United States Department of the Interior
Bureau of Land Management

Golden Valley 230 kV Transmission Line Project

Environmental Assessment

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BLM - KINGMAN FIELD OFFICE
2755 Mission Boulevard, Kingman, Arizona 86401

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ACRONYMS

ACC	Arizona Corporation Commission
ADOT	Arizona Department of Transportation
ASLD	Arizona State Land Department
BE	Biological Evaluation
BLM	Bureau of Land Management
BNSF	Burlington Northern Santa Fe
CEC	Certificate of Environmental Compatibility
CFRA	Cerbat Foothills Recreations Area
dBA	A-weighted decibel
EA	Environmental Assessment
EHC-ELF	Environmental Health Criteria on Extremely Low Frequency Fields
EMF	Electric and magnetic fields
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FCC	Federal Communications Commission
FLPMA	Federal Land Policy and Management Act
HVOTL	High-voltage overhead transmission line
KOP	Key observation point
kV	kilovolt
L_{dn}	Average day-night noise intensity
L_{eq}	Average noise intensity over a given time period
MHz	megahertz
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NRHP	National Register of Historic Places
OPGW	Optical ground wire
RMP	Resource Management Plan
ROW	Right-of-way
RPM	Resource protection measures
SR	State Route
UNSE	UNS Electric
USDOT	U.S. Department of Transportation
VRM	Visual resource management
WAPA	Western Area Power Administration
µT	Microteslas

CHAPTER 1: INTRODUCTION

1.1 Background

UNS Electric (UNSE), a subsidiary of UniSource Energy Services, has applied for a right-of-way (ROW) from the Bureau of Land Management (BLM) Kingman Field Office to construct, operate, maintain, and terminate a new electric transmission line and substation on BLM-administered land in Mohave County, Arizona.

UNSE first applied for this ROW from the BLM in 2007 but rescinded its application in 2008 when the Mineral Park Mine, the primary proponent, no longer wanted to pursue the project. The transmission line is no longer being proposed to serve the Mineral Park Mine but to accommodate load increases in the system.

1.2 Project Location

The proposed project is located in Mohave County in and near Kingman and Golden Valley, Arizona. There are six alternatives being considered (Maps 1 through 8 in Appendix A-1). All alternatives start at the Harris Substation, which is located adjacent to the Nucor Steel Plant approximately 3 miles southwest of Kingman, and all alternatives end just south of Mineral Park Road at the newly proposed Mineral Park Substation located approximately 10 miles northwest of Kingman (see Table 1 in Appendix A-2 for the project's legal description).

1.3 Purpose and Need

The purpose of the action is to improve reliability, replace aged equipment, and accommodate a projected 5- to 35-megawatt increase in load over the next decade in the north Golden Valley area by transmitting 230 kilovolts (kV) of electricity to a location where the electricity currently is transmitted via UNSE's 69-kV transmission network to its northern service area. The need for the action is established by the BLM's responsibility under the Federal Land Policy and Management Act to respond to a request for a ROW grant for a transmission line and substation.

1.3.1 BLM Decision to Be Made

The BLM's authorized officer will decide whether to grant UNSE a ROW for the transmission line and substation on BLM-administered land and if so, under what terms and conditions.

1.4 Statutory and Regulatory Authority

1.4.1 Land Use Plan Conformance

The proposed action is in conformance with the BLM Kingman Resource Area Proposed Resource Management Plan (RMP) and Final Environmental Impact Statement (BLM 1993) and the Record of Decision (BLM 1995). Rationale for this statement can be found in the RMP within the Management Guidance Common to All Alternatives (specifically Land Use Authorizations and Utility Corridors) and Alternative 2 (specifically Linear ROWs and Visual Resources) (BLM 1993). Also providing rationale for project conformity is the lands decision made in the Record of Decision for the RMP, which states, "All major utility systems are required to route their systems through the designated corridors under the Approved RMP where practicable. Alternate routes will be considered on a case by case basis" (BLM 1995).

1.4.2 Applicable Regulatory Requirements and Required Coordination

The proposed action alternatives are consistent with applicable federal, state, and local laws and regulations to the maximum extent possible. A summary of applicable laws, regulations, permits, and authorizations can be found in Tables 2 and 3 in Appendix A-2.

In order to finalize a route for the proposed transmission line should the BLM grant the ROW, UNSE would apply to the Arizona Corporation Commission (ACC) for a Certificate of Environmental Compatibility (CEC) for the project. The Arizona Power Plant and Transmission Line Siting Committee (Line Siting Committee) would then review the application, a process that includes opportunities for the public to provide comments. If approved, the Line Siting Committee would send a proposed CEC to the ACC for final review and approval.

1.4.3 Interagency Coordination

The BLM invited government agencies that have jurisdiction by law or special expertise to cooperate in the preparation of this Environmental Assessment (EA) because working with governmental partners who have knowledge of local conditions and values would benefit the of the EA. The Arizona State Land Department (ASLD) accepted the invitation to be a cooperating agency and executed a Memorandum of Understanding with the BLM. The ASLD will cooperate in preparation of this National Environmental Policy Act (NEPA) document and is recognized to have special expertise as the official representative of the State of Arizona in any communication between the State of Arizona and the United States government in all matters respecting state lands or any interest of the state in or with regards to the BLM-administered land within Arizona.

