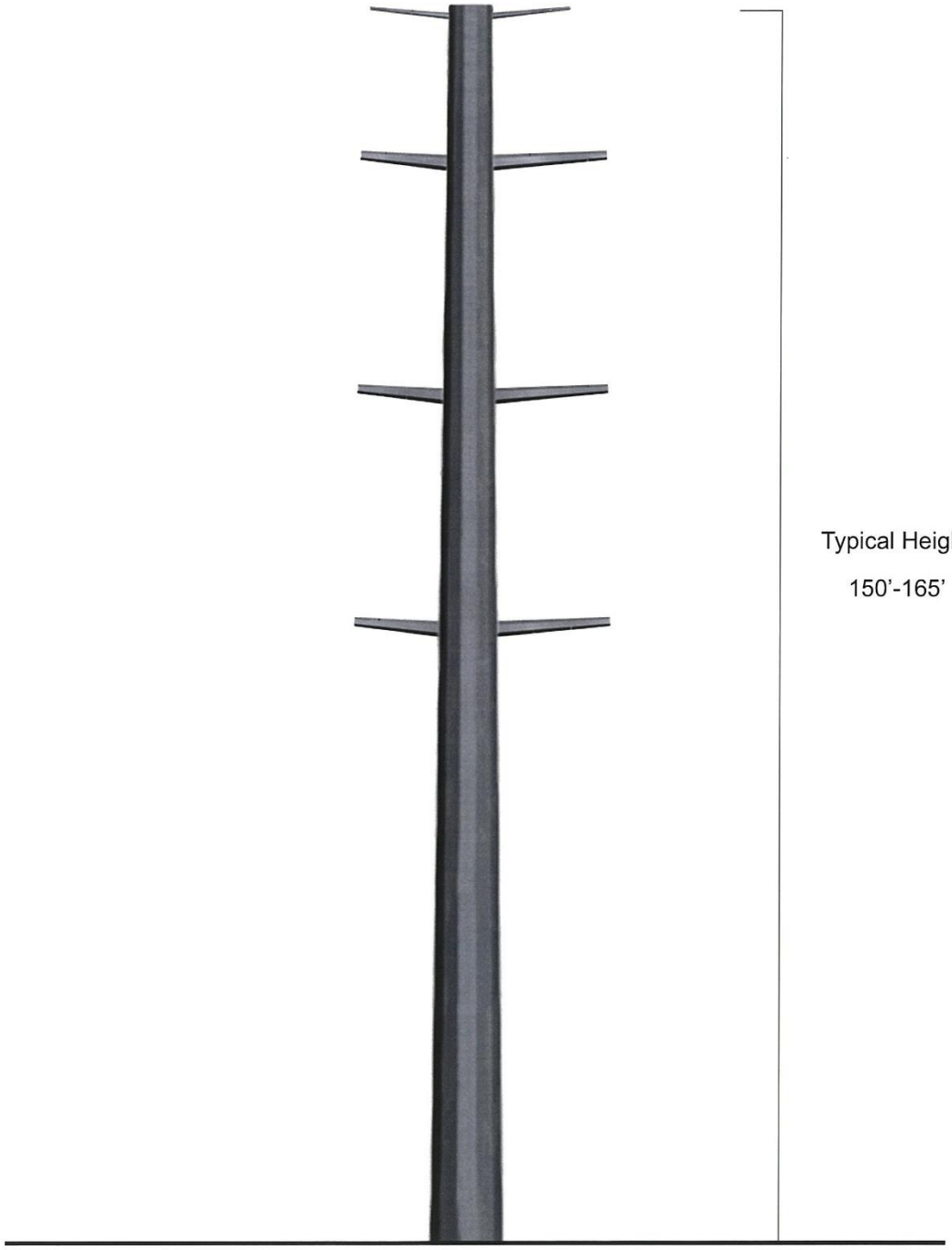


EXHIBIT G-3

Conceptual 500/230kV Steel Monopole Turning Structure

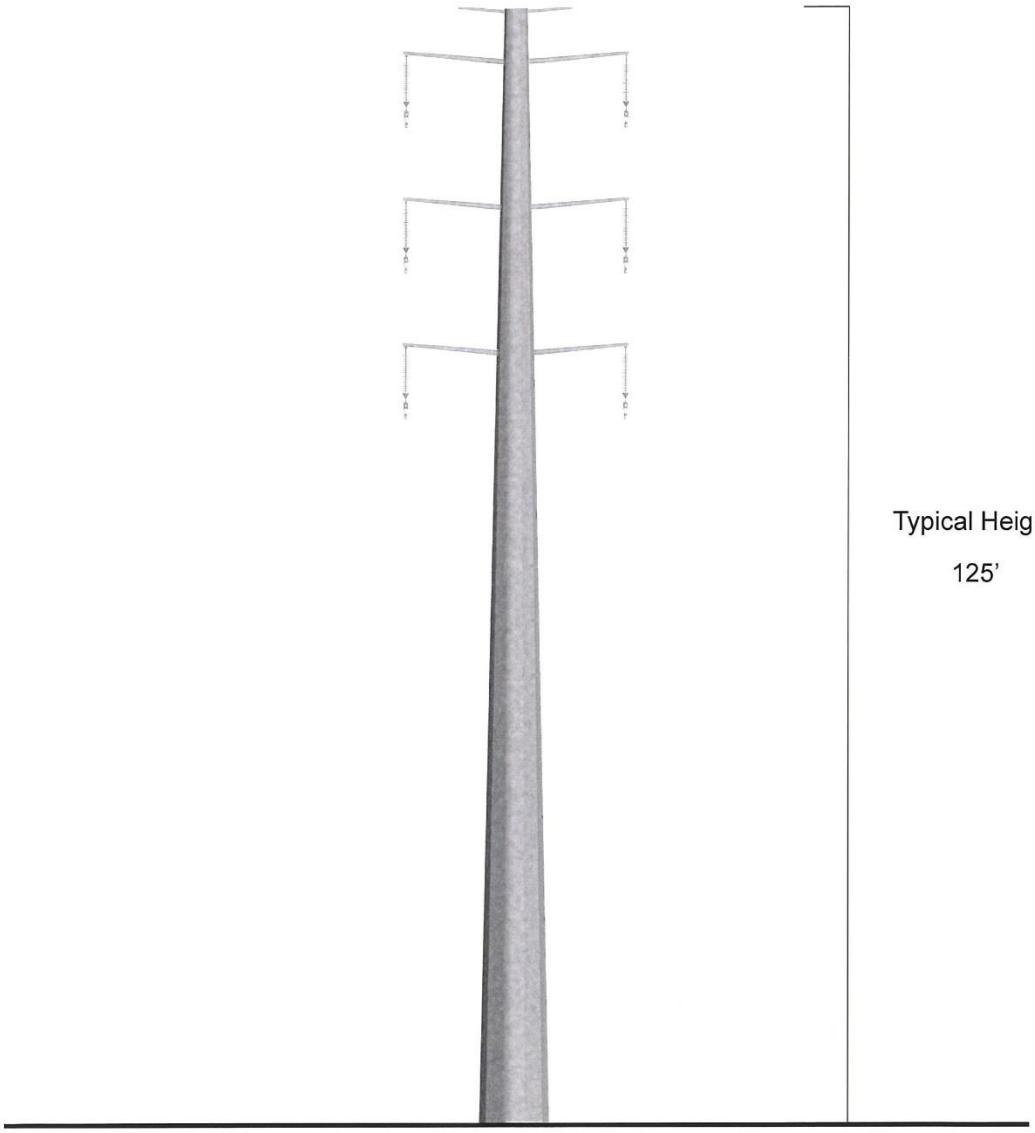


EXHIBIT G-4
Conceptual 230kV Double-Circuit Structure

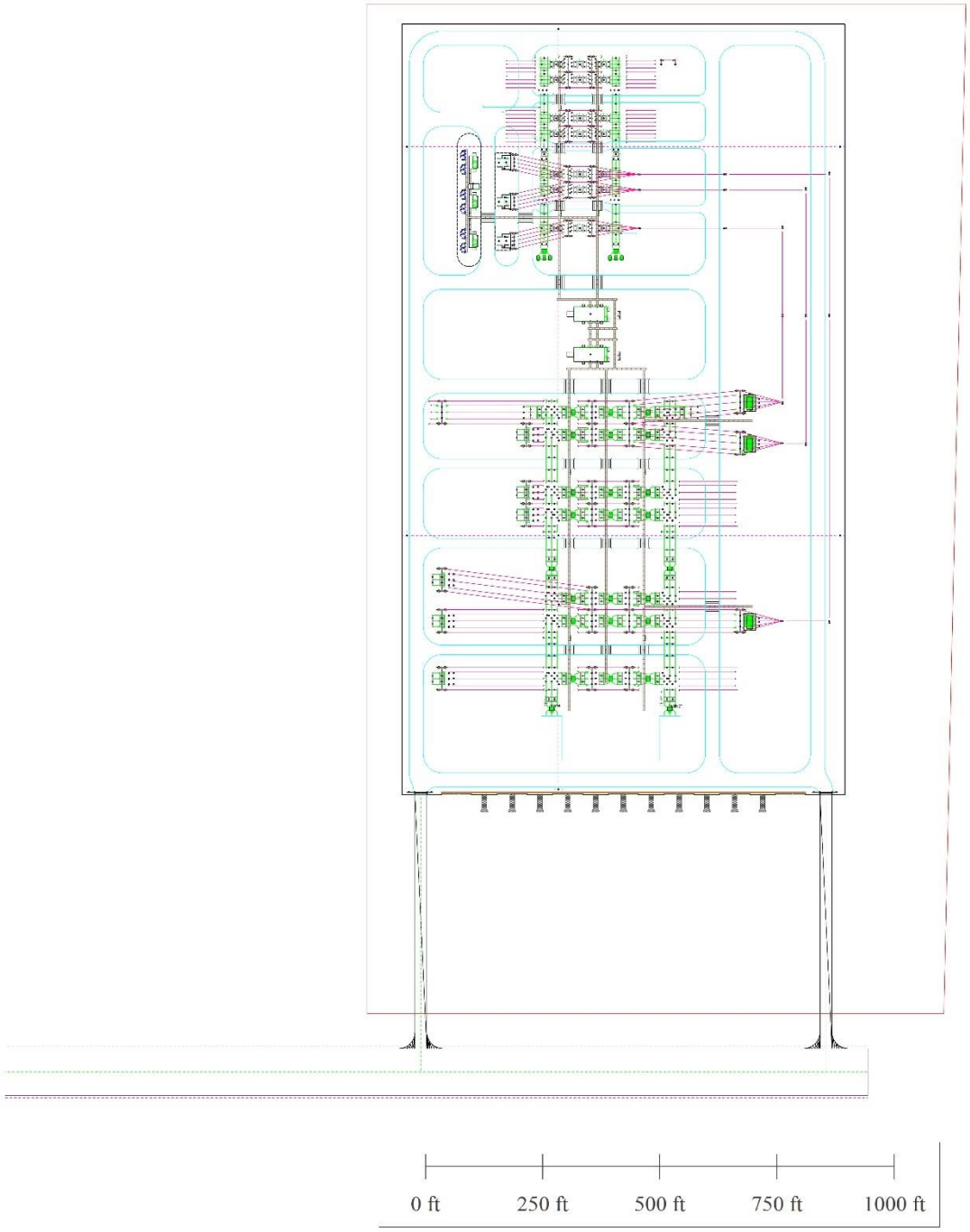


EXHIBIT G-5
230kV Avery Substation

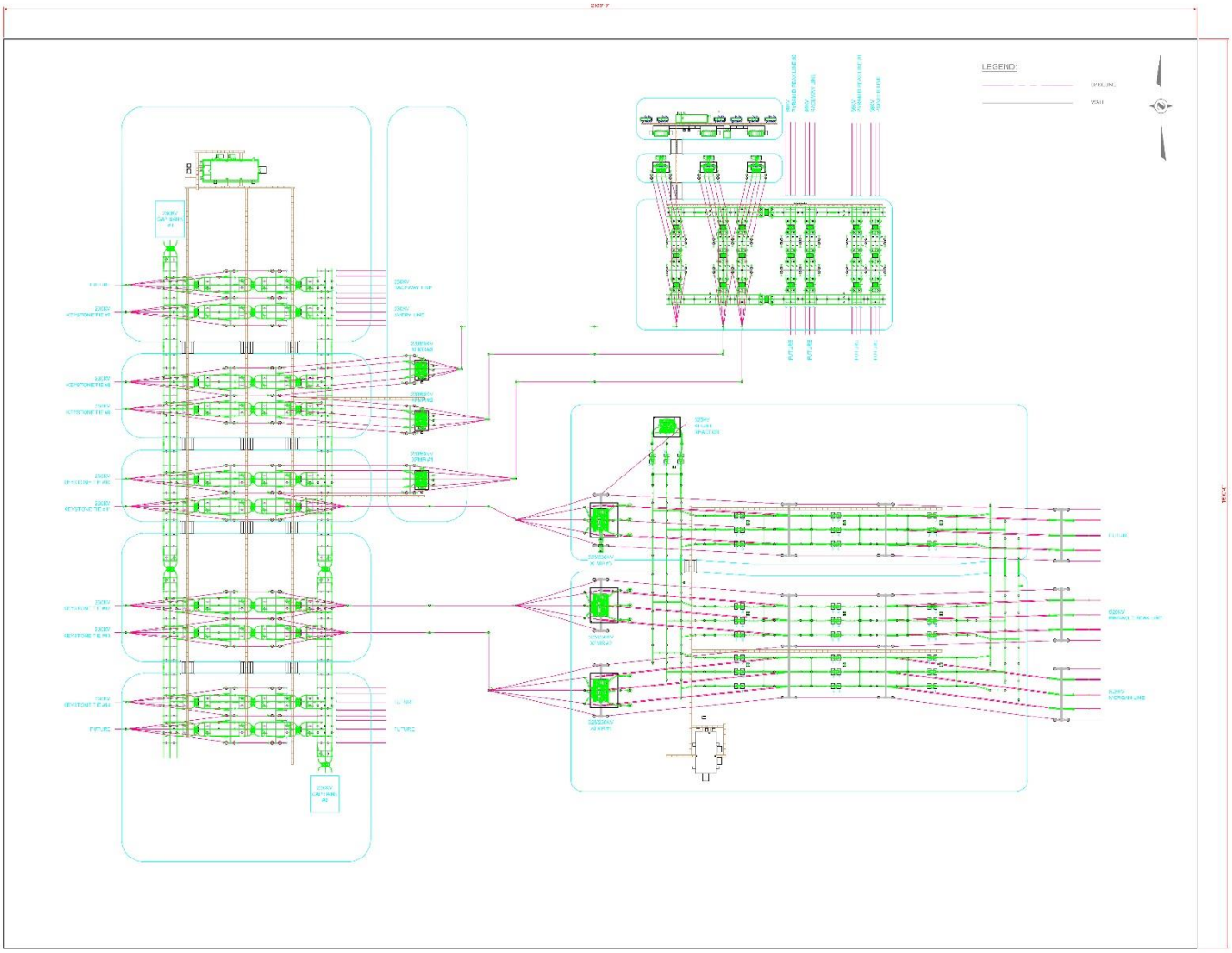


EXHIBIT G-6
TS22 Substation

Exhibit H
Existing Plans

As stated in 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 governments and private entities for other developments at or in the vicinity of the proposed site or route."

Overview

As part of the land use study (discussed in detail in Exhibit A-Location and Land Use Information), general and site-specific plans were obtained from the respective jurisdictions, landowners and developers. Furthermore, APS invited representatives from jurisdictional planning departments, local agencies, and developers to provide relevant planning information throughout the siting study process.

Throughout the siting process, APS met with representatives from the local planning departments with the City of Phoenix, Arizona State Land Department, and with TSMC. Jurisdictional general plans, agency management plans, site plans from specific developers and aerial photography were reviewed to identify development plans and constraints to relocating the transmission line, expansion of the Avery substation, and the siting of TS22.

