BUREAU OF RECLAMATION

Final Environmental Assessment

Fria Grid Battery Energy Storage System Project, Arizona
Interior Region 8: Lower Colorado Basin

U.S. Department of the Interior
Bureau of Reclamation
Interior Region 8: Lower Colorado Basin
Phoenix Area Office
Glendale, Arizona

September 2025
PXAO-25-04

Mission Statements

The U.S. Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, Native Hawaiians, and affiliated Island Communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Acronyms and Abbreviations

ADOT	Arizona Department of Transportation
ANPL	Arizona Native Plant Law
APE	area of potential effects
APLIC	Avian Power Line Interaction Committee
APS	Arizona Public Service
ARHP	Arizona Register of Historic Places
ASLD	Arizona State Land Department
ASM	Arizona State Museum
AZDA	Arizona Department of Agriculture
AZGFD	Arizona Game and Fish Department
BESS	battery energy storage system
BMP	best management practice
C.F.R.	Code of Federal Regulations
CO	carbon monoxide
EA	environmental assessment
EPA	United States (U.S.) Environmental Protection Agency
gen-tie	generation-tie corridor
IO	isolated occurrence
kV	kilovolt(s)
LGIA	Large Generator Interconnection Agreement
Pb	lead
MBTA	Migratory Bird Treaty Act
mph	miles per hour
MW	megawatt(s)
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act of 1969
NHPA	National Historic Preservation Act of 1966
NO_2	nitrogen dioxide
NRHP	National Register of Historic Places
NSTS	Navajo Southern Transmission System
O&M	operations and maintenance

O_3	ozone
Pub. L.	Public Law
PM	suspended particulate matter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PM_{10}	particulate matter less than 10 microns in diameter
Project	Fria Grid Battery Energy Storage System Project
Proponent	Fria Grid, LLC
RCRA	Resource Conservation and Recovery Act
Reclamation	U.S. Bureau of Reclamation
ROW	right-of-way
SHPO	State Historic Preservation Office
SO_2	sulfur dioxide
SR 303	State Route 303
SWCA	SWCA Environmental Consultants
SWPPP	stormwater pollution prevention plan
SWReGAP	Southwest Regional Gap Analysis Project
U.S.C.	United States Code
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compound
WOTUS	waters of the United States

TABLE OF CONTENTS

List of Figures

List of Tables

1 INTRODUCTION, BACKGROUND, PURPOSE, AND NEED

1.1 Introduction

Fria Grid, LLC (Proponent), a subsidiary of Eolian Energy, is proposing to interconnect the Fria Grid Battery Energy Storage System Project to the Westwing Substation operated by Arizona Public Service Company (APS). The Proponent filed an application in 2019 (APS queue number Q280) to interconnect up to 300 megawatts (MW) of energy storage capacity into the 230-kilovolt (kV) bus of the APS Westwing Substation. The generation point of interconnection would be located on an undeveloped tract of private land adjacent to the APS Westwing Substation is approximately 1 mile south of the City of Peoria in unincorporated Maricopa County, Arizona (Figure 1).

The project proposes to interconnect to the Navajo Southern Transmission System (NSTS), of which the United States (U.S.) Bureau of Reclamation (Reclamation) is a part owner and APS is the operator. All interconnection requests for the NSTS that result in a Large Generator Interconnection Agreement (LGIA) must be submitted to APS and approved by the owners of the transmission line, including Reclamation via the Regional Director of Reclamation's Lower Colorado Basin Region. Prior to the Regional Director's approval, Reclamation must complete an environmental review of the proposed interconnection in compliance with the National Environmental Policy Act of 1969 (NEPA) (Public Law [Pub. L.] 91-190, as amended). Reclamation, as the lead federal agency, is preparing this environmental assessment (EA) to assess the environmental effects of the proposed project.

1.2 Background

The proposed project consists of a utility-scale battery energy storage system (BESS). The project would interconnect up to 300 MW of energy storage capacity to the NSTS via a proposed 230-kV generation-interconnection line (gen-tie) to the APS Westwing Substation (Figure 2). Total output of the project to the NSTS would not exceed 300 MW.

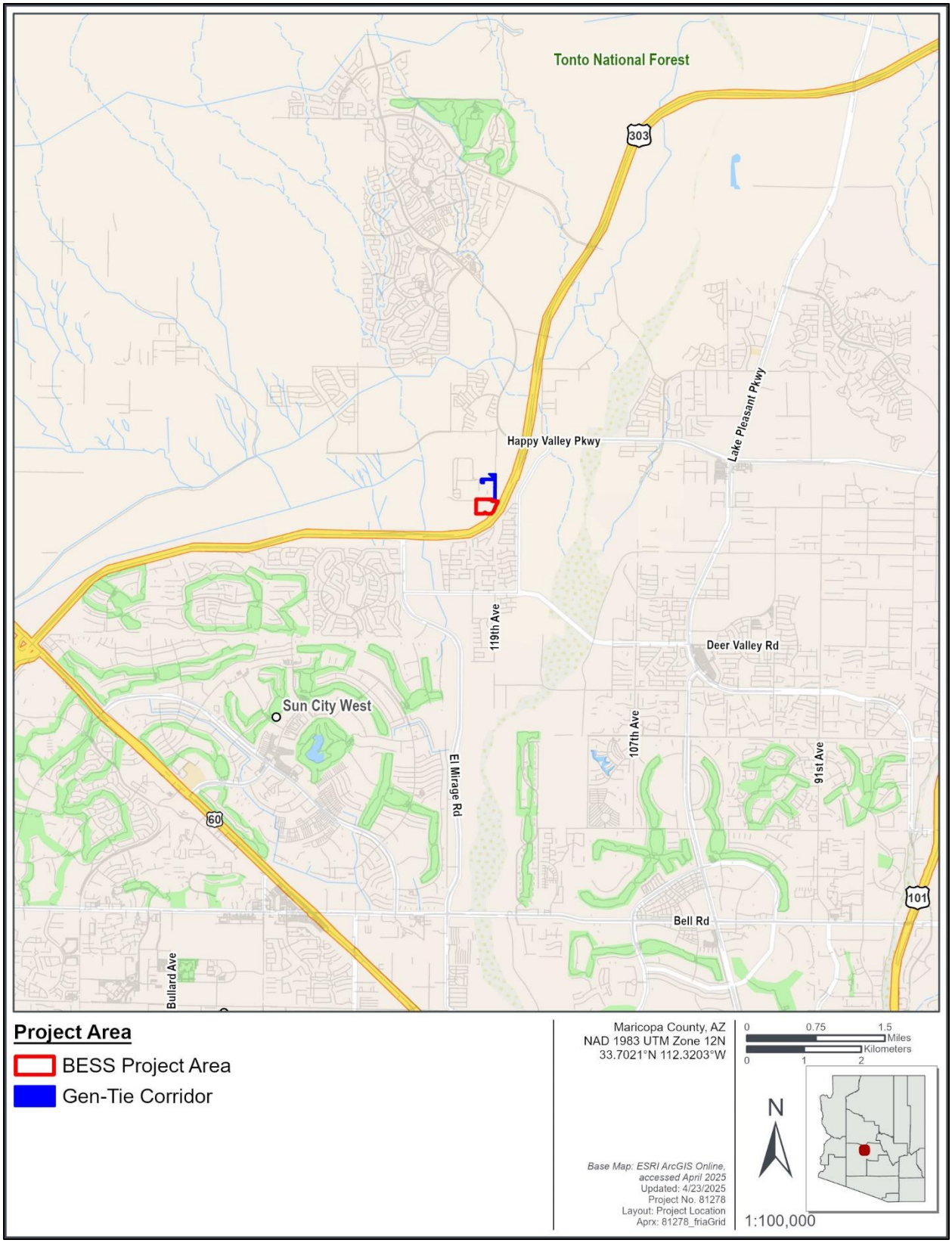

Figure 1. Project vicinity.

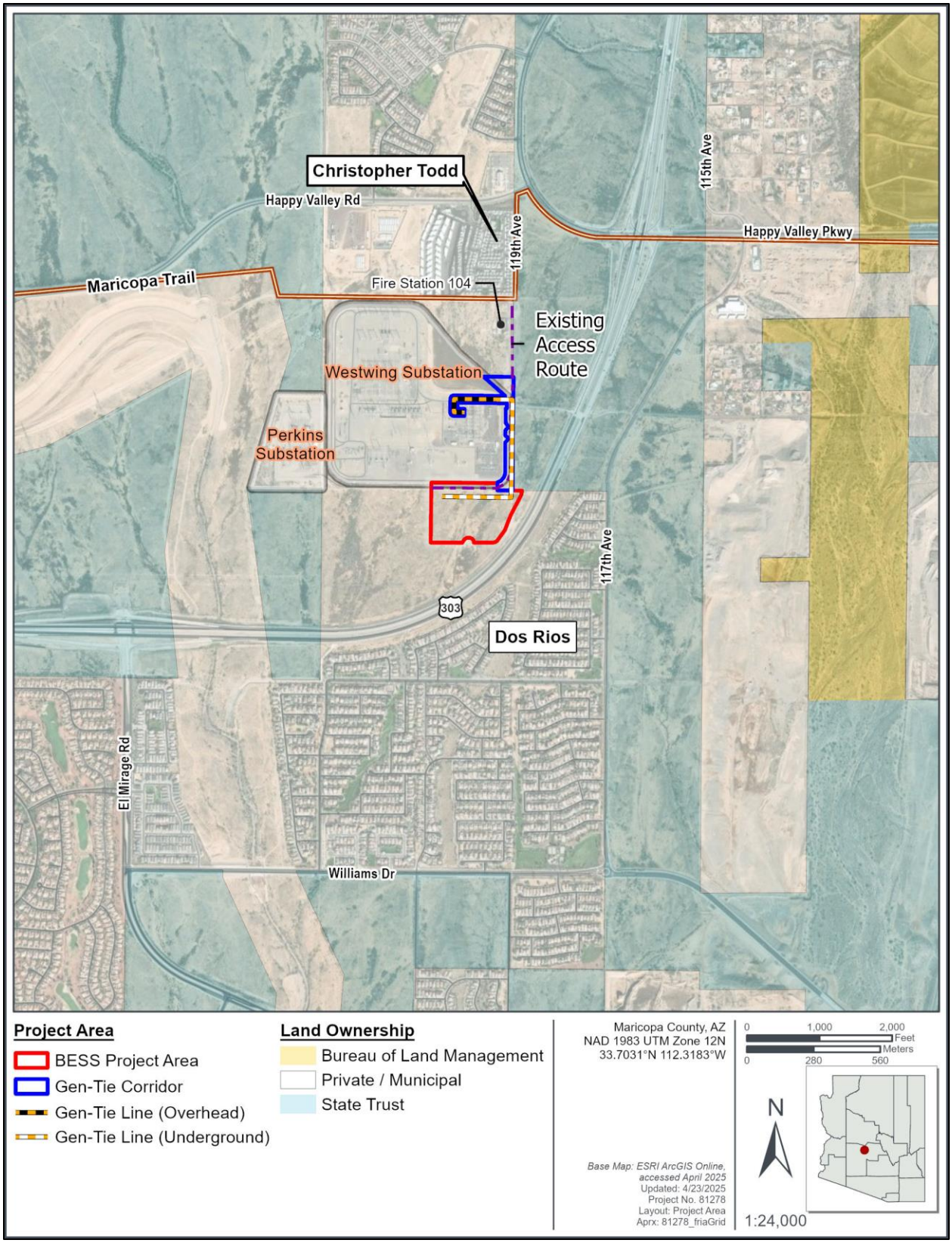

Figure 2. Project area.

The proposed BESS would be an energy infrastructure project that would provide electrical energy storage for the regional transmission grid and an opportunity for managing additional energy supplies. The project would facilitate improved integration of energy sources, reduce the need for fuel generation during peak load, and provide responsive and dispatchable capacity to maintain grid reliability. One of the main advantages of a BESS is to provide the opportunity to shift the delivery period for power generation to times when it is most needed.

A BESS can capture excess generated power and shift its delivery into the early evening peak demand hours.

The primary components of the project would include the BESS, project substation, 230-kV interconnection transmission line, internal site driveway and perimeter access drives, stormwater basins, and a laydown area, which would be located on a parcel of private land in Section 12, Township 4 North, Range 1 West (Calderwood Butte), south of the existing APS Westwing Substation. The components are located within the 27.5 acres of private land south of the existing APS Westwing Substation (Figure 3).

1.3 Project Location

This EA evaluates an approximately 20-acre area proposed for a BESS facility and substation (BESS Project Area), and an approximately 7.5-acre, 230-kV underground and overhead transmission line (gen-tie) corridor, as shown in Figure 2. These areas are collectively known as the Project Area. The BESS Project Area can be accessed via 119th Avenue, which connects to West Happy Valley Road about 0.75 miles to the south. The private land in the BESS Project Area is in an unincorporated county island that is zoned Light Industrial (IND-2) and is currently vacant. A portion of the proposed gen-tie corridor area is within the access-controlled perimeter of the APS Westwing Substation, which is also accessed from 119th Avenue. Surrounding lands are a mixture of Arizona State Land Department (ASLD) lands to the southwest and west; the McGuire grazing allotment managed by the ASLD to the northeast; and private lands to the south, southeast, east, and north (see Figure 2).

1.4 Purpose and Need

As a share owner of the NSTS, Reclamation's purpose is to consider the large generator application for interconnection of the project to the NSTS at the APS Westwing Substation and, if appropriate, approve the LGIA.

The need for Reclamation's review and approval of the LGIA request is based on the partial ownership of the NSTS by the U.S. government. The Navajo Generating Station and its associated transmission lines were authorized by the 1968 Colorado River Basin Project Act (Pub. L. 90-537, 82 Statute 885), and Reclamation manages the federal government's interests. Reclamation, along with the other owners, must approve the proposed interconnection into the NSTS.