1.5 Scoping and Issue Identification

Internal (BLM interdisciplinary team) and external (public, agency, and Tribal) scoping was conducted throughout the development of this project, both in 2007 and 2008 when the project was originally proposed as well as in 2016 when the project recommenced (see Appendix B Scoping Summary Report for a list of agencies and Tribes contacted). Information about the project was provided via newsletters, public meetings, and tours of the alignment. Written comments provided by the public, agencies, and Tribes were collected and documented and are summarized in the Scoping Summary Report. Issues and concerns identified during the scoping process (listed in Table 4 of Appendix A-2) have been considered in the preparation of this EA.

CHAPTER 2: PROPOSED ACTION ALTERNATIVES

This chapter describes and analyzes the six proposed action alternatives developed for analysis as well as the no action alternative.

It should be noted that detailed engineering plans have not been completed for any of the proposed action alternatives. UNSE and the BLM collaboratively developed details for the proposed action alternatives to a level sufficient for environmental analysis. If site-specific design and engineering varies from what is analyzed in this EA, the BLM would prepare additional environmental analysis under the NEPA as appropriate.

2.1 Design Features Common to the Proposed Action Alternatives

While the proposed action alternatives would follow different routes, design features would be the same amongst all proposed action alternatives as described in the following sections.

2.1.1 Design and Construction Details

2.1.1.1 Transmission Line Structures

The proposed project would be built on double-circuit 230-kV transmission line structures (Figure 3, Appendix A-3). The structures would be tubular, weathering-steel monopoles that typically range in height from 85 to 115 feet tall when spaced approximately 700 to 900 feet apart (Table 5, Appendix A-2 contains additional design information); long spans for crossing canyons or highways will require structures with heights up to 195 feet. The transmission line structures would be designed to accommodate two 230-kV transmission circuits, but only one 230-kV transmission circuit would be built at this time.

Where the line turns, a structure referred to as a turning structure would be installed. Turning structures would be single poles made of the same material but slightly larger in circumference. Conductors (i.e., the wires) would be non-specular (i.e., treated to reduce reflectivity) aluminum. Polymer insulators would be used between the arms that support the conductors and each conductor. To protect conductors from lightning, overhead ground (also referred to as shield) wires (non-specular) would be installed at the top of the structures. The overhead ground wire would also contain fiber optic cable to control electrical system operations. The fiber optic cable would not be used for commercial purposes without prior approval from the BLM.

2.1.1.2 Substations

As part of the project, the Harris Substation would be slightly modified and a new substation, the Mineral Park Substation, would be built. The Harris Substation would need to be expanded; this substation is located on private land and would not require ROW acquisition from the BLM. The expansion would occupy approximately 5 acres of land to the south and east of the Harris Substation and would contain bus work and breakers, conduits, ground grids, and other auxiliary equipment necessary to operate the facility. Bus work would be approximately 15 feet in height. The substation would be graveled, free of vegetation, and enclosed by an extension of the surrounding fence.

The Mineral Park Substation would require a 10-acre parcel of land: 7 acres for the proposed substation development and 3 acres to accommodate future development. The substation site would contain bus work and breakers, conduits, relaying and communication equipment, ground grids, a metal control building, and other auxiliary equipment necessary to operate the facility. Bus work would be approximately 15 feet in height. Microwave dishes or covers would be gray. The substation grounds would be graveled, free of vegetation, and fenced with a 12-foot tall expanded metal mesh security fence (75 percent opacity) with a 1-foot-diameter roll of razor wire at the top of the fence. The security fence would be painted an appropriate

color, as directed by the BLM. Low-profile lighting would be used to illuminate the yard and would only be used when nighttime work is performed. A 12-foot-wide by approximately 1,600-foot-long gated gravel access road would be installed and maintained between the substation and Mineral Park Road.

2.1.1.3 69-kV Feeders

Two new 69-kV feeders would be constructed from the Mineral Park Substation to tie into existing overhead 69-kV lines (Map 9, Appendix A-1). Feeder 1 would be 1,850 feet long, and Feeder 2 would be 2,210 feet long. Feeder 2 would be collocated with the 230-kV Golden Valley transmission line towers, so no new structures would be required. Structures for Feeder 1 would be tubular weathering-steel monopoles averaging 65 to 75 feet in height above ground and spaced approximately 350 feet apart (see Table 6 in Appendix A-2 for design characteristics of the feeder lines).

2.1.2 Project Activities

2.1.2.1 Environmental Clearances

Environmental clearance surveys and flagging/fencing of sensitive areas as outlined in resource protection and mitigation measures would be conducted prior to construction activities for sensitive resources.