Jurisdictional and Agency General Plans

Existing and future land use information was reviewed for the Project study area. The land use analysis is based on the most recently available data from various local and regional plans relevant to the study area and GIS databases including:

- Carefree Highway Scenic Corridor Study (Maricopa County 2008)
- 2015 COP General Plan (COP 2018)
- Planned Unit Development (PUD) Narrative for North Phoenix 3,500 (COP 2020a)
  - North Gateway Village Annual Report (COP 2020b)
  - State of Arizona Land Resource Information System (ALRIS 2007)
  - City of Phoenix GIS database (COP 2021a)
  - U.S. Geological Survey (USGS) National Hydrography Dataset (NHD) (NHD 2020)
  - Arizona Department of Transportation (ADOT) GIS database (ADOT 2020)
  - Federal Emergency Management Agency (FEMA) GIS database (FEMA 2020).

In June 2021 letters were sent to the jurisdictions (listed in Table H-1) to provide Project information and request new or additional information or plans or planning development. Exhibit H-1 provides a copy of the letter. Responses received will be provided as supplemental exhibits.

Table H-1: Jurisdiction/Agencies contacted

Contact Name	**Title**	**Jurisdiction/Agency**
Randy Everett	Senior Division Administrator	Arizona Department of Transportation, Central District
Mark Edelman, AICP	Director, Planning and Engineering	Arizona State Land Department
Christine Mackay	Director, Community and Economic Development	City of Phoenix
Debra Stark	Director, Planning and Development Department	Maricopa County

Exhibit H-1. Sample Agency Letter

AECOM

AECOM
7720 North 16th Street
Phoenix, AZ 85020
aecom.com

June 7, 2021

Christine Mackay, Director
City of Phoenix Community and
Economic Development
200 W. Washington Street
Phoenix, Arizona 85003

Dear Christine Mackay:

Arizona Public Service Company (APS) plans to file an application to amend a Certificate of Environmental Compatibility for relocating approximately 3.5 miles of an existing 500/230kV transmission line as well as amend the size and location a previously approved substation (Avery). A new 80-100 acre 500/230kV TS22 Substation is also being proposed to help address future regional energy needs. The project is in northern Phoenix and generally located south of State Route 74, north of Loop 303 and east of Interstate I-17 on Arizona State Trust land (see attached map).