The Proponent has applied to the operator (APS) to interconnect the project at the APS Westwing Substation. The project would involve storing and delivering energy through a gen-tie line, with both underground and overhead segments, to the APS Westwing Substation, which in turn would supply the regional electrical grid to meet the load demand.

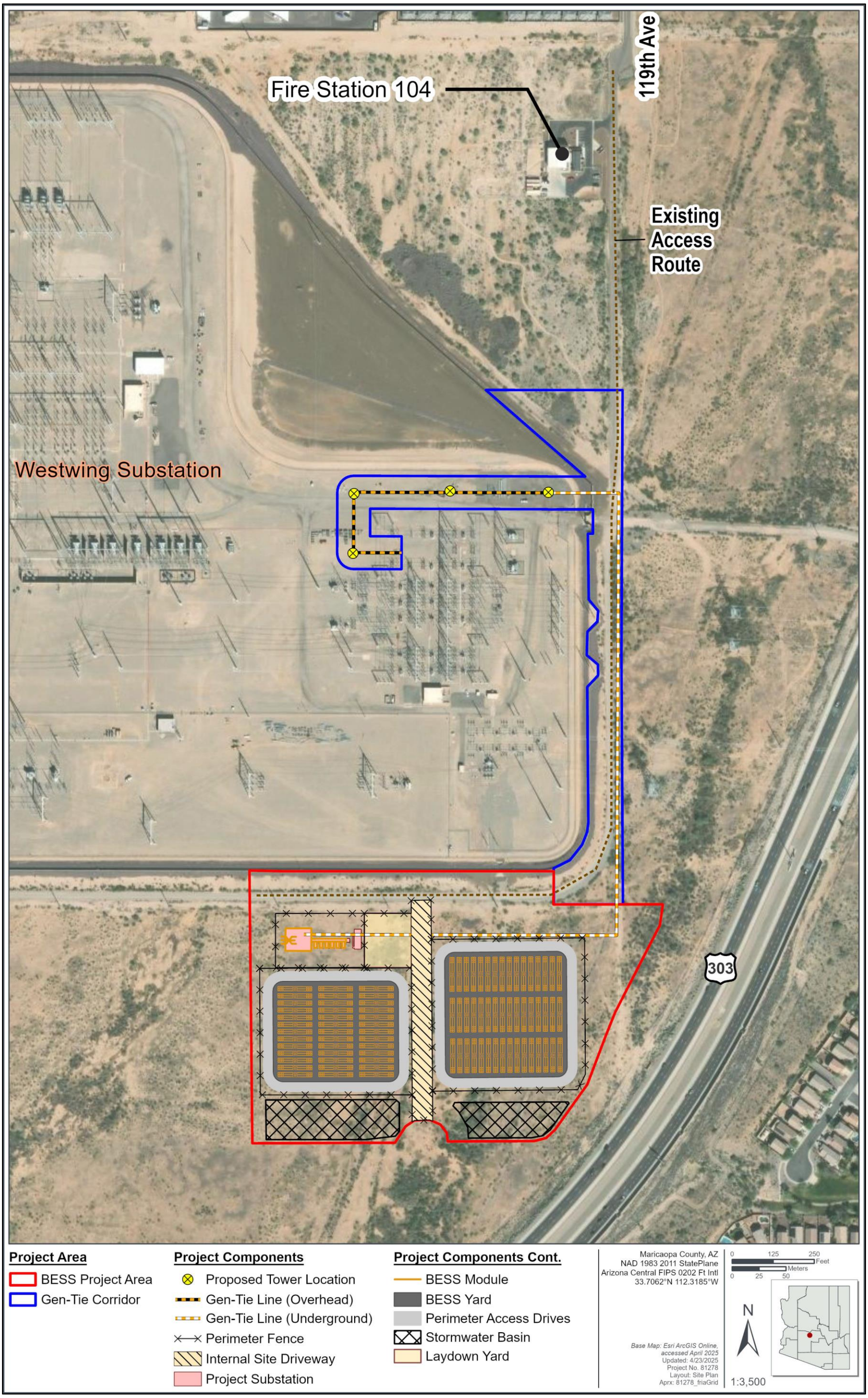

Figure 3. Project components detail.

1.5 Public Involvement and Agency Consultation

1.5.1 PUBLIC SCOPING AND TRIBAL CONSULTATION

Reclamation began a 30-day public scoping period on September 9, 2024. As part of the public scoping process, public interest letters were sent to 285 interested parties, including neighboring property owners; Native American Tribes; local, state, and federal agencies; and non-governmental organizations. Section 4.2, Agency Coordination and Tribal Consultation, details the agencies and Native American Tribes contacted for public scoping.

Reclamation did not receive responses during the 30-day scoping period.

1.5.2 PUBLIC COMMENT PERIOD

Reclamation began a 30-day public comment period for the Draft EA on June 10, 2025. A Notice of Availability was sent to interested parties (including neighboring property owners within 0.25 miles of the Project Area); Native American Tribes; local, state, and federal agencies; and non-governmental organizations contacted during the public scoping process. Information was also made available on the Reclamation website. Reclamation received three responses during the 30-day public comment period, one each from the U.S. Environmental Protection Agency (EPA), U.S. Army Corps of Engineers (USACE), and ASLD.

1.6 Changes Between the Draft and Final EA

Minor, editorial changes were made to the Final EA based on public comment on the Draft EA, including to Section 3.7, Public Health and Safety, to discuss fire prevention. Reclamation-initiated changes were made to Section 3.6, Cultural Resources, to address additional cultural resources inventory conducted in support of a modification of the gen-tie alignment.

2 PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

The Proposed Action for Reclamation would be to approve the LGIA for the interconnection of the project to a 230-kV bus inside the APS Westwing Substation operated by APS via a transmission line, with both underground and overhead segments. The Proposed Action considers the associated interconnection facilities, which include a gen-tie line to the APS Westwing Substation, transmission towers, project substation, BESS facilities, stormwater features, and site access. The major components of the Proposed Action are shown in Figure 3.

2.1.1 PROJECT COMPONENTS

The temporary and permanent disturbances associated with the Proposed Action is provided in Table 1. Temporarily disturbed areas are those that would be reclaimed and revegetated immediately following construction. Permanently disturbed areas are those that would be occupied by project infrastructure and remain disturbed throughout the estimated 30-year operation period. These areas would be reclaimed and revegetated during decommissioning as described in Section 2.1.4. Detailed descriptions of each project component and the associated disturbance are provided in the following sections.

Table 1. Estimated Acres of Temporary and Permanent Disturbance for the Proposed Action

Project Component	Acres	
	Temporary Disturbance	Permanent Disturbance
BESS	2.7	5.9
Substation	0.3	1.0
Gen-tie, including towers*	3.7	<0.1
BESS yard perimeter access drives	0.0	2.1
Internal site driveway	0.0	1.0
Stormwater basins	0.0	2.7
Collector lines†	0.0	0.0
Laydown area	0.6	0.0
Total	**7.3**	**12.7**

* Permanent disturbance includes footprints of the foundations associated with the new towers. Temporary disturbance consists of 1) approximately 2 acres within a 100-foot-wide gen-tie corridor for construction access, tower construction, and associated pulling and tensioning movement along the overhead segment of the gen-tie line, and 2) 1.7 acres along the underground segment of the gen-tie line for a 10-foot-wide excavation area and a 10-foot-wide buffer on each side of the trench for construction access. The new gen-tie line towers would be constructed within the APS Westwing Substation; therefore, temporary disturbance does not consider potential disturbance within the limits of the APS Westwing Substation (see Section 2.1.1.1 for details).

† Assumes entirety of the collector line corridors would be constructed underground and within the disturbance footprints of the BESS and substation. No additional permanent or temporary disturbance is anticipated (see Section 2.1.1.4 for details).

2.1.1.1 Gen-Tie Line

The Proposed Action would require the construction of a new 230-kV gen-tie line. The new gen-tie line would exit the project substation and continue north from the BESS Project Area along 119th Avenue and into the APS Westwing Substation (see Figure 3). From the project substation, approximately 2,500 feet would be installed underground to a location within the APS Westwing Substation. The underground gen-tie line would be installed within an excavated trench with a width of 5 to 10 feet and a depth of 4 to 8 feet. Following installation, physical protection, such as concrete, may be added within the trench to protect the gen-tie line from accidental damage and the trench would be backfilled and compacted. Access to the underground gen-tie line would be from the adjacent 119th Avenue.

Upon entering the APS Westwing Substation, the gen-tie line would transition to above the ground and the remaining 900 feet would be installed overhead on four new towers constructed within the existing disturbance footprint of the APS Westwing Substation and carried to a connection within the substation (see Figure 3).

The gen-tie line would include primary and auxiliary lines from the APS Westwing Substation to provide power feeds to the BESS facilities and project substation. The 230-kV gen-tie line would be designed to be held aloft on a combination of steel monopole towers and steel H-frame towers at the crossings of other transmission lines. Tower type and locations would be determined during final design and engineering but may include any combination of pole structures. The tower heights would be up to 120 feet. This height is necessary to achieve the minimum clearance of the lowest conductor to the ground as required by the National Electrical Safety Code, with an additional 5-foot buffer. The tower footprints would vary by location and would be up to 8 feet in diameter. The drilled concrete foundations would include excavation depths up to 40 feet deep. Temporary work areas along the gen-tie line within the APS Westwing Substation may be necessary for line pulling and tensioning.

2.1.1.2 Project Substation

A new substation would be needed for the proposed BESS to transform the stored energy from 34.5 kV to 230 kV. The substation would be connected to the new gen-tie line that would carry electricity from the project to the existing APS Westwing Substation. The project substation would permanently disturb an approximately 1-acre area and temporarily disturb approximately 0.3 acres in the immediate vicinity of construction equipment and worker movement (see Table 1 and Figure 3). The project substation would include electrical equipment such as power transformers, circuit breakers, switchgear, voltage regulators, capacitors, switches, arresters, various monitoring instruments/equipment, and a small control building.

Construction of the project substation would begin with site clearing and grading, after which a copper grounding grid would be installed in trenches 2 to 5 feet deep to protect equipment and personnel in the event of electrical faults or lightning strikes. Next, concrete foundations for the control building and major electrical equipment would be poured; these foundations would typically be 5 to 8 feet deep. Once the control buildings and electrical equipment are erected, a final layer of crushed rock surfacing would be installed with a geotextile-type underlayment to help prevent weeds.

A security fence with entrance gates would be installed around the perimeter of the project substation. Fencing would be constructed using chain-link or masonry blocks consistent with county building codes, would be approximately 6 to 8 feet in height, and would be topped with outward-facing barbed-wire strands approximately 2 feet high. Additional safety measures would include security lights, motion and thermal sensors, and cameras.

2.1.1.3 Battery Energy Storage System

The Proposed Action includes 300 MW of storage capacity consisting of approximately 87 modular, containerized battery storage structures constructed within an approximately 8.6-acre area, which includes approximately 5.9 acres of permanent disturbance and 2.7 acres of temporary disturbance (see Table 1 and Figure 3). Temporary disturbance associated with the BESS includes an area that is expected to be utilized for construction equipment and worker movement.

It is anticipated that lithium-ion technology would be used, as this is currently the most cost-effective available technology to fulfill the common 1- to 4-hour peak energy requirements. The duration of the energy storage is not specified by the interconnections. Rather, the duration is selected by the ultimate utility customer; in this region utilities prefer a 4- to 6-hour duration. Although the interconnection allows for up to 300 MW of total energy storage capacity, the actual size may be limited to less than 300 MW by constraints on the site, size, and spacing limitations of the electrical equipment, and the needs of the utilities who would use the BESS to manage regional power supply and demand.

A security fence (or masonry wall if required by county building codes) with entrance gates would be installed around the perimeter of the BESS. Fencing would be constructed using chain-link or masonry blocks consistent with county building codes; would be approximately 6 to 8 feet in height, and would be topped with outward-facing barbed-wire strands approximately 2 feet high. Additional safety measures would include security lights, motion and thermal sensors, and cameras.

2.1.1.4 Collector Lines

The BESS modules would be connected by an underground collection line network that converts electricity from direct current (DC) to alternating current (AC) and vice versa. Individual inverters would be connected to the project substation with 34.5-kV collection cables. Approximately 1.5 miles of underground collector lines would be installed to a depth of 3 to 4 feet within 2- to 4-foot-wide trenches located within the footprint of the BESS yards, internal site driveway, and internal and perimeter access drives. Trenches would be backfilled following installation.

2.1.1.5 Laydown Area

The Proponent would establish an approximately 0.6-acre temporary laydown area (see Figure 3) during construction adjacent to the proposed substation within the BESS Project Area for the storage of project equipment and materials to support construction.

2.1.1.6 Internal Site Circulation

An approximately 65-foot-wide and 670-foot-long internal site driveway would be constructed between the BESS yards and would provide access from 119th Avenue to the southern boundary of

the Project Area (see Figure 3). Approximately 26-foot-wide and 1,600-foot-long perimeter access drives would be constructed around each BESS yard to provide internal circulation and access to the project components, as required by local fire code adopted by the North County Fire and Medical District (see Figure 3).

2.1.1.7 Stormwater Basins

Two stormwater retention basins (the basins) are proposed along the southern BESS Project Area outside of the security fencing. The basins would be designed to control surface water runoff and maintain existing drainage patterns. The stormwater basins would measure approximately 420 feet long by 120 feet wide and approximately 285 feet long by 110 feet long in size, each at a depth of approximately 3 to 4 feet, with sloped and riprap-armored sides and an uncompacted, vegetated flat bottom to allow for stormwater infiltration. To the extent practicable, the project would use permeable surfaces consisting of 8-inch-diameter crushed rock to promote movement along the contoured ground to the stormwater basins. The project substation and areas around the BESS equipment would be graveled to prevent the potential for standing water around the high-voltage equipment. The project substation and BESS yards would be contoured to direct stormwater runoff to the proposed stormwater basins.