2.1.2.2 Surveying and Engineering

Survey and engineering work would locate the transmission line centerline, determine accurate topographical profiles along the centerlines, and determine the exact location of structures. The substation site would be surveyed for design and drainage.

2.1.2.3 Access

UNSE would access each structure location using existing roads. Spur roads would be constructed where existing roads do not extend all the way to structure sites.

When existing access roads are not in a condition that would allow heavy construction equipment to pass, they may need to be made suitable (i.e., leveled, graded, drainage crossings fixed, etc.) and/or widened. All access roads to be used for construction, both existing and new, would require a travel lane approximately 12 feet wide. In some areas this may require a total road area up to 25 feet wide to accommodate turns, cut and fill, and the installation of culverts and other drainage control devices. Where roads are required on slopes above 12 percent, the total road prism could be 30 to 50 feet wide. This earthwork would occur only with approval from authorizing agencies and private landowners. Rock staining would be required on BLM-administered land where the visual contrast of the road exceeds visual resource management (VRM) objectives. After construction is complete, vehicle ways of approximately 12 feet in width would be left for future maintenance of the transmission line. The remaining disturbed area would be reclaimed.

Between structures where no access route exists, overland access within the ROW would be required for a vehicle driving along the transmission line ROW pulling ropes between each transmission line structure that would be used to pull in a cable which would ultimately be used to pull the conductors. This would not necessitate clearing of all vegetation and leveling the surface, as this vehicle would travel over vegetation in most cases. Alternatively, this may be performed using a helicopter.

2.1.2.4 Vegetation Clearing

For safety during construction, clearing of vegetation would be required at each structure site. A 60-foot-wide by 136-foot-long rectangular area would be leveled and cleared of vegetation to use as a workspace for vehicle movement, structure assembly, and necessary crane and equipment maneuvers. A larger cleared work area would be needed approximately every 10 structures for turning angles in the line. This area would be 150 feet in diameter (Figure 1, Appendix A-3). Pulling and tensioning sites, which would require an area

150 feet wide by 400 feet long, would also be cleared (Figure 2, Appendix A-3). However, UNSE would opt to leave as much vegetation as possible and to crush existing vegetation rather than remove it, which would allow for the resprouting at pulling and tensioning sites. A small, temporary access road up to 560 feet in length that would provide access to pulling and tensioning sites would be cleared as well. The Mineral Park Substation and area of expansion at the Harris Substation would be cleared of vegetation and graded for appropriate drainage.

2.1.2.5 Construction Yard and Material Handling Sites

Two temporary construction yards or staging areas, each about 3 to 5 acres in size, would serve as a reporting location for workers, parking area for vehicles, and storage area for equipment and material. Construction yards would be located on previously disturbed private land in Kingman or in close proximity to the project area on private land. The specific locations are not known at this time and would depend upon the alternative chosen. Prior to the notice to proceed, these sites would be inspected by both a qualified biologist and an archaeologist to ensure avoidance of sensitive resources. Construction materials would be hauled to the construction yards from the local highway network and then delivered to structure sites via approved access roads.

2.1.2.6 Fueling

Fuels anticipated to be used during construction of the project are petroleum hydrocarbons and the derivatives (e.g., oils, lubricants, and solvents) required to operate construction equipment. Fueling would only occur at approved areas outside the ROW and not on BLM-administered land. All hazardous materials used for this project would be contained within vessels engineered for safe storage. No fuels or hazardous materials would be stored within the ROW or located on BLM-administered land.

2.1.2.7 Structure Foundation Excavation and Installation

Vertical excavations for structure foundations would be made using power auguring equipment. The excavation depth would be approximately 15 to 40 feet depending on structure height and foundation type. A vehicle-mounted power auger or backhoe would be used. Spoil material (excavated soil) would be used for fill where suitable, and the remainder would be sidecast (i.e., placed beside the excavation area) around the new structure foundation.

For turning or dead-end structures (i.e., where the transmission line angles or provides reinforcement), concrete foundations would be installed. These foundations would include reinforced steel and a structure anchor bolt cluster at the top of the foundation hole.

Foundation excavation and installation would require construction equipment such as power augers or drill rigs, cranes, material trucks, crew trucks, and ready-mix concrete trucks. The largest equipment would have wheelbases of up to 70 feet. Water would be used for concrete footings. Concrete trucks would be cleaned on-site using approved wash-out equipment. Residual concrete would be cleaned up and removed from the site.

2.1.2.8 Structure Assembly and Erection

Structure placement activities include 1) mobilizing construction vehicles, equipment, and poles along new and existing access roads and 2) assembling and erecting the structures. Sections of the new structures and associated hardware would be delivered to each structure site by flatbed truck with wheelbases of approximately 70 feet. Erection crews would assemble new structures and work within the cleared work areas. Crews would position the assembled structures in the augured foundation holes using a large crane and would then backfill around each pole with soil and concrete. Where terrain prohibits direct burial and at turning and dead-end structures, structures would be bolted to the foundation.