APS and its consultant, AECOM, implemented a comprehensive planning process, including environmental studies, to evaluate alternative alignments for the 500/230kV alignment and two substations. The process findings support the proposed route identified for the project, which will be brought before the Siting Committee. APS will request Siting Committee approval for the CEC amendment for the Proposed facilities.

Arizona Administrative Code Rule R14-3-220 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 on 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 June 25, 2021, via email at mark.turner@aecom.com or by physical mail Attn: Mark Turner, AECOM, 7720 North 16th Street, Suite 100, Phoenix, Arizona 85020.

Thank you for your consideration.

Yours sincerely,

Mark Turner, Environmental Project Manager
AECOM, Technical Services Inc.
Cc: Kevin Duncan, APS Senior Siting Consultant

Attachment: Project Location Map

Exhibit I
Biscuit Flats 500/230kV Line Relocation

As stated in 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."

Certain electromagnetic effects are inherently associated with overhead transmission of electrical power at extra high voltage (EHV). 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 EPRI ACDCLine software to calculate these various electromagnetic effects which are presented here. The project involves moving existing 500kV and 230kV transmission lines built on common structures to a new alignment approximately 0.5 mile to the north of their present location. Modeling of two different sections of the future configuration is done with the highest modeled results of the two segments provided here. Section A is the western section of the line and Section B is the eastern section of the line. A new substation temporarily named TS22 designates the boundary between Sections A and B. Modeling of the two sections are identical except for the line flows that each section carries.

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 – 15 kVrms/cm. For comparison purposes, the breakdown strength of air is 21.1 kVrms/cm at 25 °C and 76 mm barometric pressure.

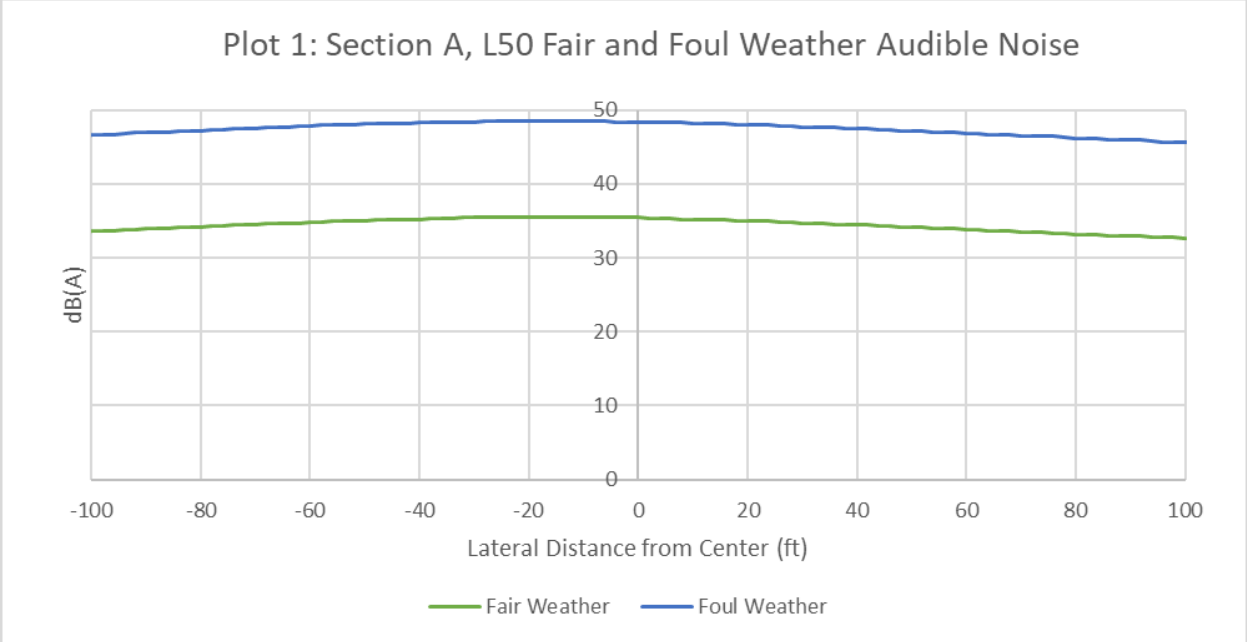
Corona represents power loss on the transmission line and creates transmission line noise. The expected peak voltage surface gradient magnitudes would indicate that these transmission lines will not create adverse corona effects.

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 52.9 dB measured on an "A" weighted scale at the edge of the right-of-way. These noise levels will occur during very heavy rain conditions[3], which conditions will serve to mask the noise. During light rain [4], or wet conductor conditions, the expected audible noise is in the range of 47.4 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 34.9 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. Plot 1 shows the calculated fair weather and foul weather (light rain) audible noise levels expected. These values are similar to the values calculated for the original line.