2.1.2 CONSTRUCTION METHODS

2.1.2.1 Workforce

Construction would require approximately 50 workers per day over a 14-month period. The workforce is expected to be drawn from surrounding communities in the Phoenix metropolitan area and from crews traveling with the contractor to various job sites.

2.1.2.2 Transportation and Equipment

During construction, the BESS Project Area would be accessed from 119th Avenue. During construction of the Proposed Action, the unpaved surface of 119th Avenue would be maintained for public vehicle access, as needed.

As mentioned in Section 2.1.1.3, secure entrance gates would be installed at the entrances of the internal access driveway. During construction, access to the site would be monitored and controlled. A security guard may patrol the area using the new internal site driveway and perimeter access drives to prevent incidents that could affect the public.

Temporary warning fences or barricades (consisting of warning tape, barricades, plastic mesh, and/or warning signs) would be erected in areas where safety risks could exist and where site personnel would not be available to control access. Fences would be installed around any laydown areas, areas deemed hazardous, or areas where security or theft are of concern, and would be removed at the completion of the construction period.

Equipment required for construction would include passenger vehicles, light duty trucks, and heavy civil equipment for site preparation, clearing, leveling, and foundation installation, as well as cranes to assemble and lift the structures into place (Table 2). Table 3 provides daily traffic estimates for the Proposed Action.

Table 2. Construction Vehicles and Equipment

Activity	Equipment
Access improvements, site preparation and clearing	1 grader, 1 pickup truck, 1 bulldozer, 1 backhoe
Materials hauling	1 tractor trailer, 1 tractor-mounted crane, 1 pickup truck, 1 flatbed truck
Preparation of concrete foundations and transmission structures sites	1 bulldozer or motor grader, 1 pickup truck, 1 flatbed truck
Transmission structure excavation, hole augering, foundations	1 mounted auger truck, 1 backhoe, 1 pickup truck, 1 air compressor
Structure assembly	1 or 2 hydraulic cranes, 2 pickup trucks, 2 flatbed trucks, 1 air compressor
Wire stringing	1 puller, 1 tensioner, 2 reel-stringing trailers, 1 materials truck, 1 bulldozer, 2 or 3 pickup trucks
Revegetation and restoration	1 bulldozer with ripper, 1 grader, 1 front-end loader, 1 tractor with harrow/disk, 1 pickup truck

Table 3. Estimated Traffic Volumes

Phase (Year)	Interconnection Project Traffic
Construction (Year 1)	30 round trips per day (average) 50 round trips per day (maximum)
Operation (Years 2-30)	5 round trips per day
Decommissioning (Year 30)	25 round trips per day

2.1.2.3 Construction Power, Water, and Mineral Materials

Power for construction is currently available on-site via an existing electrical line. Power could also be supplied by the proposed Westwing Business Park, which is anticipated to construct permanent utilities accessible to the project near the eastern boundary of the BESS Project Area (see Figure 4 in Section 3.2). If necessary, power could be supplied using generators.

During construction, water would be used for dust control, equipment washing, foundation construction, and other needs. Approximately 1 acre-foot (325,000 gallons) of water could be used during construction, primarily for dust suppression and irrigation during operation. The water would be sourced from the following:

- Accessing the existing hydrant at the APS Westwing Substation and trucking to the site.
- Purchasing water from nearby towns and/or water districts and trucking to the site.
- Accessing a Westwing Business Park proposed water line or hydrants to be located along the eastern boundary of the BESS Project Area.

Mineral materials such as sand and gravel for construction and internal site driveway and perimeter access drives base would be sourced from sand and gravel deposits from an Arizona Department of Transportation (ADOT)–permitted external source located regionally. The materials source would be identified prior to the start of construction.

2.1.2.4 Reclamation and Revegetation

Post-construction, the temporary disturbance areas (approximately 7.3 acres; see Table 1) would be reclaimed and revegetated, as needed. Reclamation of temporary construction disturbance typically consists of regrading areas to mimic surrounding natural contours and revegetating with an approved weed-free native seed mix. Weed-free mulch may be applied as required to provide additional erosion control. Ungraded areas disturbed by overland travel would be assessed to determine whether reclamation is needed for recovery of the area.

All landscape materials would be native or approved nativized desert species, such that temporary irrigation (i.e., drip irrigation) would be needed only for an initial establishment period.

2.1.3 PROJECT OPERATION

Once construction is complete, the Proponent would operate and maintain the facilities for the anticipated operational life of 30 years. Routine preventative maintenance would occur on an approximately 6-month interval, and maintenance workers may be present a few days a week for short periods. Unplanned maintenance would occur as required.

BESS facilities are designed to be unstaffed and remotely operated as an integrated grid resource. Police and fire services would be provided by the Maricopa County Sheriff's Office and North County Fire and Medical, respectively.

During operation, it is anticipated that 119th Avenue would continue to be maintained by the Proponent and others. Road maintenance activities (e.g., grading, repair of rutting) would occur periodically, as needed, throughout the 30-year operation period.

Operational power and water needs would be supplied from infrastructure available as part of the proposed Westwing Business Park (see Figure 4 in Section 3.2). Backup power would be provided by a diesel generator, which would be used only in the event of power outages from the primary power source or during emergencies. If necessary, power needs can be accessed from existing electrical lines that cross the BESS Project Area, and water service could be accessed from the APS Westwing Substation and extended to the BESS Project Area. The planned Westwing Business Park includes the construction of a new roadway that would be adjacent to the southern boundary of the BESS Project Area. This proposed roadway may provide the opportunity for a secondary entrance onto the Proposed Action's internal site driveway for operations and maintenance (O&M) traffic.

2.1.4 PROJECT DECOMMISSIONING

The goal of decommissioning would be to remove the collection substation, collector lines, BESS, internal site driveway and perimeter access drives, gen-tie line, and stormwater basins, and return the site to a condition ready for the next allowable land use. Batteries would be recycled, and some interconnection infrastructure may remain in place as it could continue to serve area power

transmission needs. All decommissioning and reclamation would be completed in compliance with applicable federal, state, and local requirements.

Shallow foundations (less than 36 inches below ground), like that for the substation, would be removed in their entirety. Foundations deeper than 36 inches below the ground surface would be left in place. All excavated concrete and steel debris would be removed from the site and disposed of in accordance with applicable state and local requirements. Voids left by the removed concrete foundations would be filled with native material secured from an ADOT-permitted source and would be restored as near as possible to their original condition. Disturbed areas would be reseeded with a native seed mix, as applicable.

2.1.5 BEST MANAGEMENT PRACTICES

The best management practices (BMPs) incorporated as part of the Proposed Action are listed in Table 4. The environmental effects analysis conducted for this EA considers environmental effects after these BMPs are implemented. Implementation of BMPs would be required.

Table 4. Best Management Practices to Avoid, Minimize, and Mitigate Impacts

Resource	Best Management Practice
Aesthetics and Scenery Resources	• The project will use the minimum amount of lighting necessary to meet safety and security needs. Low-intensity lighting (such as LEDs and low-pressure sodium lamps) and motion sensors or timers will be used, and all lighting will be directed downward and fully shielded. • Lighting will comply with the Maricopa County Dark Sky Ordinance (No. 2019-10). • Artificially weathered (dulled) galvanized steel transmission poles and nonspecular conductors will be used to reduce visual impacts.
Air Quality	• The project will comply with the Maricopa County Fugitive Dust from Dust-Generating Operations (Rule 310).
Cultural Resources	• If previously unidentified cultural resources, including human remains or burials, are encountered during ground-disturbing activities, work will cease immediately at the location, and the Arizona State Museum's Repatriation Office will be notified, pursuant to Arizona Revised Statutes 41-865. • If needed, all borrow material will come from an approved source (i.e., a source that has been previously cleared under the National Historic Preservation Act), such as those on ADOT's list of commercial material sources with environmental clearance, before purchasing and/or removing the borrow material.
General Wildlife	• The contractor will fill trenches in a reasonable time frame, cover them at night, and provide escape ramps for wildlife when not in use or covered. Trenches that have been left unattended for an extended period (such as overnight) will be inspected, and wildlife removed prior to backfilling. • To minimize activities that attract prey and predators during construction and O&M, garbage will be placed in approved containers with lids and removed promptly when full to avoid attracting nuisance wildlife. Open containers that may collect rainwater will also be removed or stored in a secure or covered location to avoid attracting wildlife.
Land Use	• Access for residents, recreational users, and emergency vehicles on public roads to be used by the project will be maintained.

Resource	Best Management Practice
Migratory Birds	• If clearing, grubbing, tree/limb removal, or ground disturbance will occur between March 1 and August 31, the contractor will employ a qualified biologist to conduct a migratory bird nest search within 14 days prior to removal. Vegetation may be removed if it has been surveyed and no active bird nests are present. If active nests are discovered, an avoidance buffer will be established in coordination with the Reclamation biologist, as appropriate. • As recommended by the Avian Power Line Interaction Committee (APLIC) (2006), transmission lines will have at least 60 inches of horizontal separation and a vertical separation of 40 inches between phase conductors, which is greater than the physical dimensions of all large birds and bats that could potentially use the structures for perching. • In situations where particular hardware present an electrocution risk (e.g., jumpers, cutouts, arrestors, transformers), perch guards and/or insulators will be installed in accordance with APLIC (2006) guidelines to minimize electrocution risk. • Line marking devices will be installed as needed to reduce risk of avian collisions (APLIC 2012).
Noxious Weeds	• To prevent the introduction of invasive species seeds, the Proponent will establish a controlled inspection and cleaning area where all earthmoving and hauling equipment will be cleaned prior to entering or departing the construction site and the contractor will inspect all construction equipment and remove all attached debris, including plant parts, soil, and mud, prior to the equipment entering or departing the construction site. • All temporarily disturbed areas will be stabilized and seeded using a weed-free seed mix of species native to the project vicinity.
Public Health and Safety	• A spill prevention, control, and countermeasures plan will be developed for the proposed facility and will have information about training, equipment inspection and maintenance, and refueling for construction vehicles, with an emphasis on minimizing spills. • During operation, potentially hazardous materials will be stored in approved, aboveground containers with appropriate spill containment features. • Vehicles and equipment will be kept in proper working condition to reduce the potential for leaks of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials.
Vegetation	• Clearing will be kept to a minimum to preserve existing vegetation, landforms, and topography. Where grading is necessary, topsoil will be removed, stockpiled, and used for site reclamation and revegetation during decommissioning. • Designated areas for equipment staging, stockpiling materials, and parking will be established to minimize the area of ground disturbance. • All work area boundaries will be conspicuously staked, flagged, or otherwise marked to minimize surface disturbance activities.
Water Resources	• A stormwater pollution prevention plan (SWPPP) will be prepared, and a Notice of Intent will be obtained prior to construction. The SWPPP will identify measures to control erosion and off-site migration of sediment. • The site will be graded so that downstream flows will not be adversely impacted as a result of proposed changes to natural washes from grading or drainage management measures.

2.2 No Action Alternative

Under the No Action alternative, Reclamation would not approve the Proponent's LGIA request, the project would not interconnect with the NSTS, and the project would not be built.

2.3 Alternatives Considered but Eliminated from Further Study

Alternatives eliminated from further study include those that are infeasible or purely conjectural possibilities whose implementation is remote and speculative. Alternative locations for the proposed BESS facility were considered but eliminated from further study. Alternative locations would maintain a proposed point of interconnection but considered factors such as proximity to the APS Westwing Substation, private land parcels suitable for battery storage development and with low resource value, and proximity to existing transportation and utility infrastructure. Although other feasible locations were identified that could allow for an interconnection to the APS Westwing Substation, alternative locations are anticipated to result in increased costs and environmental impacts due to a longer gen-tie line and subsequent increased distance from the APS Westwing Substation. Based on these factors, the proposed BESS Project Area was chosen for development.

None of the comments received during the public scoping period suggested additional alternatives for analysis in the Draft EA (see Section 1.5.1, Public Scoping and Tribal Consultation,).

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter presents the existing conditions and the resources in the Project Area that have the potential to be affected and discloses the potential environmental effects that would be reasonably expected from implementing the Proposed Action and alternatives.

Environmental consequences are analyzed based on direct and indirect effects on resources under consideration within a resource's analysis area. The analysis areas are defined in each resource section below, and the analysis time frame for all resources is the operational life of the project (30 years). BMPs or other mitigative or protective measures described in the following sections are considered part of the Proposed Action and are taken into consideration when evaluating environmental consequences.

3.1 Impact Analysis Methods and Terminology

The impact analysis for each resource is focused only on areas where the applicable resource is likely to be impacted by the Proposed Action and alternatives. However, not all resources would experience impacts within the Project Area, and not all impacts from the Proposed Action or alternatives would extend across the entire analysis area.

For each resource, this chapter describes the current conditions, followed by an analysis of the impacts of the Proposed Action and alternatives using the following impact type descriptors:

- Direct—A direct impact is an impact to a resource that is caused by the action and occurs at a particular time and place.
- Indirect—An indirect impact is an impact to a resource that is caused by the action later in time or farther away and is still reasonably foreseeable (e.g., increased likelihood of nonnative, invasive species moving into the area after disturbance).
- Short-term—A short-term impact is an impact to a resource that would be less than 5 years in duration, including temporary disturbance during construction and decommissioning.
- Long-term—A long-term impact is an impact to a resource that would be greater than 5 years in duration.
- Negligible—This indicates no measurable or observable change from current conditions. The impact to the resource would be at or below the levels of detection.
- Minor or minimal—This indicates a small, detectable, or measurable change. The impact could be:
    - outside the range of natural or typical variability but occur for a very brief duration; or

  - within the natural or typical range of variability but occur for a longer period of time. Mitigation, if implemented, would be easily applied and successful with a high degree of certainty.