2.1.2.9 Conductor Placement

UNSE would establish conductor pulling and tension sites along the proposed alignment; these sites would be approximately 150 feet by 400 feet (1.38 acres) and would be placed approximately every 2 to 3 miles along the alignment and at turning structures. Each pulling and tensioning site would consist of two separate sites, each in line with the transmission line's direction and located up to 560 feet from the structures. Equipment paths approximately 16 feet wide would be created for access between these sites and the proposed ROW. Reels of conductor and overhead shield wire would be delivered to these designated areas. Level locations would be selected, so little or no earth moving would be required. The conductors and shield wires would be pulled into place from these locations.

Crews would then install insulators and sheaves. Sheaves are rollers attached to the lower end of the insulators that allow crews to pull sock lines (i.e., rope or wire used to pull transmission line conductors into place). Once the equipment is set up, a lightweight vehicle or helicopter would pull the sock line from one supporting structure to the next (where access is available). The sock line would be hoisted and passed through the sheaves on the ends of the insulators at each structure and then used to pull the conductor through the sheaves. The conductors would next be attached to the sock line and pulled through each supporting structure under tension. After the conductors are pulled into place, they are pulled to a pre-calculated sag and then clamped to the end of each insulator. The final step is to install vibration dampers and accessories.

Prior to pulling and tensioning, workers would install temporary guard structures at road crossings and energized electric lines to prevent the sock line or conductors from sagging onto the roadway or other energized lines during the stringing operation.

All necessary safety requirements would be employed should helicopters be used. UNSE would locate landing zones on private land, but in the event UNSE would need landing zones on BLM-administered or state-owned land, they would obtain permission from the land jurisdiction agency prior to use.

Pulling and tensioning sites would be selected to avoid environmentally sensitive resources. On BLM-administered land outside of areas that would be used for future maintenance, pulling and tensioning would be reclaimed to their approximate former condition.

2.1.2.10 Optical Ground Wire Installation

UNSE proposes to install an Optical Ground Wire (OPGW) as the overhead ground wire. The OPGW cable contains fiber optics and provides a communication path along the newly constructed transmission line. Crews would attach the OPGW cable near the top of each electrical transmission line structure above the electrical conductors. The process of installing the OPGW cable would require the same or similar action as conductor installation and would occur in conjunction with conductor installation.

2.1.2.11 Substation Installation

Construction equipment would rough-grade the substation site and establish drainage for subsurface infrastructure (i.e., conduits and grounding grids). Conduits, foundations, and grounding grids would be installed and enclosed with a 12-foot-tall expanded metal security fence (75 percent opacity) with a 1-foot-diameter roll of razor wire at the top. The security fence would be painted an appropriate color, as directed by the BLM. Finally, the equipment and control building would be installed when the site is secure and the substation area is covered with gravel. Equipment used for the substation development would include graders, excavators, cement trucks, tractor trailers, bucket trucks, pickup trucks, and cranes.

2.1.2.12 Collocation of Existing UNSE 69-kV Transmission Line and 230-kV Transmission Line

UNSE owns and operates a 69-kV line that runs along an approximately 7.3-mile segment of the proposed 230-kV transmission line alignment shared by all proposed action alternatives. This segment is located on the southwest side of U.S. Route 93 (US-93) from the area just north of the intersection of State Route (SR)-68 and US-93 to the point where the 230-kV transmission line crosses US-93 near Mineral Park Road and the Proposed Mineral Park Substation. This segment of the 69-kV line would be moved to the new 230-kV transmission line structures, and the 69-kV structures would be removed. Another segment of this same 69-kV line is within the same alignment as a segment of the East Cerbat alternatives, and under those alternatives most of the 69-kV line would also be collocated with the proposed 230-kV line except for a portion within the City of Kingman, which would be parallel with the proposed 230-kV line. The proposed plan for this segment of the 69-kV line is described in Section 2.2.1.1.

2.1.2.13 Right-of-Way Cleanup and Restoration

UNSE would ensure construction sites, material storage yards, and access roads are kept in an orderly condition during the construction period. Crews would collect waste construction materials and debris from all construction areas and dispose of it at approved sites in a timely manner. Construction crews would not be allowed to have pets on-site. All structure assembly and erection pads not needed for normal maintenance would be returned to their original contour, and natural drainage patterns would be restored. The intent would be to restore all construction areas to their original condition, where feasible. Scarifying and seeding would be conducted as required by the BLM and ASLD. Any damaged gates and fences would be repaired immediately to at least their former condition.

2.1.2.14 Operation and Maintenance

Day-to-day operation of the line would be directed by system dispatchers in UNSE's power control center. These dispatchers would use communication facilities to control the transfer of electrical power through the line between the Harris and Mineral Park substations using utility communication infrastructure. UNSE's preventative maintenance program for transmission lines would include routine aerial and ground patrols. Maintenance includes inspection and repair or replacement of damaged conductors, structures, and insulators. It also includes vegetation management to meet North American Electric Reliability Corporation Standard safety clearances of the lines, per the Federal Energy Regulatory Commission order issued approving FAC-003-2. These standards are meant to prevent vegetation-caused outages and wildfires. Typically, encroaching vegetation will be removed within 20 to 25 feet of the conductors. Because of the arid, sparsely vegetated characteristics of the project area, minimal and infrequent measures would be necessary to control vegetation. Tree and shrub trimming and removal may be required at structures and along the permanent ROW to control vegetation that may jeopardize the maintenance, safety, or reliability of the line. Vegetation management will also aid in fire prevention.