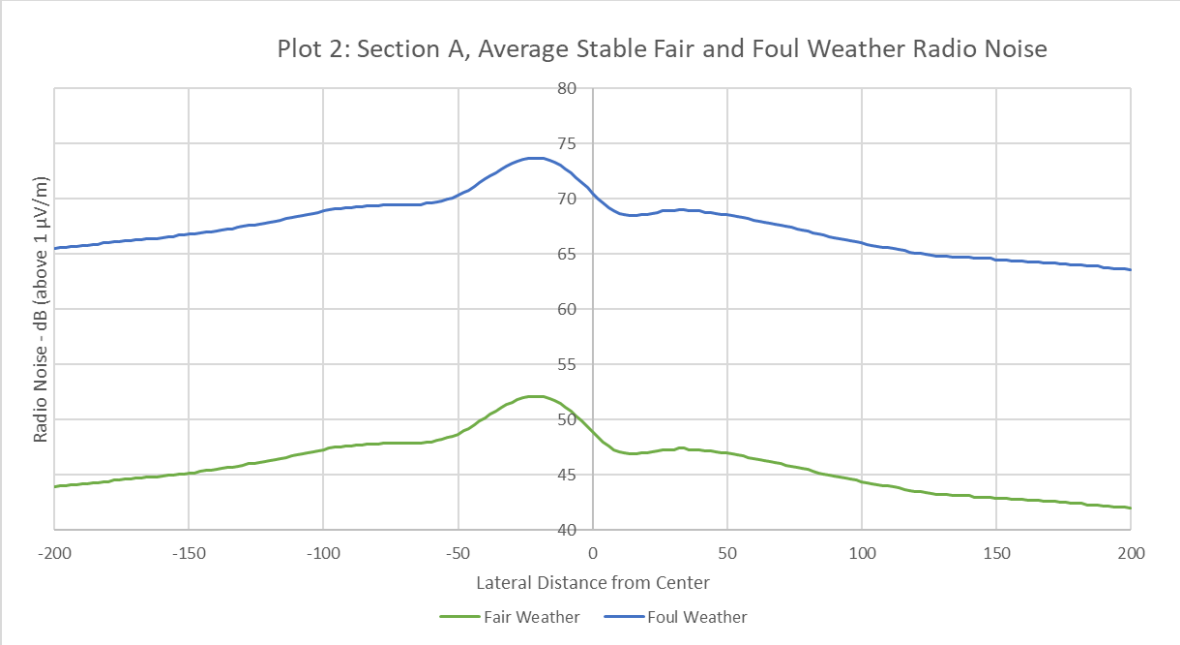
[3] Heavy rain conditions are designated statistically as L5 conditions (95% of the time noise levels are at or below the specified values).
[4] Light to moderate rain levels are designated statistically as L50 conditions (50% of the time noise levels are at or below the specified values).

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 MHz. As the frequency of interest increases, corona produced radio noise reduces with typical reductions in the range of 20 – 40 dB for a frequency increase from 1 MHz to 100 MHz [EPRI] depending on the distance to the conductor.

Modeling of the expected radio noise levels for the transmission line designs shows similar results as modeled with the existing 500/230 kV line. Expected average stable fair weather radio noise levels generated by these transmission lines are in the range of 42 – 47 dB, at a distance of 100 feet from the outside phase. As distance increases, these levels fall off so that at greater than 200 - 400 feet from the outside phase the noise levels are below 40 dB. Experience shows that there are generally no problems with radio interference when calculated noise interference levels are below 40 dB at 100 feet from the outside phase. [IEEE 1980]. This is not a precise value as the interference is a function of radio signal strength and other factors so the fact that calculated interference levels for this line are above 40 dB at the prescribed distance does not mean that unacceptable interference will occur. During inclement weather, transmission line noise levels increase to levels in the range of 65 – 69 dB, 100 feet from the outside phase (average stable foul weather values). Successful operation of the existing line with similar calculated values is noted. Should radio interference caused by the transmission line become unacceptable in a given situation, the utility 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 Plot 2.



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 will be experienced in the upper VHF (Channels 7 - 13) and UHF bands (Channels 14 - 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 the same as the existing 500 kV/230 kV lines at their current locations.

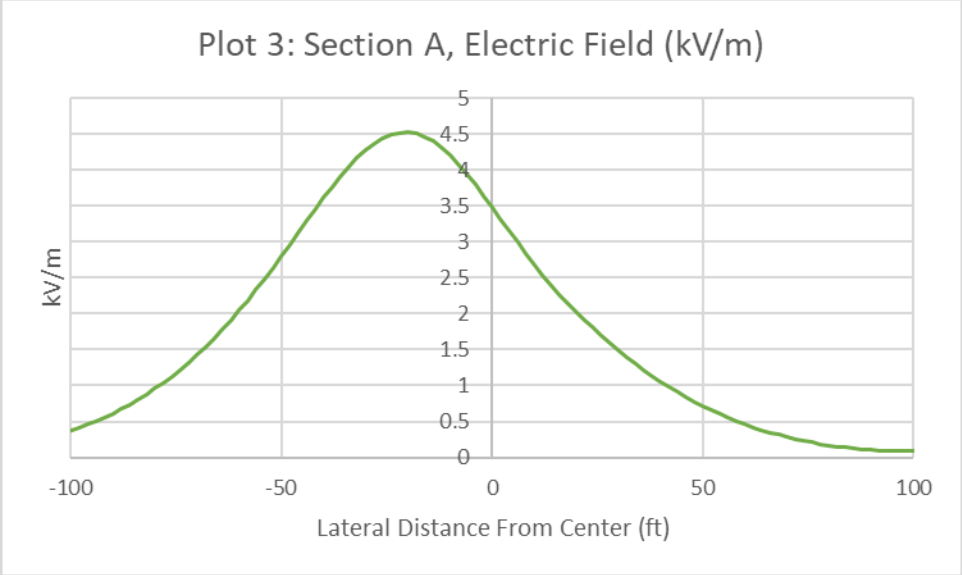
In cases where transmission line generated television interference has been found to be a problem, it is generally the result of induced voltage on fences, conductors, and hardware, which are adjacent to the right-of-way. In these situations, the interference can be easily corrected by grounding the objects, or by realigning, relocating, or providing higher gain television antennas. APS is prepared to assist affected parties in resolving TVI problems resulting from the operation of our facilities. 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 enough to the object for the sparks to occur. Based on computer modeling, the electric fields associated with the proposed transmission line relocation will be consistent with the electric field values of the existing 500 kV/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. Plot 3 shows the expected electric field (calculated 1m 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 C95.6].