- Moderate—This indicates an easily discernible or measurable change. The effects would either:
  - be readily apparent or would result in measurable impacts to the resource; these impacts would affect the availability or natural recovery of those environmental elements over the long term; or
  - be substantial but of a short duration with no permanent impact to the resource. It is anticipated that mitigation, if implemented, would be successful with a high degree of certainty, based on prior examples with similar effects and documented mitigation outcomes.
- Major—This indicates a large observable or measurable change. The effects would result in substantial impacts to the resource that would be readily apparent, consequential, and outside the natural or typical range of variability. Mitigation, if implemented, would be uncertain in its success, or ineffective with consequent long-term and permanent changes in the availability or natural recovery of the resource.
- Beneficial—This indicates a positive change in the condition, appearance, or function of the resource.
- Adverse—This indicates a negative change that moves the resource away from or detracts from its condition, appearance, or function.

The analysis captures effects to the extent reasonably possible based on the best available information.

3.2 Resource Considerations

Reclamation developed a list of preliminary resources to address in the Draft EA. Resources carried forward for detailed analysis in Chapter 3 and the effect indicators used to assess the effects of each alternative are listed in Table 5. Resources that do not require detailed analysis to address potential environmental effects and the rationale for that determination are listed in Table 6. The resources in Table 6 were evaluated and determined to be either not affected or minimally affected with implementation of BMPs, which were summarized in Table 4. Past, present, and reasonably foreseeable future actions that incrementally add to the potential total impacts of the Proposed Action are considered in this EA. The intent of this analysis is to capture the total effects of several actions over a reasonable period that would be missed by evaluating each action individually. Reasonably foreseeable future projects and actions considered in the effects analysis are listed in Table 7 and shown in Figure 4.

Table 5. Resources Carried Forward for Detailed Analysis in the EA

Resource	Analysis Issue	Effect Indicator
Air Quality	How would emission-generating equipment used for the Proposed Action affect air quality in the local area, including fugitive dust generation?	Emissions from equipment used during construction, operation, and decommissioning as a percentage of the total Maricopa County emission inventory, including levels of $PM_{2.5}$ and PM_{10} from fugitive dust generation.
Biological Resources		
Native Vegetation	How would the Proposed Action affect native vegetation?	Acres of temporary and permanent disturbance to vegetation.
General Wildlife	How would the Proposed Action affect general wildlife species?	Acres of temporary and permanent disturbance to habitat for general wildlife; timing and length of human disturbances.
Human Environment Resources		
Cultural Resources	How would ground-disturbing activities associated with the Proposed Action affect the integrity of historic properties and those cultural resources treated as eligible for the National Register of Historic Places?	Effects to historic properties are considered adverse when they diminish the property's integrity of location, design, setting, materials, workmanship, feeling, or association. Examples of adverse effects may include the following: • Physical destruction/damage to all or part of the historic property. • Removal of the property from its historic location. • Change of the property's historic use within the setting that contributes to its historic significance. • Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property. • Neglect of a property that causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian Tribe.
Public Health and Safety	How would the Proposed Action affect the public health and safety?	Worker and public exposure to hazardous conditions.

Table 6. Resources Not Analyzed in Detail in the EA

Resource	Dismissal Rationale and Findings
Aesthetics and Scenery Resources	Project construction, operation, and decommissioning activities would take place in, and directly adjacent to, areas already disturbed by the existing APS Westwing Substation and associated transmission line corridors. The Proposed Action would represent a long-term, direct impact to the visual landscape. However, among the backdrop of existing and proposed large-scale utility substations, BESS facilities, and transmission towers and lines that exist in the landscape, the Proposed Action infrastructure would be visually similar and consistent with the existing visual character. Installation of a lower-profile BESS facility and associated gen-tie towers and lines among existing towers and facilities associated with the APS Westwing Substation would result in a negligible change in the visual landscape. Therefore, no further analysis is necessary.
Biological Resources	
Bald Eagle and Golden Eagle	No suitable eagle nesting, foraging, or perching habitat is present (SWCA Environmental Consultants [SWCA] 2024). The nearest known bald eagle nest locales are 15 miles to the north at Lake Pleasant (Arizona Game and Fish Department [AZGFD] 2022a). The nearest potential golden eagle breeding area is 35 miles to the west of the Project Area (AZGFD 2022b). Bald eagles or golden eagles may pass through to reach suitable habitats, but they are unlikely to use the BESS Project Area and gen-tie corridor for foraging or nesting. No further analysis is necessary.
Floodplains/Flood Zones	According to the Federal Emergency Management Agency, the Project Area falls within an area of minimal flood hazard (Zone X) (Federal Emergency Management Agency 2024). Based on the lack of floodplains and other flood zones, no further analysis is necessary.
Indian Trust Assets	Indian Trust Assets are legal assets associated with rights or property held in trust by the U.S. for the benefit of federally recognized Tribes or individuals by treaties or individual Tribal members. The U.S., as trustee, protects and maintains the specific rights reserved by, or granted to, Indian Tribes or individuals by treaties, statutes, and executive orders. There are no known Indian Trust Assets within the Project Area; therefore, the Proposed Action would result in no adverse effects to any Indian Trust Assets, and no further analysis is necessary.
Livestock Grazing	No area associated with the Project Area is used for grazing. The Project Area occurs east of the ASLD-managed McGuire grazing allotment, but no aspect of the project occurs within or near unleased parcels of grazing land in the McGuire allotment (ASLD 2024). Therefore, the Proposed Action would not impact grazing or grazing allotments, and no further analysis is necessary.

Resource	Dismissal Rationale and Findings
Land Use	The BESS Project Area is entirely within vacant, privately held land in unincorporated Maricopa County. The BESS Project Area is adjacent to the developed APS Westwing Substation, within which a portion of the gen-tie corridor occurs, and the Salt River Project Perkins Substation located approximately 0.4 miles to the west. The Proposed Action would be consistent with Maricopa County land-use and zoning designations. According to the Maricopa County *Vision 2023 Comprehensive Plan* (Maricopa County 2016), the Proposed Action occurs within the White Tank/Grand Avenue Area Plan and includes energy, utilities, and public facilities as a plan element (Maricopa County 2023a). In addition, the Proposed Action is within an IND-2 industrial designation (Maricopa County 2024). The Maricopa County Planning and Development Department approved a zone change in September 2019 (Case No. Z2019018) to allow light industrial or heavy industrial uses for the approximately 75-acre, planned Westwing Business Park. The Proposed Action would occur within the planned Westwing Business Park. Within this zoning designation, the light industrial or heavy industrial uses, such as BESS facilities, developed under a coordinated plan with integrated infrastructure are allowed (Maricopa County 2023b). The Proposed Action was designed to minimize land use impacts by locating it near facilities with existing and planned utility and road infrastructure, and the Proposed Action is consistent with existing Maricopa County land use plans. In addition, no temporary or permanent access alterations are anticipated to lands outside of the Project Area. Therefore, impacts to land use would be negligible, and no further analysis is necessary.
Noise	The Proposed Action is located in an urban to suburban unincorporated region in Maricopa County located in undeveloped terrain north of State Route 303 (SR 303). Ambient noise surrounding the Proposed Action consists predominantly of industrial and human-made noise, natural sounds, and vehicle traffic on the adjacent SR 303. The nearest sensitive receptors are residences in the Christopher Todd and Dos Rios communities, approximately 0.1 miles to the north of the APS Westwing Substation and southeast of SR 303, respectively. The Maricopa Trail is located immediately north of the APS Westwing Substation. Based on the SR 303 freeway being adjacent to and separating the Proposed Action, distance to the nearest residences, and potential impacts to noise-sensitive receptors limited to daytime hours during the 14-month construction period, noise would be non-obtrusive at the nearest receptors. Noise generated during construction would have negligible, short-term, temporary impacts. Long-term noise impacts during operation would be negligible. Noise impacts during decommissioning would be similar to those during construction since similar traffic volumes and associated noise would be similar to those for construction. No further analysis is necessary.
Recreation	There are no designated recreational activities or facilities known within the Project Area. Maricopa Trail crosses 119th Avenue north of the proposed access route, but the Proposed Action would not impact the trail or its users. Recreational opportunities within 0.5 miles of the Proposed Action are limited to open space areas within developed residential communities. Given the lack of recreational opportunities in the area, the Proposed Action would have negligible impacts to recreation. Therefore, no further analysis is necessary.

Resource	Dismissal Rationale and Findings
Socioeconomics	The project may result in minor beneficial impacts to the socioeconomic conditions of the analysis area when workers would be on-site daily, and there would be a small increase in local spending as a result of jobs. The improvements made to vacant land would subject that land to a potentially higher tax assessment ratio, which would affect the long-term property tax revenue paid to Maricopa County. Given the short-term nature of the construction and decommissioning employment and the small operation workforce, the Proposed Action would have a negligible, but beneficial, impact to employment and spending in the analysis area; therefore, no further analysis is necessary.
Soils	According to the Natural Resources Conservation Service (2024), the Project Area contains two mapped soil types. Neither of these soils are hydric, and there are no prime farmlands, unique farmlands, or other protected farmlands present. Impacts to soils from vegetation clearing and ground disturbance would be limited to 20 acres and would occur primarily during the construction and decommissioning periods. Ground-disturbing activities have the potential to cause soil erosion and compaction. However, BMPs (see Table 4) would be implemented to reduce these impacts, including minimizing surface disturbances, implementing a SWPPP, and reclaiming the land during decommissioning. With the implementation of these BMPs, impacts to soils would be negligible; therefore, no further analysis is necessary.
Threatened and Endangered Species	The biological resources report (SWCA 2024) concluded that the Project Area is outside the known geographic and elevational ranges and/or does not contain habitat for the four threatened and endangered species returned in the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) database query (Project Code: 2024-0098638) (USFWS 2024). There is no suitable habitat in or near the Project Area for cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*), California least tern (*Sterna antillarum browni*), Gila topminnow (including Yaqui) (*Poeciliopsis occidentalis*), or yellow-billed cuckoo (*Coccyzus americanus*). Therefore, it is anticipated that there would be no effect on these species, and no further analysis is necessary. There is no critical habitat for federally threatened or endangered species in the Project Area or vicinity (USFWS 2024).
Transportation	Construction, operation, and decommissioning access would be from 119th Avenue. No improvements would be necessary. During construction, the Proposed Action would result in a minor, short-term increase in traffic on 119th Avenue and Happy Valley Road in the immediate vicinity of the Project Area as equipment is transported to the site. Delays may occur during delivery of large equipment, such as the substation components; however, deliveries would be directed to laydown areas within the BESS Project Area to minimize traffic impacts and delays on local roadways or at intersections. There would be no road closures required and delays are not expected to impede the existing use of Happy Valley Road or other local roadways. During construction, 119th Avenue would be maintained for vehicle access (e.g., improving drainage or smoothing rough surfaces). Impacts to transportation from O&M activities would be negligible and would not impact traffic flow on local roadways, as the BESS facility would be primarily operated remotely and would only be visited for maintenance visits twice per month on average. Therefore, impacts to transportation would be negligible and no further analysis is necessary.

Resource	Dismissal Rationale and Findings
U.S. Army Corps of Engineers Jurisdictional Waters, including Wetlands	There are no wetlands or riparian areas within the Project Area. The results of the desktop research and field investigation indicate that there are no drainages within that would be considered Waters of the United States (WOTUS) as defined by the USACE under the Revised Definition of WOTUS (2023 WOTUS Rule) (EPA 2024a). According to a January 2022 report titled *Aquatic Resources Assessment/Jurisdictional Determination Request for the Westwing Business Park* (SWCA 2022), a majority of the BESS Project Area was reviewed for WOTUS as part of a larger study area. The USACE issued an Approved Jurisdictional Determination (USACE File No. SPL-2022-00182) on October 6, 2022, which concurred with the findings. Impacts to wetlands and riparian areas from construction, O&M, and decommissioning activities are not anticipated. Therefore, no further analysis of the resource is warranted.
Water Quality	Ephemeral surface water features in the Project Area have the ability to transport stormwater flows from localized precipitation events. Transportation of stormwater flows, and subsequent impacts to surface water quality are not likely due to the implementation of the erosion control and stormwater drainage BMPs, including the SWPPP (see Table 4). Once operational, the project would be designed to maintain existing drainage patterns and control the rate and amount of surface water runoff through the implementation of stormwater retention basins. Impacts to water quality from construction, O&M, and decommissioning activities are not anticipated. Impacts to water quality would be negligible with the implementation of these BMPs; therefore, no further analysis is necessary.

Table 7. Past, Present, and Reasonably Foreseeable Future Projects

Project Name	Description	Status/Schedule	Project Location
Westwing Business Park	The Westwing Business Park is a proposed private development that would consist of self-storage, flex industrial building use, energy development, and supporting roadways and utilities. The project would be located in the proposed business park development area. The Maricopa County Planning and Development Department approved a zone change in September 2019 (Case No. Z2019018) for the land associated with the Westwing Business Park to allow light industrial or heavy industrial uses, such as BESS facilities.	Reasonably Foreseeable	The proposed development is located on approximately 75 acres of vacant land south of the APS Westwing Substation, between El Mirage Road and SR 303.