UNSE would maintain their own gates and/or cattleguards on access roads. Maintenance and repair work would occur within the width of the granted ROW.

Transmission lines are sometimes damaged by storms, floods, vandalism, or accidents and require immediate repair. Emergency repair would involve prompt movement of crews to repair and replace damaged equipment. If UNSE damages access roads, UNSE would repair them as needed.

2.1.2.15 Abandonment

If in the future the proposed transmission line or related substations were no longer needed, they would be removed. If additional areas are needed outside the proposed ROW for removal of structures, a temporary use permit would be requested for BLM-administered land at that time. Shield wires, conductors, insulators, and hardware would be dismantled and removed. Structures would be removed by pulling the pole out of

the ground or removing from the concrete foundations. Cranes, large trucks, and pickup trucks, as well as earth-moving equipment (for a few of the steeper areas), would be required. Following removal of the transmission line, all disturbed areas would be restored to their original conditions as much as possible. Scarifying and seeding would be conducted, as required by BLM, the City of Kingman, and ASLD.

2.1.2.16 Personnel and Equipment

Table 7 (Appendix A-2) provides assumptions for the personnel and equipment required for construction of the transmission line and substation. The tasks would be conducted in stages; therefore, personnel and equipment would not work on all tasks simultaneously at a given location. Several of the same activities may be conducted on an as-needed basis for routine or emergency maintenance.

2.2 Proposed Action Alternatives

Six routes were analyzed for the possible alignment of the proposed Golden Valley 230-kV transmission line. These routes are shown on Maps 1 through 8 in Appendix A-1**.** Each of these routes would cross private, ASLD, and BLM-administered public land, and the East Cerbat alternatives would also cross City of Kingman land. A no action alternative (i.e., UNSE would not build the transmission line) is also being considered.

The six proposed action alternatives are split into two groups based on their respective positions in relation to the Cerbat Foothills Recreations Area (CFRA). The East Cerbat alternatives (E1 and E2) are generally in the eastern portion of the CFRA, and the West Cerbat alternatives (W1, W2, W3, and W4) run along the west side of the CFRA.

2.2.1 East Cerbat Alternatives

Both East Cerbat alternatives would originate at Harris Substation and follow US-93 through the CFRA. However, the E1 East Cerbat Alternative generally extends east out of the Harris Substation, whereas the E2 East Cerbat Alternative extends south when it exits the Harris Substation. After 1 or 2 miles, depending on which alternative is followed, the two East Cerbat alternatives share a common alignment.

2.2.1.1 Design Features Unique to the East Cerbat Alternatives

UNSE owns and operates a 69-kV transmission line that extends along US-93 and would be within the same corridor as the proposed 230-kV transmission line. Rebuilding and/or removal of most of the segments of the 69-kV transmission line where they occur along the same alignment as the proposed 230-kV transmission line would occur as a result of implementing both East Cerbat alternatives. This would occur along an approximate 4.3-mile-long segment of US-93 near Coyote Pass.

The following description is given as if travelling into Kingman on US-93 and is illustrated on Map 10 (Appendix A-1). The first approximate 2.5-mile segment of the 69-kV line in the same corridor as proposed for the new 230-kV transmission line is supported by wood poles. These wood poles would not be removed, but the 69-kV line would be moved to the new 230-kV structures and the wood poles would be topped at a height of approximately 35 feet. They would continue to support a distribution line. Two new wood poles would need to be installed near the Coyote Pass Trailhead to support the distribution line where it is currently attached to steel monopoles.

The next approximate 2 miles of the 69-kV transmission line were recently rebuilt; old wood poles were replaced with steel monopoles. This section of the alignment crosses US-93 twice. For the first approximate 0.7 mile of this segment, which is mostly on the north side of US-93, the steel monopoles would be removed and the 69-kV line would be moved to the new 230-kV transmission line structures. For the last approximate 1.2 miles of this segment from where it would turn south in the vicinity of Camp Beale Springs, cross US-

93, and continue east towards I-40 through the western part of Kingman, the 69-kV line would remain as is and the new 230-kV transmission line would be built next to the 69-kV line, as these 69-kV poles also support an electrical distribution line. The length between 230-kV structures is too long to accommodate the distribution line, and for this reason, the 69-kV line and electrical distribution line would not be moved to the 230-kV structures.