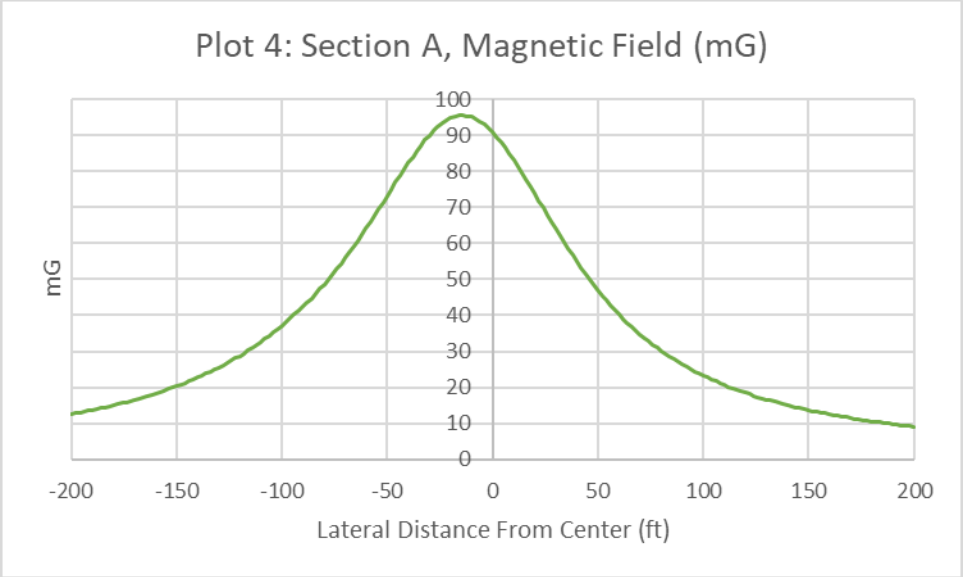
The magnetic fields associated with transmission lines can also induce voltages and currents in conductive objects (e.g. fences, communication lines, railroads, pipelines, etc.),

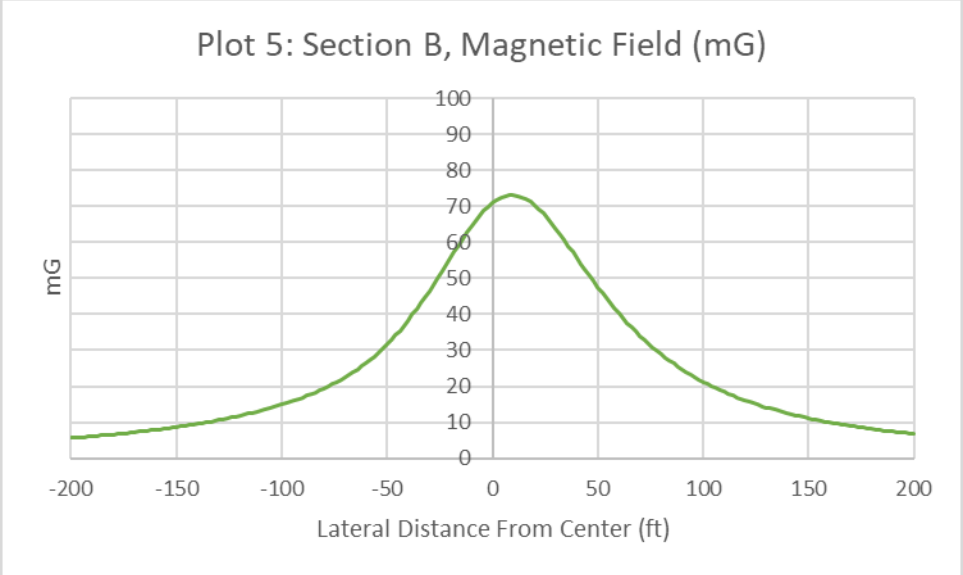
which are close to and run parallel to the transmission line. The magnetic field level is a function of the current level in the transmission line, which in turn is a function of the line loading.

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 titled "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] The report concludes that "Thus, on balance, the evidence is not strong enough to be considered causal, but sufficiently strong to remain a concern." [WHO], The results of the WHO report support previous findings by the National Institute of Environmental Health Science [NIEHS] and International Agency for Research on Cancer [IARC] 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].

The actual 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, and magnetic fields associated with these lines is comparable to the fields associated with the existing transmission lines. Plots 4 and 5 shows the calculated magnetic field for the two sections of line for the expected line configurations (calculated 1 m above ground).





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.

REFERENCES

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, No. 1, Jan./Feb. 1980, pages 365-388.

—. IEEE C95.6 "IEEE Standard for Safety Levels with Respect to Human Exposure to Electromagnetic Fields, 0 – 3 kHz.", 2002.

NIEHS 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, May 1999.

IARC 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, 2002: Lyon, France.

WHO Extremely Low Frequency Fields Environmental Health Criteria Monograph No. 238 (2007), World Health Organization, Geneva, Switzerland, ISBN 978-92-4-157238-5

EPRI EPRI Transmission Line Reference Book, 2nd Edition, 1982, The Electric Power Research Institute.

Exhibit J
Special Factors

As stated in 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 study area, and helped to identify potential issues relative to the Project.

Public Involvement Program Summary

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

To reach the affected residents and agencies, APS and AECOM (as consultant to APS) instituted multiple public participation activities, including a virtual public open house meeting, jurisdictional and agency briefings, a newsletter mailing, newspaper advertisements, use of social media, 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 process.

Website

A Project website (**aps.com/BiscuitFlats**) 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 the newsletter, in the virtual open house, in paid newspaper advertisements, and on the Project information line. The project website went live to coincide with the beginning of the virtual open house which was after the production of this Application. A screenshot of the website will be provided as a supplemental exhibit.

Virtual Open House

An online Project virtual open house (**BiscuitFlatsOpenHouse.com**) will be hosted for the Project starting June 14, 2021. The virtual open house will be announced in the newsletter, through paid newspaper advertisements, on the Project website and telephone information line.

The virtual open house format entails 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 include 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 will initiate a 2-week comment period, requesting that stakeholder comments or questions be provided by June 28, 2021; the virtual open house will remain accessible after this date.

A copy of the comment form provided through the virtual open house and Project website is included in Exhibit J-2. Images taken of the virtual open house are included in Exhibit J-3, and the informational display boards presented in the virtual open house are also included in Exhibit J-3.