Project Name	Description	Status/Schedule	Project Location
Arizona Peaking Capacity Energy Storage Project	The Arizona Peaking Capacity Energy Storage Project is an approximately 100-MW, Western Area Power Administration–financed, BESS facility interconnecting to the APS Westwing Substation. This project is currently under construction by AES Energy Storage, LLC. Reclamation acted as a cooperating agency during the NEPA process and approved the AES Energy Storage, LLC's request to interconnect the facility into the NSTS.	Reasonably Foreseeable	The project is located immediately north of the APS Westwing Substation, on Happy Valley Road, between El Mirage Road and 119th Avenue.
Utility rights-of-way (ROWs)	Utility ROWs (transmission lines, gas pipelines, substations, and energy generation) are subject to ongoing vegetation management and routine maintenance activities.	Ongoing	Multiple high-voltage transmission lines connect into the existing APS Westwing Substation, adjacent to the northern boundary of the project. The Transwestern Pipeline ROW is located 0.5 miles north of the project.
Highway and road maintenance	SR 303 is a six-lane divided highway maintained by ADOT. Happy Valley Road is a four-lane roadway maintained by Maricopa County. The project access route, 119th Avenue, is maintained by the City of Peoria and APS. Ongoing maintenance activities may include herbicide treatments and other vegetation management, as well as routine repairs and resurfacing.	Present	The existing access points for the APS Westwing Substation would serve as the access to the Proposed Action.
Grazing	Livestock grazing occurs on private and ASLD lands northwest of the Project Area.	Present	The McGuire grazing allotment (ASLD-permitted) is located west of the Proposed Action.
Residential development	Multiple master planned communities are located in the vicinity of the project.	Past and Present	The Dos Rios, Crossriver, Corte Bella, and Christopher Todd single-home master planned communities are all within 1 mile of the Proposed Action.
Gravel and aggregate mining	The gravel and aggregate mining includes open pit extraction of mineral materials used for construction aggregate production and cement manufacturing.	Present	An open pit operated by Vulcan is located 0.5 miles east of the Proposed Action, and another similar open pit is operated by Cemex approximately 1 mile east of the Proposed Action; both are located within the Agua Fria riverbed.

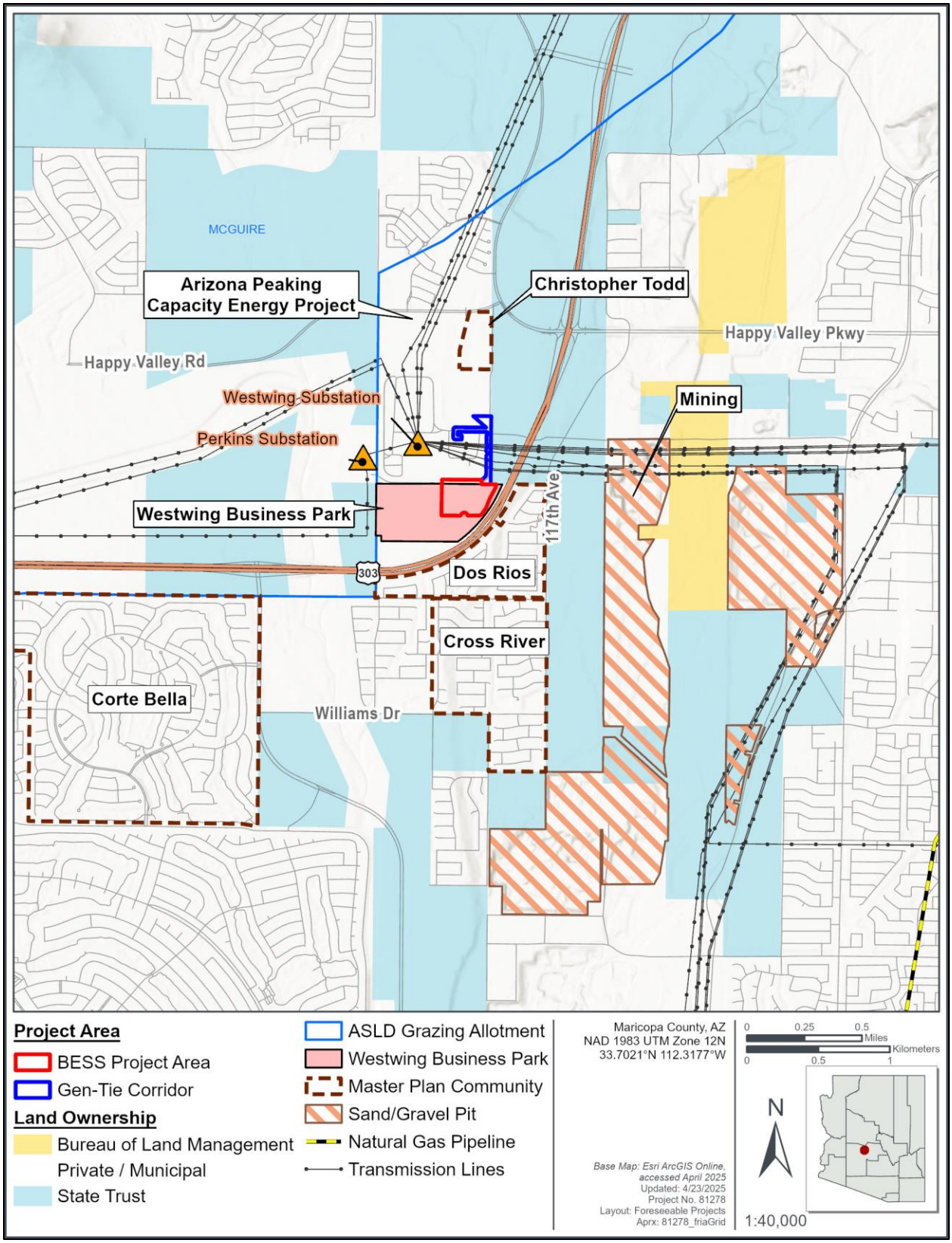

Figure 4. Reasonably foreseeable projects within the analysis area.

3.3 Air Quality

3.3.1 AFFECTED ENVIRONMENT

The Clean Air Act (42 United States Code [U.S.C.] 7401 et seq.) is a comprehensive federal law that regulates air emissions from stationary and mobile sources. Among other things, this law authorizes the EPA to establish National Ambient Air Quality Standards (NAAQS) to protect public health and welfare and regulate emissions of hazardous air pollutants. A region is given the status of "attainment" if the NAAQS have not been exceeded. A status of "nonattainment" for particular criteria pollutants is assigned if the NAAQS have been exceeded. A region is designated "unclassifiable" if there is insufficient data to determine whether the region is within or exceeds the standard. When an area is reclassified from nonattainment to attainment, it is designated as a "maintenance area," indicating the requirement to establish and enforce a plan to maintain attainment of the standard.

The EPA has set NAAQS for principal pollutants, which are called criteria pollutants. The criteria pollutants include ozone (O_3), carbon monoxide (CO), suspended particulate matter (PM), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), and lead (Pb). PM emissions are regulated in two size classes: particulates up to 10 microns in diameter (PM_{10}) and particulates up to 2.5 microns in diameter ($PM_{2.5}$).

The General Conformity Rule, established under 40 Code of Federal Regulations (C.F.R.) Part 51 Subpart W and 40 C.F.R. Part 93 Subpart B, requires a general conformity analysis for any emission-generating activities resulting from a federal action that is not already covered by permitting. A conformity determination is required for each criteria pollutant or precursor where the total of direct and indirect emissions of the criteria pollutant or precursor in a nonattainment or maintenance area caused by the federal action would equal or exceed designated General Conformity de minimis thresholds (EPA 2024b). This regulation ensures federal actions conform to established state implementation plan/transportation improvement plans regarding air quality.

The Proposed Action occurs in an area designated as a maintenance area for CO, and a nonattainment area for O_3 and PM_{10} (Arizona Department of Environmental Quality 2024).

3.3.2 ENVIRONMENTAL CONSEQUENCES

3.3.2.1 Proposed Action

Emissions from the Proposed Action would consist of CO, NO_2, PM_{10}, $PM_{2.5}$, SO_2, and volatile organic compounds (VOCs). Potential emission rates from the Proposed Action were calculated and compared to de minimis thresholds for general conformity determination. All emissions were calculated based on emission factors derived from the EPA's Motor Vehicle Emissions Simulator model (EPA 2024c).

Construction emissions were calculated based on number of vehicles, types of vehicles, hours of operation, total surface area of disturbed land, and expected duration of construction. Total annual estimated emissions during construction and operation are provided in Table 8.

Table 8. Estimated Total Annual Criteria Pollutant Emissions

Emission Source Category	Emissions (tons)					
	CO	NO_2	SO_2	VOCs	PM_{10}	$PM_{2.5}$
Total Annual Construction Emissions	1.16	4.49	0.01	0.15	3.31	0.50
Total Annual Operational Emissions	0.34	1.62	0	0.04	0.06	0.04
General Conformity de minimis Threshold*	100	100	100	50	70	N/A
Below de minimis Levels*	Yes	Yes	N/A	Yes	Yes	N/A

* de minimis levels for moderate nonattainment for the 2015 8-hour O_3 standard, serious nonattainment for the 1987 PM_{10} standard, and maintenance for the 1971 CO standard

Note: N/A = not applicable

Table 8 shows that, for all project pollutants subject to General Conformity, all construction pollutant emissions are below the General Conformity de minimis thresholds, and no further analysis is required.

Based on the total annual emissions during construction, operational, and decommissioning activities, emissions of each criteria pollutant are each calculated to be less than 1 percent of the total Maricopa County emission inventory (EPA 2020). The Proposed Action would have minor, short-term impacts on air quality during construction. Emissions would predominantly occur during the short-term construction phase, which would consist of heavy vehicles and equipment. The small amounts of criteria pollutants that would be generated by the Proposed Action would not be expected to cause a detectable increase in the ambient concentrations of these pollutants or cause a trend toward nonattainment and are not anticipated to affect local or regional long-term air quality. Emissions would also occur during the long-term operational phase, but to a lesser extent due to the decreased level of vehicle travel and ground-disturbing activities. Long-term air quality impacts during operation would be negligible and not expected to contribute to measurable or detectable impacts to air quality and not anticipated to affect local or regional long-term air quality. Effects to air quality during decommissioning would be similar to those for construction.

Sources of emissions from the Proposed Action would include fugitive dust from vehicle travel on unpaved surfaces, vehicle exhaust emissions during construction, operation, and decommissioning, and windblown dust from disturbed areas. Project activities such as driving on dirt surfaces, mowing, grading, and clearing would loosen and disturb soil, potentially resulting in windblown or fugitive dust particles, which can contribute to PM_{10} pollutants. Negligible impacts resulting from short-term construction and long-term operation-related fugitive dust–generating activities are anticipated with the implementation of dust control BMPs. Project-related activity impacts to air quality would be localized to the Project Area and vicinity as a result of implementing dust control measures. With the implementation of design features and BMPs (see Table 4) to reduce fugitive dust generation, it is unlikely that the Proposed Action would exceed de minimis thresholds (EPA 2024b) for pollutants or deteriorate visibility or air quality within this airshed.

When the impacts of ongoing activities and future planned actions are combined with the incremental contribution of the Proposed Action, the effects could result in increased fugitive dust and vehicle and equipment emissions in the analysis area. These potential effects would be minor,

short-term, and localized during construction and operation of the present and reasonably foreseeable future actions.

3.3.2.2 No Action Alternative

Under the No Action alternative, Reclamation would not approve the LGIA, and the project would not be constructed. Therefore, there would be no direct or indirect impacts to air quality.

3.4 Native Vegetation and Noxious Weeds

3.4.1 AFFECTED ENVIRONMENT

The analysis area for vegetation is the BESS Project Area. The portion of the gen-tie corridor located within the APS Westwing Substation is not included in the analysis area because it is maintained by APS to prevent vegetation; therefore, no vegetation is anticipated to occur.

The vegetation within the analysis area is in the Lower Colorado River Valley subdivision of the Sonoran Desertscrub biome (Brown 1994), and according to Southwest Regional Gap Analysis Project (SWReGAP) data, land cover is dominated by Sonora-Mojave Creosotebush-White Bursage Desert Scrub (17 acres, or 62 percent) and Developed, High Intensity (10.5 acres, or 38 percent) (U.S. Geological Survey 2016) (Table 9). The Project Area is located on a flat plain above the Agua Fria River, representing the terminal bajada of the Hieroglyphic Mountains; elevations range from approximately 1,230 to 1,330 feet above mean sea level.

Table 9. SWReGAP Vegetation Communities in the BESS Project Area

Vegetation Community	Acres in Project Area
Developed, High Intensity	10.5
Sonora-Mojave Creosotebush-White Bursage Desert Scrub	17.0
Total	**27.5**

Source: U.S. Geological Survey (2016)

Non-federal lands are subject to the Arizona Native Plant Law (ANPL) (Arizona Revised Statutes 3-904; Arizona Administrative Code R3-3-208) managed by the Arizona Department of Agriculture (AZDA), which regulates harvest, salvage, and transport of plants on non-federal lands. Harvest or salvage of most plant species may be permitted or required, and fees may be assessed. Plants listed in the Highly Safeguarded category may be taken or salvaged only for scientific or conservation purposes. The ANPL identifies a lengthy list of plant species—largely cacti, agave, yucca, and desert trees—that are susceptible to removal for collection, landscaping, sale, or other commercial uses. The ANPL states that these plants shall not be taken, transported, or possessed from any land without permission and a permit from the AZDA; it also requires notification before land clearing, even if the plants would be destroyed.

A biological site visit, consisting of a pedestrian survey to evaluate vegetation and landscape features considered important to the potential occurrence of special-status plant and animal species, was conducted on April 4, 2024 (SWCA Environmental Consultants [SWCA] 2024).