A communication line attached to a 0.6-mile segment of the 69-kV steel poles on the northeast side of US-93 is also located in this area. Because the 69-kV poles would be removed and the 230-kV line poles would be more widely spaced and too far apart to support the communication line, it is expected the communication line owner would install wood poles along the edge of UNSE's ROW to support the communication line. This communication line continues north along the northeast side of US-93 where it is supported on UNSE's wood poles. These wood poles would be topped at a height of approximately 25 feet and left in place to support the communication line.

2.2.1.2 E1 East Cerbat Alternative

The E1 East Cerbat Alternative is the shortest of all 6 proposed action alternatives, totaling 17 miles in length; it would cross the least amount of BLM-administered land. It would extend east from the Harris Substation to the base of mountainous terrain where it would turn and generally follow a northerly route through the mountainous terrain. The route would cross the Burlington Northern Santa Fe (BNSF) Railroad as well as Historic Route 66 (US-66) and then travel over the mesa between US-66 and Interstate 40 (I-40). It would then cross I-40 and head north towards US-93. Just prior to US-93, the alignment would turn northwest and travel along US-93. The alignment would cross and run along the northeast side of US-93 for a short distance before crossing back over and running along US-93 toward the Arizona Department of Transportation (ADOT) Port of Entry. The alignment would turn west for a short distance, continuing along the alignment of an existing 69-kV transmission line and extending away from US-93, before turning north at Kofa Road and remaining along the alignment of the 69-kV transmission line. Shortly after crossing SR-68, the alignment would run parallel to US-93 again, following the alignment of the existing 69-kV transmission line, and continue along US-93 to a point just south of Mineral Park Road. At this point, it would turn north, cross US-93, and terminate at the proposed location for a new substation.

2.2.1.3 E2 East Cerbat Alternative

The E2 East Cerbat Alternative is the longest alternative, at 17.9 miles. The E2 East Cerbat Alternative is very much the same as the E1 East Cerbat Alternative, with the exception of approximately the first 2 miles of the alignment. The E2 East Cerbat Alternative would travel south out of the Harris Substation rather than east like the E1 East Cerbat Alternative. After a short distance, it would turn north and travel into the same mountainous terrain discussed for the E1 East Cerbat Alternative. Just prior to crossing the Burlington Northern Santa-Fe Railroad, the E2 East Cerbat Alternative would follow the same alignment as described for the E1 East Cerbat Alternative. This alternative would parallel existing transmission line infrastructure for nearly 0.5 mile and the majority of it would run along the boundary of BLM land rather than cutting across BLM land like the E1 East Cerbat Alternative.

2.2.2 West Cerbat Alternatives

There are four West Cerbat alternatives, all of which would travel westerly from the origination point at the Harris Substation and generally follow Shinarump and Kirkland roads before turning north and following the boundary of the CFRA. The primary distinguishing feature of the four alternatives is the differing routes and land type traversed near the southwestern boundary of the CFRA. In this area, the W1 and W2 West Cerbat alternatives would be built on BLM-administered land, whereas the W3 and W4 alternatives would be built on a combination of BLM and private land. The first approximate 2 miles and the last approximate 12 miles would be the same for all four of the West Cerbat alternatives.

2.2.2.1 Design Features Unique to the West Cerbat Alternatives

There are no design features unique to the West Cerbat Alternatives.

2.2.2.2 W1 West Cerbat Alternative

The W1 West Cerbat Alternative would span the least amount of private land. It would travel north from Shinarump Road across BLM-administered land and would then enter the CFRA. The transmission line would follow the southern and western boundaries of the CFRA through Golden Valley. Just south of SR-68, the transmission line would turn east and follow the northern boundary of the CFRA for a short distance before turning north to extend along Kofa Road, where it would be within the existing alignment of a 69-kV transmission line which extends north and northwest to just south of the proposed Mineral Park Substation (this section of the alignment follows the same route as described for the E1 and E2 East Cerbat alternatives).

2.2.2.3 W2 West Cerbat Alternative

The W2 West Cerbat Alternative is nearly identical to the W1 Alternative but for a 1.3-mile segment, which would be constructed along the edge of the CFRA (i.e., on the border but inside the CFRA), whereas the W1 West Cerbat Alternative in this area would be built approximately 800 feet inside the CFRA. The W1 West Cerbat Alternative was designed to be deeper into the CFRA to minimize the effects to residences located close to the boundary. This alternative would cross the most BLM-administered land and one of the least amounts of private land.

2.2.2.4 W3 West Cerbat Alternative

The W3 West Cerbat Alternative varies from the W1 and W2 West Cerbat alternatives because it would be built along Shinarump Road for an additional 1 mile, extending across more privately owned land. It would turn north from Shinarump Road at Tooman Road and continue north on private land for 1 mile before it reaches the western boundary of the CFRA. At this point, all West Cerbat Foothill alternatives would follow the same route to the Mineral Park Substation.