Media Relations

APS placed paid advertisements in the Arizona Republic and Foothills Focus which have a distribution territory that encompasses the study area. These advertisements introduced the Project and announced the virtual open house meeting. Advertisements were published in the Arizona Republic on June 16, 2021 and June 19, 2021. An advertisement was published in the Foothills Focus on June 16, 2021. A copy of the display advertisement is included in Exhibit J-4.

Social Media

APS placed an ad through Facebook targeted to users located in the public outreach area identified for the project, encompassing the study area and adjacent neighborhoods. The Facebook ad provided brief information on the project and directed users to the virtual open house for more information about the project.

Agency and Local Officials Briefings

During the Project process, APS coordinated with City of Phoenix and Arizona State Land Department representatives, including elected officials and planning staff, and others to relay information on the Project, better understand landowner development plans, 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 the virtual open house and public comment period

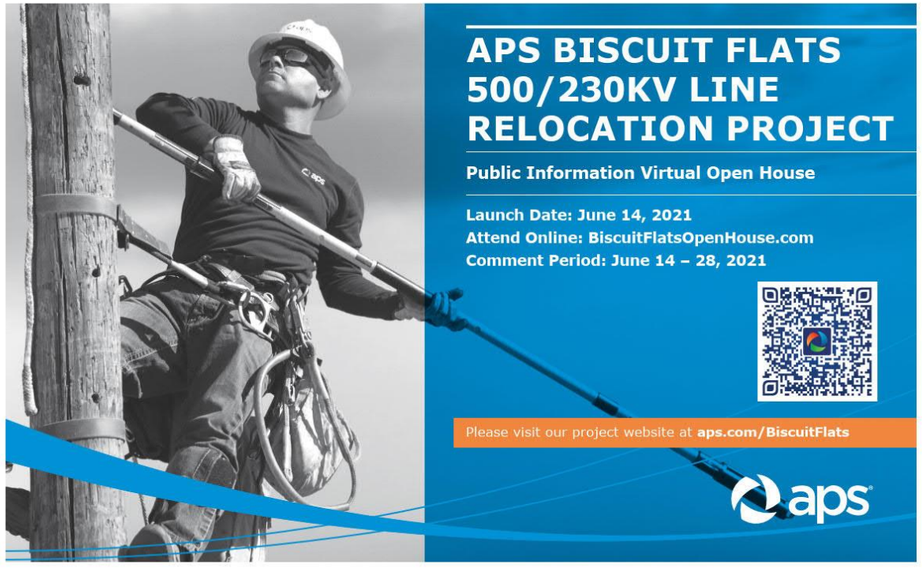
opens following the submittal of the Application, the number of comments and copies of the comments received will be provided in a supplemental exhibit. Comments from agency and jurisdiction representatives were also received and considered in the planning process.

Mail Station 3293
P.O. Box 53933, Phoenix, AZ 85072

IMPORTANT: TRANSMISSION LINE PROJECT

Presorted
Standard Mail
US Postage Paid
Phoenix, AZ.
Permit No. 90

CS#1904019



APS BISCUIT FLATS 500/230KV LINE RELOCATION PROJECT

JUNE 2021

We are proposing to relocate approximately three to four miles of an existing 500/230kV transmission line approximately 0.5 mile to the north of the existing alignment to accommodate development of an advanced semiconductor manufacturing plant in Phoenix.

The developer of the manufacturing plant requested and is funding the relocation of the transmission lines because their existing location will interfere with their manufacturing process and site development plans. In addition, the manufacturing plant uses an extensive amount of electric power and requires a robust 230kV system to serve its operations. To meet these needs, we are expanding the size of a planned substation while constructing a new substation to maintain system reliability of the surrounding transmission system.

We are dedicated to providing safe and reliable electric service while making these facilities a part of our system. All work related to the transmission line relocation and the substations will occur on Arizona State Trust Land.

WHAT

Relocation of three to four miles of an existing 500/230kV transmission line approximately 0.5 mile north of its present location, and expansion of a planned substation along with a new substation.

WHY

Accommodate construction of an advanced semiconductor manufacturing plant in Phoenix, as the current transmission line location interferes with the manufacturing process and site plans.

WHERE

The proposed relocated transmission line and substation work is generally located 0.5 mile west of I-17, and approximately 0.5 mile south of the Carefree Highway in Phoenix. The entirety of the project is located on Arizona State Trust Land.

PROJECT SCHEDULE

March-June 2021
- Project Announcement
- Data Collection
- Stakeholder Engagement
- Open House

June 2021
- Prepare and File CEC* Application
- Continue Public and Stakeholder Outreach

July 2021
- Arizona Power Plant and Transmission Line Siting Committee Hearings for CEC Application

**Certificate of Environmental Compatibility*

aps

TYPICAL STRUCTURES*

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

The relocated transmission line structures will be similar in height and design of the existing structures. The steel monopoles are anticipated to be up to 165 feet in height.

**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 BiscuitFlatsOpenHouse.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 printed copy of the open house materials to be mailed.

We welcome your feedback for this project. You are encouraged to have your comments submitted by June 28, 2021, to ensure its review and consideration in this process. To learn more, please visit the APS Biscuit Flats 500/230kV Line Relocation Project website at aps.com/BiscuitFlats. 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:

KEVIN DUNCAN
Senior Siting Consultant
Project information phone number: (602) 282-8890
Email: BiscuitFlats@aps.com

Public Information Virtual Open House

Launch Date: June 14, 2021
Attend Online: BiscuitFlatsOpenHouse.com
Comment Period: June 14 – 28, 2021