Native plant species observed in the BESS Project Area include desert Indianwheat (*Plantago ovata*), creosote bush (*Larrea tridentata*), triangle bur ragweed (*Ambrosia deltoidea*), yellow paloverde (*Parkinsonia microphylla*), velvet mesquite (*Prosopis velutina*), brittlebush (*Encelia farinosa*), woolly tidestromia (*Tidestromia lanuginosa*), desert globemallow (*Sphaeralcea ambigua*), Coues' cassia (*Senna covesii*), water jacket (*Lycium andersonii*), Jerusalem thorn (*Parkinsonia aculeata*), and saguaro cactus (*Carnegiea gigantea*). One plant species with unclear native or nonnative origins, pepperweed (*Lepidium* sp.), was observed in the BESS Project Area. No broadleaf deciduous riparian vegetation communities (i.e., communities containing cottonwood [*Populus* spp.], willow [*Salix* spp.], ash [*Fraxinus* spp.], etc.) were observed in the BESS Project Area.

The State of Arizona maintains a list of noxious weeds in three categories: Class A, Class B, and Class C (AZDA 2024). Class A species are those that are not known to occur in Arizona, are of limited distribution, and are of high priority for quarantine, control, or mitigation. Class B noxious weeds are species known to occur but of limited distribution in Arizona and that may be high-priority pests for quarantine, control, or mitigation if a significant threat to crop, commodity, or habitat exists. Class C noxious weeds are species of plants that are widespread but may be recommended for active control based on risk assessment.

Nonnative plant species observed in the BESS Project Area include stinknet (*Oncosiphon piluliferum*), prickly Russian thistle (*Salsola tragus*), red brome (*Bromus rubens*), redstem stork's bill (*Erodium cicutarium*), and buffelgrass (*Pennisetum ciliare*). Three of these invasive plant species are AZDA-listed noxious weeds: stinknet, red brome, and buffelgrass. Stinknet is listed as a Class B noxious weed, whereas red brome and buffelgrass are listed as Class C noxious weeds.

3.4.2 ENVIRONMENTAL CONSEQUENCES

3.4.2.1 Proposed Action

Direct impacts to vegetation under the Proposed Action would include 7.3 acres of temporary disturbance and 12.7 acres of permanent disturbance from vegetation clearing, grading, and installation of project infrastructure during construction, all of which would occur in the Lower Colorado River Valley subdivision of the Sonoran Desertscrub biotic community that encompasses the analysis area (see Table 8). BMPs would be implemented during construction to minimize impacts to vegetation, such as minimizing grading and ground disturbance by designating areas for equipment staging and materials storage and conspicuously staking or flagging work area limits (see Table 4). Following construction, temporarily disturbed areas would be reclaimed and revegetated using landowner-approved certified weed-free native seed mixes. Vegetation in these reclaimed areas would gradually return to pre-construction conditions over the 30-year operation period. Permanent disturbance would be limited to the footprint of the structures installed during construction and maintained areas, including the BESS perimeter access drives, internal site driveway, and stormwater basins, which would remain disturbed throughout the 30-year operation period.

Fugitive dust generated by ground disturbance and vehicle traffic can repeatedly blanket the foliage of vegetation adjacent to disturbed areas and unpaved access roads, which can interfere with photosynthesis and reduce plant productivity. However, the amount of dust that must accumulate to result in a measurable effect on plant productivity is far greater than what is typically observed under normal conditions (Thompson et al. 1984). Under the Proposed Action BMPs (see Table 4), road watering and a speed limit of 25 miles per hour (mph) would be implemented to reduce fugitive dust generation, which would minimize the potential for adverse impacts to vegetation. Any effects from fugitive dust that were to occur would primarily be limited to the 14-month construction period and 14-month decommissioning period. Most routine inspections and maintenance activities would involve little to no ground disturbance, and vehicle traffic during operation would be limited to five round trips per day on average (see Table 3); therefore, the impacts to vegetation from fugitive dust during operation would be negligible.

Ground-disturbing activities associated with the construction of the Proposed Action may create conditions that could increase the potential for introduction, establishment, and/or spread of nonnative plants, including noxious and invasive weeds. Disturbance from vegetation clearing, grading, and installation of project infrastructure could lead to increased competition between natives and nonnatives as well as changes in vegetation communities, including a possible shift over time to more wildfire-adapted vegetation as a result of noxious weed spread. BMPs would be implemented during construction to minimize the spread of noxious weeds, such as requiring that vehicles and equipment be cleaned before entering or departing the project site. Long-term effects during operation would be minimized through routine weed control measures, including as-needed herbicide applications.

Direct effects on general vegetation during operation under the Proposed Action would be incurred as a result of ongoing trimming, pruning, or removing trees and shrubs within areas previously disturbed during construction to maintain clearances along the internal site driveway, BESS perimeter access drives, and the interconnection facilities.

During decommissioning, infrastructure would be removed, and disturbed areas would be restored and revegetated with landowner-approved weed-free seed mixes. Grasses, shrubs, and forbs would be expected to recover within a few years of reclamation and revegetation, though it may take many decades to replace any mature trees adversely impacted as a result of the Proposed Action.

Reasonably foreseeable actions, when combined with the effects of the Proposed Action, would have moderate, short-term effects on vegetation and noxious weed spread in the analysis area, primarily during the construction phases for planned energy facilities. Most of these effects would be short-term in nature, ceasing after the construction of the facilities, though effects would persist in the long term where there is permanent disturbance from the placement of project infrastructure. Livestock grazing and ongoing right-of-way (ROW) and highway maintenance activities may also cause short-term effects to vegetation but, due to the localized and intermittent nature of these activities, would have negligible long-term effects on vegetation. Over the long term, effects to vegetation in the analysis area would be minor because temporarily disturbed areas would be restored following construction.

In summary, with the implementation of BMPs (see Table 4), the Proposed Action would have minor, short-term impacts to vegetation during construction and decommissioning. Long-term impacts to vegetation during operation would be negligible.

3.4.2.2 No Action Alternative

Under the No Action alternative, Reclamation would not approve the LGIA, and the project would not be constructed. Therefore, there would be no direct or indirect impacts to native vegetation or noxious weed spread.

3.5 General Wildlife and Migratory Birds

3.5.1 AFFECTED ENVIRONMENT

The analysis area for wildlife is the Project Area and a surrounding 0.5-mile buffer to account for effects on wildlife that extend beyond the construction footprint, such as noise from construction equipment and vehicle traffic (Wrigley 2018).

The analysis area has been previously disturbed with transportation corridors, energy distribution infrastructure, and high-density residential developments. Therefore, many of the wildlife species typical of the Lower Colorado River Valley subdivision of the Sonoran Desert are rare or absent. However, wildlife species that are tolerant of human activities and disturbances have the potential to occur, such as small-sized terrestrial mammals and bats. Round-tailed ground squirrel (*Xerospermophilus tereticaudus*) was the only mammal observed during the site visit (SWCA 2024). Other species that may occur in the analysis area include Brazilian (Mexican) free-tailed bat (*Tadarida brasiliensis*), cactus mouse (*Peromyscus eremicus*), coyote (*Canis latrans*), desert cottontail (*Sylvilagus audubonii*), desert kangaroo rat (*Dipodomys deserti*), Harris' antelope squirrel (*Ammospermophilus harrisii*), and white-throated woodrat (*Neotoma albigula*) (Arizona Game and Fish Department [AZGFD] 2024; Hoffmeister 1986).

The Lower Colorado River Valley subdivision of the Sonoran Desert biotic community is home to many reptile species (Brown 1994). Species of this biotic community may occur in the portions of the analysis area containing native vegetation, and a small number of these species also tolerate developed environments. Reptile species associated with the habitat in the analysis area include desert spiny lizard (*Sceloporus magister*), gopher snake (*Pituophis catenifer*), western diamondback rattlesnake (*Crotalus atrox*), tiger whiptail (*Aspidoscelis tigris*), and zebra-tailed lizard (*Callisaurus draconoides*) (AZGFD 2024; Brown 1994).

Suitable aquatic habitats for frogs or other amphibians, fish, or other aquatic or semi-aquatic species are not present in the analysis area.

Migratory birds are protected under the Migratory Bird Treaty Act (MBTA), which prohibits the take of any migratory bird or active nest, except as permitted by regulation. Six avian species were observed during the site visit. Native, MBTA-protected species included Abert's towhee (*Melozone aberti*), Anna's hummingbird (*Calypte anna*), house finch (*Haemorhous mexicanus*), white-crowned sparrow (*Zonotrichia leucophrys*), white-winged dove (*Zenaida asiatica*), and verdin (*Auriparus flaviceps*). Additionally, nests were observed in trees during the site visit, and birds were observed using cavities in saguaros for nesting. There is also a possibility for ground nests to be present.

Other bird species commonly associated with habitat in the analysis area include American kestrel (*Falco sparverius*), cactus wren (*Campylorhynchus brunneicapillus*), common raven (*Corvus corax*), Cooper's

hawk (*Accipiter cooperii*), curve-billed thrasher (*Toxostoma curvirostre*), European starling (*Sturnus vulgaris*), Gambel's quail (*Callipepla gambelii*), Gila woodpecker (*Melanerpes uropygialis*), gilded flicker (*Colaptes chrysoides*), great-tailed grackle (*Quiscalus mexicanus*), greater roadrunner (*Geococcyx californianus*), lesser goldfinch (*Spinus psaltria*), lesser nighthawk (*Chordeiles acutipennis*), mourning dove (*Zenaida macroura*), northern cardinal (*Cardinalis cardinalis*), northern mockingbird (*Mimus polyglottos*), phainopepla (*Phainopepla nitens*), red-tailed hawk (*Buteo jamaicensis*), turkey vulture (*Cathartes aura*), and western burrowing owl (*Athene cunicularia hypugaea*) (AZGFD 2024; Brown 1994). Nonnative species not afforded protection by the MBTA that may occur in the analysis area include house sparrow (*Passer domesticus*) and rock pigeon (*Columba livia*).

3.5.2 ENVIRONMENTAL CONSEQUENCES

3.5.2.1 Proposed Action

Under the Proposed Action, impacts to general wildlife and migratory birds could occur from construction, operation, and decommissioning through habitat loss, alteration, or fragmentation; direct mortality or injury; and disturbance or displacement from noise and increased human presence in the analysis area.

Vegetation clearing and ground disturbance during construction would temporarily disturb up to 7.3 acres of habitat for general wildlife, including nest substrates and foraging resources for migratory birds. These areas would be reclaimed and revegetated immediately following construction of the Proposed Action. An additional 12.7 acres of habitat for general wildlife would be permanently disturbed by the placement of project infrastructure and would remain unavailable to wildlife throughout the 30-year operation period. In addition to direct habitat loss, this disturbance would fragment the remaining habitat in the analysis area and create barriers to terrestrial wildlife movement. Fencing installed for the Proposed Action would enclose relatively small areas (7.9 acres) and create a barrier to movement, increasing the effects of fragmentation. Further, the analysis area is located in a suburban area where use by general wildlife species is already limited, thereby incurring only minor additional impacts. The 12.7 acres of long-term habitat disturbance that would occur under the Proposed Action would be expected to have a minimal impact on general wildlife. The impacts to migratory birds from this habitat loss would be similarly minimal considering the developed nature of the analysis area and the availability of similar habitat in the analysis area and surrounding region.

During construction, smaller, less mobile wildlife could be crushed by vehicles and construction equipment. Injury or mortality could also occur if wildlife becomes trapped in trenches or other excavated areas. Increased vehicle traffic on access routes could also lead to an increased risk of injury or mortality from vehicle strikes. BMPs (see Table 4), including escape ramps and covers for trenches and a 25-mph speed limit in the Project Area, would be implemented to minimize the risk of wildlife injury or mortality. Noise and human presence may disrupt bird behaviors, including foraging, roosting, nesting, or breeding, or may temporarily displace individual birds near the activity area. Since there is already a high degree of human presence and noise in the analysis area, any birds still using the analysis area are likely accustomed to this sort of disturbance. Any displacement of birds would be localized and short-term in nature, and birds would be expected to return to the analysis area following construction. Increased vehicle traffic (see Table 3) and equipment usage, especially during construction and decommissioning, could result in direct mortality or injury to migratory birds due to collisions and crushing of ground-nesting birds. However, these impacts

would be minimized or avoided by implementing a 25 mph speed limit on the project's internal site driveway and perimeter access drives, as well as conducting pre-construction nest clearance surveys during the migratory bird breeding season (see Table 4).

Increased human presence and noise from construction activities can disturb wildlife, leading to the disruption of breeding, foraging, sheltering, migratory activities, or displacement of individual animals from the analysis area. Any displacement of wildlife would be localized and short-term in nature, and wildlife would be expected to return to the analysis area following construction.

Wildlife may be attracted to the analysis area if it is not maintained in a sanitary condition; trash, waste materials, and water sources might attract wildlife and result in increased predation for some species. These effects would be localized and short-term in nature, and effects to wildlife can be mitigated by waste management BMPs (see Table 4). Regular foraging patterns would be expected to resume within the analysis area following construction.

Impacts to general wildlife during the 30-year operation period would be negligible because there would be minimal traffic on the internal site driveway and perimeter access drives (refer to Table 3 for traffic estimates) and because most maintenance activities would involve little to no ground disturbance or vegetation removal. The potential effects to migratory birds from collisions with or electrocution by the gen-tie line and substation components during operation would be minimized by designing these components in accordance with Avian Power Line Interaction Committee (APLIC) guidelines (APLIC 2006, 2012) (see Table 4).