2.2.2.5 W4 West Cerbat Alternative

The W4 West Cerbat Alternative would cross the most private land. The W4 West Cerbat Alternative would differ from the other three West Cerbat alternatives in that it has an approximate 2.5-mile segment that would be built south of Shinarump Road along the north side of the Western Area Power Administration (WAPA) Davis to Prescott 230 kV Transmission Line. It would follow the Davis to Prescott line for 1.5 miles; the other approximately 1-mile segment would follow residential roads. At one of the residential roads, Pine Road, it would turn north, extending across Shinarump Road and following the same route along Tooman Road as described for the W3 West Cerbat Alternative.

2.2.3 Right-of-Way Needs

2.2.3.1 Bureau of Land Management

For all proposed action alternatives, UNSE is requesting a long-term ROW with right of renewal. The transmission line ROW would be 125 feet wide for a specific number of miles depending on the proposed action alternative selected across BLM-administered land (Table 8, Appendix A-2). In addition, a 10-acre parcel of land would be needed for the proposed Mineral Park Substation, and additional ROW would be needed where access roads along the transmission line would be outside of the 125-foot-wide ROW. The length of access roads needed is summarized in Tables 9 and 10 in Appendix A-2.

UNSE is also requesting temporary use areas which would allow extra space for construction activities. Temporary use areas would be needed approximately every 10 structures to provide a larger work area to install the structure as well as at each pulling and tensioning site.

2.2.3.2 City of Kingman Lands

For the East Cerbat alternatives, UNSE would use an existing ROW easement in Section 15, Township 21 North, Range 17 West, Gila and Salt River Baseline and Meridian. where transmission line facilities exist across lands owned by the City of Kingman. UNSE would request an amendment to their ROW authorization to account for project upgrades.

2.2.3.3 State of Arizona Trust Lands

UNSE would use an existing State ROW easement in Sections 4 and 36, Township 22 North, Range 17 West and Section 8, Township 21 North, Range 17 West, all in G&SRM, where transmission line facilities exist across State of Arizona Trust land. UNSE would request an amendment to their ROW authorization to account for project upgrades.

2.2.3.4 Private

Once the final route is determined, UNSE would purchase private land rights through negotiations with landowners based on independent appraisals. Landowners would retain land titles, and landowner ROW use would be allowed for any purpose compatible with UNSE's rights, including safety-related requirements. If good faith negotiations are not successful, UNSE would acquire the additional ROW through condemnation under its eminent domain authority. All private land rights would be acquired in accordance with applicable laws and regulations.

2.2.4 Disturbance Acreages and Length of Access Roads and Proposed Action Alternatives

Table 8 (Appendix A-2) summarizes the length of each proposed action alternative across each land jurisdiction. Tables 9 and 10 (Appendix A-2) summarize the distance of access road needed to be built and improved. Tables 11 and 12 (Appendix A-2) summarize the permanent and temporary ROW needed for each land jurisdiction.

2.2.5 No Action Alternative

The no action alternative would result in the BLM not granting a ROW to UNSE; as a result, the transmission line and Mineral Park Substation would not be built. Improvement of reliability and support of the projected load increase of the electrical infrastructure near Golden Valley and Kingman would not occur. The no action alternative is analyzed in this EA to provide a baseline for comparison of environmental effects and to demonstrate the consequences of not meeting the purpose and need for the proposed action.

2.2.6 Preferred Alternative

Based on the analysis provided in Chapter 4 of this EA, the BLM has selected the E1 East Cerbat Alternative as the preferred alternative. This is the environmentally preferred alternative for the following reasons: both East Cerbat alternatives would be within designated utility corridors, would follow or be proximate to existing linear infrastructure more than the West Cerbat alternatives, would be proximate to less residential properties, and would have less impacts to the CFRA. While there are some resources which would be affected more from the E1 East Cerbat Alternative than some or all of the West Cerbat alternatives, in considering all impacts to all resources, the E1 East Cerbat Alternative would have less impacts than the others. This analysis considers unavoidable adverse impacts that would be anticipated from the alternative routes. Of primary consideration are affects to land use and socioeconomics. As noted above, this

alternative would have the shortest route length; however, it would have more surface-disturbing impacts to private land than the West Cerbat alternatives.

2.3 Alternatives Considered but Eliminated

During scoping, several alternatives were proposed for alternative alignments and the proposed transmission line's design which, after consideration, were eliminated from further consideration. Refer to Table 13 (Appendix A-2) for descriptions of these alternatives and the rationale as to why they were eliminated from further consideration.

2.4 Resource Protection Measures

As part of all the proposed action alternatives, resource protection measures are identified to lessen potential impacts to biological, cultural, visual, water, soils, noise, and public health and safety. See Appendix C for a description of the protection measures.

CHAPTER 3: AFFECTED ENVIRONMENT

This chapter describes the existing conditions of the environment within the project area and sets up the discussion of potential impacts upon this environment in Chapter 4. Table 14 (Appendix A-2) summarizes the resources and issues reviewed for this project. Resources not present within the project study area, as well as those present and not affected, are not discussed further. Those resources that are present and potentially affected are discussed in this and the following chapter.