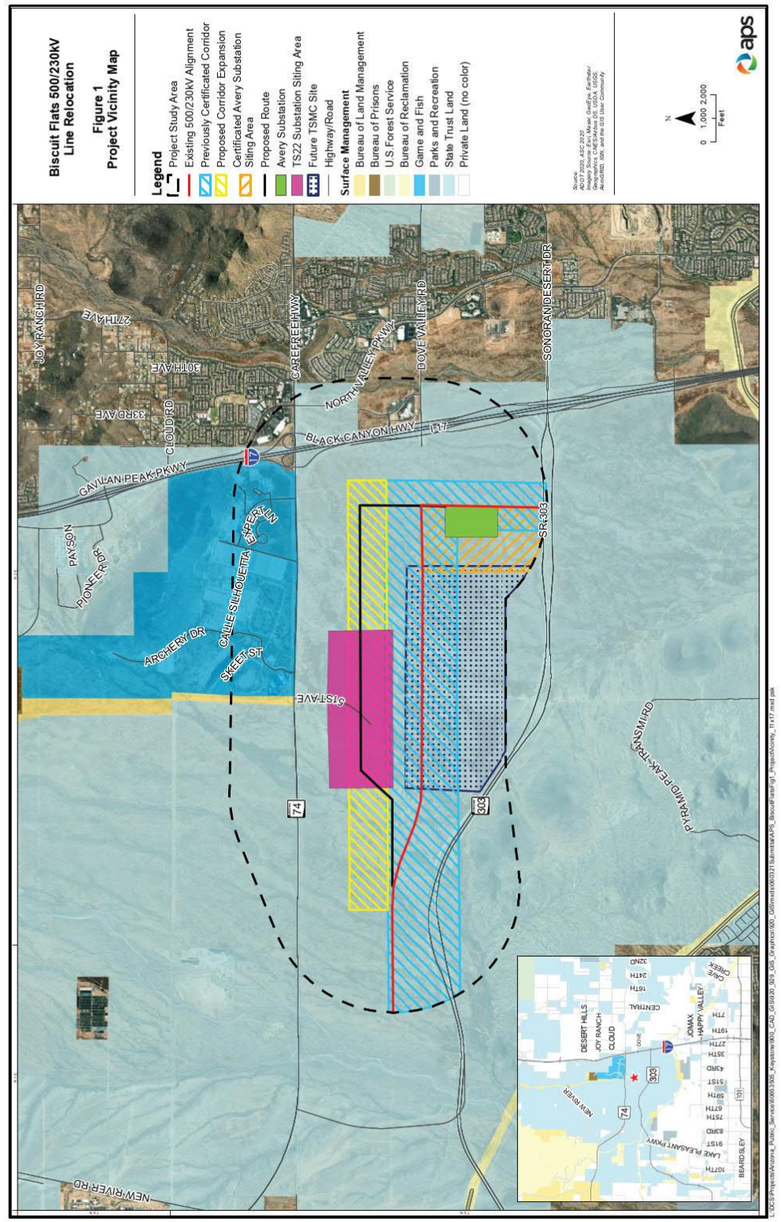


Exhibit J-2. Project Comment Form

APS Biscuit Flats 500 / 230kV Line Relocation Project

Please take a few minutes to provide your comments or questions about the Biscuit Flats 500 / 230kV Line Relocation Project. This questionnaire and the comment period for this project will close on X, 2021. For more information, please visit the project webpage at **aps.com/BiscuitFlats**. To access the virtual open house for this project, visit **BiscuitFlatsOpenHouse.com**. PLEASE NOTE: The total number of characters allowed for responses to this questionnaire is 16,000.

Required

The total number of characters allowed for responses to this questionnaire is 16,000.

1.First Name / Last Name Required to answer. Single line text.

2.Which of the following applies to you? Single choice.

- The project area is near my home
- The project area is near my business
- I represent a Local government agency
- I represent a State government agency

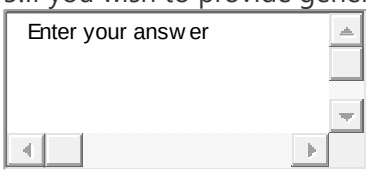
3.Please select the issues that are important to you for the Biscuit Flats 500 / 230kV Line Relocation Project. Single choice.

- Biological Resources
- Health and Safety
- Historic and Cultural Sites
- Land Use
- Noise
- Project Purpose and Need
- Proximity to Residencies
- Radio and Television Interference
- Visual / Aesthetics Resources
- Water Resources

4.What is your main interest in this project? Multi Line Text.

Enter your answer

5.If you wish to provide general comments, please enter them here. Multi Line Text.



6.Based on your experience with the virtual open house for this project, do you agree or disagree with the following statements.

Agree
Neither Agree or Disagree
Disagree

The virtual open house is easy to use.

The virtual open house features the information I was looking for.

The information in the virtual open house was helpful to my understanding of the project.

7.How did you hear about the current virtual open house for this project? Multiple choice.

- APS Project Newsletter
- APS Project Webpage
- APS Email Notice

8.Project Mailing List If you would like to be added to the Project Mailing List to receive updates about project-related activities and information, please provide your address, city, state and zip code. Single line text.

Submit

Exhibit J-3. Project Virtual Open House

Exhibit J-4. Display Advertisement

A PUBLIC INVITATION FROM APS

APS Virtual Open House

The Biscuit Flats 500/230 kV Line Relocation Project includes relocation of an existing double-circuit transmission line, expansion of the planned Avery Substation and addition of a new substation. These enhancements will take place approximately 0.5 miles west of I-17, and approximately 0.5 miles south of the Carefree Highway in Phoenix. The project will support continuing growth in the North Phoenix area and improve reliability to the local electrical system by adding another major source of electricity to the immediate area.

All interested parties are invited to attend our virtual open house online at their convenience (scan QR code below or visit biscuitflatsopenhouse.com) to learn more about the project and provide input to help us identity the ultimate location for this project. 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 June 28, 2021, to ensure its consideration.

Information about the Biscuit Flats 500/230kV Relocation Project can also be found on our project webpage by going to aps.com/biscuitflats 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: (602) 282-8890
biscuitflats@aps.com

Biscuit Flats Virtual Open House
biscuitflatsopenhouse.com

Biscuits Flats Project Website
aps.com/biscuitflats

aps.com

aps

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A PUBLIC INVITATION FROM APS

APS Virtual Open House

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aps.com/biscuitflats

aps.com

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