Effects on general wildlife and migratory birds from ground disturbance and increased vehicle traffic during decommissioning would be similar to those described for construction. Following removal of project infrastructure, permanently disturbed areas would be reclaimed and revegetated with weed-free native seed mixes, leading to the gradual recovery of wildlife habitat in the BESS Project Area and long-term beneficial effects from the restoration of habitat for migratory birds. The portion of the gen-tie corridor located within the APS Westwing Substation is maintained by APS to prevent vegetation; therefore, disturbed areas would not be revegetated.

Reasonably foreseeable future actions that may contribute to additive effects to general wildlife and migratory birds are listed in Table 7. As shown in Figure 4, most of the analysis area will be disturbed by planned energy facilities, master planned residential communities, and sand and gravel mining operation. The construction schedules for these projects are likely to overlap the construction of the Proposed Action, which would lead to increased impacts to general wildlife and migratory birds from habitat loss, alteration, and fragmentation; direct mortality from ground-disturbing activities and project-related vehicle traffic; and disturbance and displacement from increased noise and human presence. Most of these effects would be short-term in nature, ceasing after the construction of the facilities, though effects to habitat would persist in the long term where there is permanent disturbance from the placement of project infrastructure.

In summary, with the implementation of BMPs (see Table 4), the Proposed Action would have minor, short-term impacts on general wildlife and migratory birds during construction and decommissioning. Long-term impacts to general wildlife and migratory birds during operation would be negligible.

3.5.2.2 No Action Alternative

Under the No Action alternative, Reclamation would not enter into an LGIA with the Proponent. The project would not be constructed. Therefore, there would be no direct or indirect impacts to wildlife or migratory birds.

3.6 Cultural Resources

Cultural resources are generally defined as the physical manifestations of past human activities, including prehistoric and historic-era archaeological sites, historic-era buildings and structures, and the locations of important events in prehistory or history. Cultural resources may also refer to places of traditional religious and spiritual importance, including archaeological sites, landscapes, natural landforms, and sacred places, as well as gathering or use areas important to the continuity of Indigenous practices and necessary for maintaining a community's cultural identity.

3.6.1 AFFECTED ENVIRONMENT

As defined under Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended (54 U.S.C. 306108), and its implementing regulations under 36 C.F.R. § 800, the area of potential effects (APE) is the geographic area or areas within which impacts from an undertaking (that is, a federal action) may directly or indirectly affect cultural resources that are listed in, or eligible for, the National Register of Historic Places (NRHP) (i.e., historic properties). Pursuant to 36 C.F.R. § 800.4(a)(1), Reclamation, as the lead federal agency, determines the APE by considering potential direct and indirect impacts to historic properties from the construction, operation, maintenance, and decommissioning of the project. The APE consists of approximately 25 acres of private land, including approximately 20 acres for the development of the BESS facility and approximately 5 acres along an existing access route. The limits of the gen-tie associated with the BESS facility was not included in the APE due to existing disturbance of the APS Westwing Substation. The analysis area provides important context for the identification and evaluation of cultural resources within the APE from implementation of the Proposed Action.

The best-documented and most widespread archaeological remains in the Phoenix Basin are attributed to the Hohokam, pre-Contact desert farmers who occupied much of central and southern Arizona (Bayman 2001; Crown and Judge 1991; Fish 1989). The analysis area incorporates the ancestral lands and traditional territories of many modern Native American Tribes, including the Ak-Chin Indian Community, Fort McDowell Yavapai Nation, Fort Mojave Indian Tribe, Gila River Indian Community, Hopi Tribe, Pasqua Yaqui Tribe, Mescalero Apache Tribe, Salt River Pima-Maricopa Indian Community, White Mountain Apache Tribe, Yavapai-Apache Nation, Yavapai-Prescott Indian Tribe, and the Pueblo of Zuni (Salt River Pima-Maricopa Indian Community 2024). The boundaries of the Salt River Pima-Maricopa Indian Community are approximately 26 miles to the southwest.

In total, 62 previous survey projects were identified within the analysis area; these were conducted in support of residential development, transmission lines and other utilities, road development and improvements, and materials sources. Seven of these previous surveys included a portion of the current APE. In total, 39 previously recorded sites were identified within the analysis area, two of which intersect the APE (Immordino 2024).

Pursuant to Section 106 of the NHPA, Reclamation must make a "reasonable and good faith effort" to identify and inventory historic properties that may be affected by a proposed federal undertaking (36 C.F.R. § 800.4(b)(1)). As part of the inventory for this undertaking, the results of previously completed cultural resources surveys were examined, and a new Class III pedestrian cultural resources survey was conducted where necessary to encompass the entire APE. The results are summarized in *Cultural Resources Inventory of 23 Acres for the Fria Grid Battery Energy Storage System Project in Maricopa County, Arizona* (Immordino 2024).

A Class III pedestrian survey of the APE resulted in the identification of one site, AZ T:7:162(Arizona State Museum [ASM]), and two isolated occurrences (IOs). Site AZ T:7:162(ASM) is a late historic Euro-American earthen ditch located in the southwest corner of the APE, which was determined not eligible for the NRHP in 2018. The IOs consist of historic-era metal cans that do not qualify as historic properties and are recommended not eligible for the Arizona Register of Historic Places (ARHP) or NRHP. During the survey, several disturbances were observed. These included areas of scattered modern trash and off-highway vehicle two-track roads (Immordino 2024).

In April 2025, a Class III pedestrian survey was completed to address two linear segments of the gen-tie corridor that were not covered in the original 23-acre Class III inventory. The results are summarized in *Addendum of 3.1 Acres to the Cultural Resources Inventory for the Fria Grid Battery Energy Storage System Project in Maricopa County, Arizona* (Immordino 2025).

Site AZ T:7:145(ASM), a Hohokam Ceramic period site, was previously recorded as occurring in the APE, but was not found during the 2024 or 2025 Class III surveys. It was originally recorded in 1997 by Archaeology Consulting Services, Ltd., for the Estrella Interim Parkway project (Adams 1997). Adams (1997) recorded a ceramic and lithic scatter with two loci. Locus A consisted of a low-density artifact scatter, and Locus B consisted of an undefined rock cluster and a small pot drop consisting of 17 phyllite- and sand-tempered plain ware sherds with an interior red slip (Adams 1997). In 2018, the Arizona State Historic Preservation Office (SHPO) determined the site not eligible for the ARHP/NRHP for the SR 303, Jomax Road Alignment Traffic Interchange Project (Undertakings Number 2018-1176). SWCA was unable to find the site, likely due to erosional processes and impacts resulting from the construction of the APS Westwing Substation and development of SR 303.

3.6.2 ENVIRONMENTAL CONSEQUENCES

Impacts to cultural resources are discussed in terms of direct, indirect, and reasonably foreseeable impacts from the Proposed Action and the No Action alternative that could result in an adverse effect on historic properties. As defined under 36 C.F.R. § 800.5(a)(1) (Criteria of Adverse Effect), an adverse effect occurs when a federal action directly or indirectly alters any characteristics (integrity) of a historic property that qualify it for the NRHP. An adverse effect on a historic property is not limited to physical destruction or damage, but also includes relocation of the property, changes in character of the setting of the property, and the introduction of visual, atmospheric, or audible intrusions. Impacts from federal actions that result in an adverse effect on a historic property may also include reasonably foreseeable effects caused by the action that may occur later in time. Reclamation must determine whether the alteration of character-defining features (of a historic property) would result in the degradation of the aspects of integrity (i.e., location, design, setting, materials, workmanship, feeling, and association [National Park Service 1997]) to the extent

that the degree of alteration would constitute an adverse effect under Section 106 of the NHPA. Cultural resources that are ineligible for the NRHP cannot be adversely affected as defined under Section 106 because they do not qualify as historic properties.

3.6.2.1 Proposed Action

The Proposed Action would disturb approximately 20 acres (including 7.3 acres of temporary disturbance that would be reclaimed following construction and 12.7 acres of permanent disturbance). No historic properties were identified within the APE. The two sites identified in the APE were determined not eligible for the NRHP in 2018. As part of Section 106 compliance for this project, Reclamation determined that AZ T:7:162(ASM) was not eligible for the NRHP, a determination with which the Arizona SHPO concurred on August 19, 2024.

No direct or indirect impacts on NRHP-eligible or indeterminate cultural resources or historic properties are expected from construction, O&M, or decommissioning activities associated with the Proposed Action. The Proponent has committed to avoiding all historic properties during construction, operation, and decommissioning of the Proposed Action (see Table 4); therefore, there would be no impacts to historic properties within the APE.

During operation, the Proposed Action would introduce long-term visual intrusions into the landscape that are currently present in the analysis area. However, because of the distance of known cultural resources from the APE and existing development (i.e., APS Westwing Substation, SR 303), the degree of visual changes to the landscape and historic setting as viewed from these cultural resources would be very small. Any changes to setting that do occur would not be permanent because the landscape in the analysis area would be restored to its pre-construction conditions during decommissioning.

With the implementation of BMPs (see Table 4), the Proposed Action would have no effects on any historic properties or cultural resources in the analysis area. Additionally, as a part of Section 106 compliance for this project, Reclamation made a finding of *No Historic Properties Affected*, with which the Arizona SHPO concurred on August 19, 2024, and following continuing consultation on modifications to the gen-tie corridor on July 24, 2025.

3.6.2.2 No Action Alternative

Under the No Action alternative, Reclamation would not approve the LGIA and would not have a federal undertaking that would trigger Section 106 of the NHPA. The project would not be constructed; therefore, no impacts to historic properties within the APE would occur.

3.7 Public Health and Safety

3.7.1 AFFECTED ENVIRONMENT

This section discusses hazardous substances, petroleum products, and waste or other related environmental conditions and addresses the potential for occurrence in the analysis area. The review considered the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. 9601 et seq.), which established the federal Superfund program and is administered

by the EPA. The Superfund program supports the investigation and cleanup of sites contaminated with hazardous substances. In addition, the review considered various other federal programs that regulate hazardous substances or petroleum products, including the Resource Conservation and Recovery Act (RCRA); Toxic Substances Control Act; Emergency Planning and Community Right-to-Know Act; Oil Pollution Act; Federal Brownfields Program; Clean Water Act; and Federal Insecticide, Fungicide, and Rodenticide Act, as well as state programs, including the Arizona Environmental Quality Act, Water Quality Assurance Revolving Fund, and various programs and regulations for landfills, petroleum storage tanks, and voluntary cleanup sites.

The analysis area for public health and safety is the Project Area. The Project Area is largely undeveloped; therefore, there is no indication of the presence of hazardous wastes or other harmful materials in the analysis area. No Superfund sites are in or near the analysis area (EPA 2024d). No evidence of significant spills, staining, unusual odors, or potential sources of contamination was observed on or adjacent to the analysis area.

3.7.2 ENVIRONMENTAL CONSEQUENCES

3.7.2.1 Proposed Action

Petroleum, oil, and lubricants would be used in the O&M of heavy construction equipment and vehicles during both construction and decommissioning, and some use of solvents and/or cleaners may occur as a result of project O&M. In addition to implementation of a stormwater pollution prevention plan to avoid and minimize effects on surface waters (i.e., streams) resulting from stormwater runoff or pollutants, the Proponent would implement a Spill Prevention Control and Countermeasure Plan, which would outline measures for cleanup and management of any potential fuel, oil, or pollutant spills as a result of the Proposed Action. An Emergency Management Plan for the Proposed Action would also be implemented, which would include emergency recognition and prevention, organization and personnel responsibilities, emergency alerting procedures, maps and diagrams of the facilities, incident documentation, investigation responsibilities, and post-emergency activities. For public safety and security purposes, the perimeter of the BESS and substation would be surrounded by fencing. Secure access gates would be installed, and an on-site monitoring system would be managed remotely. Implementation of these plans and BMPs would reduce the risk of impacts to the surrounding communities and commercial developments.

The design of the BESS is anticipated to be a self-contained battery storage system consisting of a lithium-ion based system. Although self-contained battery storage systems are not considered a hazardous material or waste, the periodic replacement of spent batteries and the eventual decommissioning of the BESS would occur. Spent lithium-ion batteries are considered hazardous waste that must be disposed of in accordance with the RCRA and would require compliance with the Emergency Planning and Community Right-to-Know Act. Spent batteries would be recycled or disposed of off-site in accordance with 40 C.F.R. § 266 and 40 C.F.R. § 273.2, which are standards for the management of hazardous waste, including batteries.

The Proposed Action is designed with an internal layout that allows firefighter access within the site as required under local fire codes. Fire hydrants would be installed within the facility as necessary to allow service to all portions of the site. Substation equipment and battery systems would be designed and constructed to meet or exceed applicable national, state, and local electrical codes, including the 2018 International Fire Code with local amendments, as used by the North County

Fire & Medical District. This cover access requirements, provision of fire hydrants and water supplies, and fire alarm and noticing standards. The battery systems are designed to comply with the standards of National Fire Protection Association 855 and Underwriters Laboratories 9540 and 9540a, a set of national fire safety guidelines developed by a consortium of fire protection professionals, battery engineers and manufacturers, and insurance companies. The standards include a robust set of monitoring and control equipment to manage offgas detection, internal heat, smoke, and fire detection, and cabinet ventilation to prevent buildup of potentially explosive gases, battery heat, and prevent fires from occurring. The Proposed Action would utilize a system architecture developed in response to BESS system fires in California and Arizona and designed to avoid key design problems that contributed to the cause of the fires (i.e., installing the batteries within steel cabinets to prevent fire propagation, limiting human entry between battery cabinets, and including gas ventilation systems to prevent both flashback fires and the need for people to enter a potentially dangerous space).

The modular, containerized design of the system has evolved in part to contain and limit the spread of fires and to facilitate firefighting, if necessary. Should an overheating event occur in a container, other automated electronic systems would work to shut down the container and electrically isolate it and others on its circuit or nearby. If necessary, the entire facility can be shut down. If a fire occurs, a signal would be sent to the facility operator and the local fire emergency dispatch center. The standard guidance is to allow fires to burn out while protecting surrounding structures and equipment. Firefighters can set up a perimeter around the burning container to prevent damage to surrounding units and do not have to enter a structure or be concerned about evacuation of people on the unstaffed site. The Proponent would work with the local fire and building officials to provide training and ensure a mutual understanding of the facility, its requirements for fire prevention systems, and any other concerns of local officials.

Other developments, including BESS projects, transmission, and transportation projects would be assumed to use similar types and amounts of hazardous materials and hazardous and solid waste and would implement similar project design and processes to mitigate health and safety risks, including potential fire hazards. The use of hazardous wastes and materials in the analysis area would contribute to the additive use, transportation, and disposal of these wastes and materials. Reasonably foreseeable future actions, when combined with the impacts of the Proposed Action, would have negligible short-term and long-term additive impacts because construction, operation, and decommissioning of the Proposed Action and other developments would comply with appropriate hazardous waste and materials standards and fire codes.

The Proposed Action would have negligible, short-term impacts to public health and safety during construction and decommissioning. Impacts during operation would also be negligible, but long-term. However, the implementation of safety plans and BMPs, proposed design, and compliance with appropriate standards and codes would ensure that impacts to public health and safety from project equipment and materials would be reduced.

3.7.2.2 No Action Alternative

Under the No Action alternative, Reclamation would not approve the LGIA and the project would not be constructed. There would be no impacts to public health and safety from hazardous waste or other related environmental conditions, as the project would not be developed.

4 CONSULTATION AND COORDINATION

4.1 List of Preparers

Members of Reclamation and SWCA teams that contributed to the preparation of this EA are listed in Table 10.

Table 10. List of Preparers

Name	Position / Role
Reclamation Team	
Dominic Graziani	Supervisory Natural Resource Specialist/Environmental Manager
Dr. Lauren Jelinek	Archaeologist
SWCA Team	
Jeremy Casteel	Lead Environmental Planner; Water Resources Specialist
Nicholas Brasier	Lead Environmental Planner
Eleanor Gladding	Sr. Biologist; Sr. Vegetation Specialist
India Hesse	Biological Resources Specialist
Andrew Vorsanger	Sr. Cultural Resources Specialist
Annie Lutes	Cultural Resources Specialist
Chris Bockey	Aesthetics and Scenery Resources Specialist
Brad Sohm	Air and Noise Specialist

4.2 Agency Coordination and Tribal Consultation

4.2.1 TRIBAL CONSULTATION

On September 9, 2024, Reclamation sent scoping letters to 13 Native American Tribes:

- Ak-Chin Indian Community
- Fort Mojave Indian Tribe
- Fort McDowell Yavapai Nation
- Gila River Indian Community
- Hopi Tribe
- Mescalero Apache Tribe
- Pascua Yaqui Tribe
- Pueblo of Zuni
- Salt River Pima-Maricopa Indian Community

- Tohono O'odham Nation
- White Mountain Apache Tribe
- Yavapai-Apache Nation
- Yavapai-Prescott Indian Tribe

Pursuant to Section 106 of the NHPA (54 U.S.C. 306108), which requires federal agencies to consider the effects of their actions on historic properties, a cultural resources inventory was conducted for the Proposed Action, which constitutes a federal undertaking. In compliance with Section 106 of the NHPA, Reclamation has consulted on NRHP eligibility and effects with the Arizona SHPO, 13 interested Native American Tribes, the City of Peoria, and APS.

On August 12, 2024, Reclamation initiated the Section 106 consultation process with the Arizona SHPO, each of the Tribes, the City of Peoria, and APS. The consultation initiation included a letter along with physical copies of the Cultural Resources Inventory Report for review. Eight responses were received during the initial Section 106 consultation period.

The Arizona SHPO concurred with Reclamation's finding of *No Historic Properties Affected* on August 19, 2024. The Chairman of the Ak-Chin Indian Community, the Tribal Historic Preservation Officers for the Gila River Indian Community, Pascua Yaqui Tribe, Salt River Pima-Maricopa Indian Community, White Mountain Apache Tribe, and the Tribal Archaeologist for the Yavapai-Apache Nation also concurred with Reclamation's finding of *No Historic Properties Affected*. APS's archaeologist also concurred with Reclamation's finding.

On July 8, 2025, Reclamation reinitiated Section 106 consultation on the May 2025 Cultural Resources Inventory Report addendum. The consultation initiation included a letter along with copies of the Cultural Resources Inventory Report addendum for review. Six responses were received during this second round of Section 106 consultation.

The Arizona SHPO concurred with Reclamation's finding of *No Historic Properties Affected* on July 24, 2025. The Tribal Historic Preservation Officers from the Gila River Indian Community and Pascua Yaqui Tribe, the Salt River Pima-Maricopa Indian Community, and the White Mountain Apache Tribe also concurred. The Archaeologist for the Yavapai-Apache Nation stated that they had no concerns.

The White Mountain Apache Tribe provided a response to the Draft EA Notice of Availability (see Section 1.5.2) stating that the proposed undertaking would have *no adverse effect* to the Tribe's cultural heritage resources and/or historic properties.

4.2.2 LIST OF AGENCIES CONSULTED

The following organizations and agencies were sent public scoping letters and a Notice of Availability of the Draft EA for public comment:

Local and County Organizations

Arizona American Water Company
Arizona Public Service

City of Peoria
City of Surprise
Flood Control District of Maricopa County
Maricopa County Board of Supervisors
Maricopa County Department of Transportation
Salt River Project
Southwest Gas Corporation
Sun City West Property Owners Residents Association (PORA)

State Agencies

Arizona Corporation Commission
Arizona Department of Transportation
Arizona Department of Environmental Quality
Arizona Game and Fish Department
Arizona State Historic Preservation Office
Arizona State Land Department

Federal Agencies

Federal Aviation Administration
U.S. Army Corps of Engineers
U.S. Environmental Protection Agency
U.S. Federal Highway Administration
U.S. Fish and Wildlife Service
Western Area Power Administration

Conservation, Environmental, and Recreation Organizations

Arizona Native Plant Society
Arizona Sportsmen for Wildlife Conservation
Arizona Wildlife Federation
Center for Biological Diversity
Defenders of Wildlife
National Audubon Society
Natural Resources Defense Council
Sierra Club Arizona Chapter
The Nature Conservancy
Western Watersheds Project

5 LITERATURE CITED

Adams, K. 1997. *Archaeological Assessment for the Estrella Interim Parkway, North Maricopa County, Arizona*. Project No. 97-19. Archaeological Consulting Services, Ltd.

Arizona Department of Agriculture (AZDA). 2024. Noxious Weeds. Available at: https://agriculture.az.gov/pestspest-control/agriculture-pests/noxious-weeds. Accessed May 2024.

Arizona Department of Environmental Quality. 2024. eMaps. Available at: https://adeq.maps.arcgis.com/apps/webappviewer/index.html?id=e224fc0a96de4bcda4b0e37af3a4daec&showLayers=Counties;R18-11%20Appendix%20B%20-%20Lakes;R18-11%20Appendix%20B%20-%20Streams. Accessed May 2024.

Arizona Game and Fish Department (AZGFD). 2022a. *Arizona Bald Eagle Management Program 2022 Summary Report*. Technical Report 355. Available at: https://swbemc.org/Bald%20Eagle%20Management%20Program%20Summary%20Report%202022.pdf. Accessed May 2024.

———. 2022b. *Arizona Golden Eagle Productivity Assessment 2022*. Technical Report 356. Available at: https://live-azgfd-main.pantheonsite.io/wp-content/uploads/2023/05/NGTR-356.GOEA-productivity-report-2022.pdf. Accessed May 2024.

———. 2024. Arizona Heritage Geographic Information System (AZHGIS) Environmental Review Tool Report. Available at: https://ert.azgfd.gov/content/home. Accessed May 2024.

Arizona State Land Department (ASLD). 2024. Parcel Viewer. Available at: http://gis.azland.gov/webapps/parcel/?loc=-112.3214,33.7046,16&layers=3,2,1. Accessed May 2024.

Avian Power Line Interaction Committee (APLIC). 2006. *Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006*. Edison Electric Institute, APLIC, Washington, D.C., and the California Energy Commission, Sacramento.

———. 2012. *Reducing Avian Collisions with Power Lines: The State of the Art in 2012*. Edison Electric Institute, APLIC, Washington, D.C., and the California Energy Commission, Sacramento.

Bayman, J.M. 2001. The Hohokam of Southwest North America. *Journal of World Prehistory* 15:257–311.

Brown, D.E. (editor). 1994. *Biotic Communities: Southwestern United States and Northwestern Mexico*. Salt Lake City: University of Utah Press.

Crown, P.L., and W.J. Judge (editors). 1991. *Chaco and the Hohokam, Prehistoric Regional Systems in the American Southwest*. School of American Research Advanced Seminary Series. School of American Research Press, Santa Fe, New Mexico.

Federal Emergency Management Agency. 2024. Flood Map Service Center. Available at: https://msc.fema.gov/portal/home. Accessed May 2024.

Fish, P.R. 1989. The Hohokam: 1,000 Years of Prehistory in the Sonoran Desert. In *Dynamics of Southwestern Prehistory*, edited by L.S. Cordell and G.J. Gumerman, pp. 19–63. Smithsonian Institution Press, Washington, D.C.

Hoffmeister, D.F. 1986. *Mammals of Arizona*. Arizona Game and Fish Department, Phoenix, Arizona; University of Arizona Press, Tucson.

Immordino, A. 2024. *Cultural Resources Inventory of 23 Acres for the Fria Grid Battery Energy Storage System Project in Maricopa County, Arizona*. Phoenix, Arizona: SWCA Environmental Consultants.

———. 2025. *Addendum of 3.1 Acres to the Cultural Resources Inventory for the Fria Grid Battery Energy Storage System Project in Maricopa County, Arizona*. Phoenix, Arizona: SWCA Environmental Consultants.

Maricopa County. 2016. *Vision 2030 Comprehensive Plan*. Adopted January 13, 2026. Available at: https://www.maricopa.gov/DocumentCenter/View/3786/Vision-2030-Maricopa-County-Comprehensive-Plan-PDF. Accessed March 1, 2024.

———. 2023a. *White Tank Grand Avenue Area Plan*. Available at: https://www.maricopa.gov/DocumentCenter/View/90548/2023-White-Tank-Grand-Avenue-Area-Plan. Accessed March 1, 2024.

———. 2023b. *Maricopa County Zoning Ordinance*. Available at: https://www.maricopa.gov/DocumentCenter/View/4785/Maricopa-County-Zoning-Ordinance-PDF. Accessed March 1, 2024.

———. 2024. Maricopa County Planning and Zoning. Available at: https://experience.arcgis.com/experience/604705c445bc4fa4890b400e3d7dd96c. Accessed May 2024.

National Park Service. 1997. *National Register Bulletin 15—How to Apply the National Register Criteria for Evaluation*. Washington, D.C.: U.S. Department of the Interior, National Park Service, Cultural Resources, National Register, History and Education.

Natural Resources Conservation Service. 2024. U.S. Department of Agriculture (USDA). Web Soil Survey. Available at: https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx. Accessed May 2024.

Salt River Pima-Maricopa Indian Community. 2024. About SRPMIC: History and Culture. Available at: https://www.srpmic-nsn.gov/history_culture/. Accessed June 2024.

SWCA Environmental Consultants (SWCA). 2022. *Aquatic Resources Assessment/Jurisdictional Determination Request for the Westwing Business Park*. Tucson, Arizona: SWCA Environmental Consultants.

———. 2024. *Biological Evaluation for the Fria Grid Battery Energy Storage System Project, Maricopa County, Arizona.* Phoenix, Arizona: SWCA Environmental Consultants.

Thompson, J.R., P.W. Mueller, W. Fluckiger, and A.J. Rutter. 1984. The effect of dust on photosynthesis and its significance for roadside plants. *Environmental Pollution Series A, Ecological and Biological* 34(2):171–190.

U.S. Environmental Protection Agency (EPA). 2020. National Emissions Inventory (NEI) Data 2020. Online 2020 NEI Retrieval Tool. Available at: https://awsedap.epa.gov/public/single/?appid=20230c40-026d-494e-903f-3f112761a208&sheet=5d3fdda7-14bc-4284-a9bb-cfd856b9348d&opt=ctxmenu,currsel. Accessed November 2024.

———. 2024a. Revising the Definition of "Waters of the United States." Available at: https://www.epa.gov/wotus/revising-definition-waters-united-states. Accessed May 2024.

———. 2024b. General Conformity – De Minimis Tables. Available at: https://www.epa.gov/general-conformity/de-minimis-tables. Accessed May 2024.

———. 2024c. Motor Vehicle Emissions Simulator model. Available at: https://www.epa.gov/moves. Accessed November 2024.

———. 2024d. EnviroMapper web application. Available at: https://enviro.epa.gov/enviro/em4ef.home. Accessed May 2024.

U.S. Fish and Wildlife Service (USFWS). 2024. Information for Planning and Consultation (IPaC). Available at: https://ipac.ecosphere.fws.gov/. Project Code: 2024-0098638. Accessed June 2024.

U.S. Geological Survey. 2016. Survey Gap Analysis Program, GAP/LANDFIRE National Terrestrial Ecosystems 2011. Available at: https://doi.org/10.5066/F7ZS2TM0. Accessed June 2024.

Wrigley, M.J. 2018. Biological Assessment Guidebook, v. 3.1. National Park Service Intermountain Region, Lakewood, Colorado. Available at: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd639466.pdf. Accessed May 2024.