3.1 Land Use

This section summarizes the lands within the project area in terms of ownership and jurisdiction, existing land use, zoning, and planned and proposed uses. The land use study area includes those areas where land use could be directly or indirectly affected by the proposed project. Specifically, for existing land use, the study area is 1 mile on either side of the proposed transmission line centerline. For ownership and jurisdiction, existing zoning, and planned and proposed land use, the study area is 2 miles on either side of the proposed transmission line centerline. Inventoried data was gathered through aerial photograph interpretation, field verification, and the review of various documents, including general plans and maps, zoning/land development codes, and master plans. In addition, jurisdictional websites were reviewed, and direct contact was made with federal, state, and local agency staff.

A separate discussion on properties with the potential to be directly affected is provided below in Section 3.2 *Socioeconomics*.

3.1.1 Land Ownership and Jurisdiction

Land ownership and jurisdiction defines the limits of administrative or jurisdictional control maintained by the major landholders located in the vicinity of the project (Figure 4, Appendix A-3). Land status designations are important to the siting of transmission lines because they influence or directly determine such things as expenditure of management funds, land use and zoning regulations, and administrative planning goals for particular parcels or districts. Table 15 (Appendix A-2) summarizes land ownership by alternatives.

Federally managed, BLM-administered, public land and private land comprise the majority of jurisdiction along proposed action alternatives. The federally managed land crossed by the proposed action alternatives is administered by the BLM Kingman Field Office. There are also several areas held in public trust and administered by the ASLD.

The entire study area is within Mohave County, Arizona. The City of Kingman, located in the southeastern portion of the project study area, is the county seat of Mohave County. Portions of the East Cerbat alternatives cross over lands administered by the City of Kingman. Golden Valley, located along the route common to all alternatives and the West Cerbat alternatives, is an unincorporated area and is administered directly by Mohave County.

3.1.2 Existing Land Use

There are a mix of existing land uses within the project study area. Existing land uses are depicted in Figure 5 (Appendix A-3).

3.1.2.1 Residential

Residential areas are categorized and depicted in Figure 5 (Appendix A-3) based on the density of dwellings within a given area. Rural residential areas are low-density housing areas, including ranchettes, rural residences, and other single-family dwellings on large rural and/or agricultural parcels. Much of Golden Valley falls within this category. Due to the relatively small population size within the City of Kingman

and Mohave County and the rural nature of much of the study area, residential areas with four or more dwelling units per acre are considered medium-high density residential. This category includes most developed subdivisions as well as high-density housing, such as condominiums, townhouses, and apartments. A count of residential properties adjacent to the proposed action alternatives is summarized in Table 16 (Appendix A-2).

Several subdivisions are within the project study area: So-Hi Estates, Walnut Creek Estates, Sacramento Valley Ranches, Golden Sage Ranchos, Sun West Acres, Golden Valley Ranches, Metcalfe Acres, and the Kingman New School House Addition.

3.1.2.2 Public and Quasi-Public

Public and quasi-public uses include schools, churches, cemeteries, airports, and other facilities generally associated with public use. There are no public or quasi-public facilities along the West Cerbat alternatives. Along the East Cerbat alternatives and within the City of Kingman, public and quasi-public land uses include the Mohave County Sheriff's Department, several Mohave County offices, Kingman Cerbat Justice Court, Mohave County Jail, Mohave County Juvenile Detention Center, Mohave Museum of History and Arts, Kingman Visitor Center, Lee Williams High School, Palo Christy Elementary School, and Grandview Public Pool. ADOT operates the Kingman Port of Entry and Weigh Station near the intersection of US-93 and SR-68. There are no airports within the study area.

3.1.2.3 Commercial

Commercial uses, which include business, office, and retail land uses, are generally located along the East Cerbat alternatives in or near the City of Kingman, specifically near the intersection of I-40 and US-93 and along major transportation corridors, including US-93 and SR-68. A variety of transportation services, such as truck stops, service stations, automobile repair facilities, vehicle sales, convenience stores, fast food and sit-down restaurants, and other related service businesses, are located along these transportation corridors. No commercial uses are located along the West Cerbat alternatives.

3.1.2.4 Industrial

Industrial land uses are found near the point of origin of all the proposed action alternatives at the Harris Substation along I-40 and also near the US-93 and SR-68 interchange. Industrial facilities near the E1 and E2 alternatives include Nucor Steel, Harris and McConnico electrical substations, a variety of warehouses and trucking distribution centers, and several vehicle scrap yards. The West Cerbat alternatives are near the Nucor steel plant and some warehouse/distribution facilities. Further west along the W4 alignment, there is a material extraction area south of Shinarump Road used by Mohave County. Another area along the West Cerbat alternatives near the US-93 and SR-68 interchange includes a disturbed area that is used for sand and gravel extraction.

3.1.2.5 Parks/Recreation/Preservation

Parks, recreation, and preservation uses include areas, sites, or facilities used for recreational purposes or formally designated by a governmental agency for conservation or protection purposes. Such areas within the project study area are depicted on Figure 5 in Appendix A-3 and include the CFRA, Camp Beale Springs, Locomotive Park, Charles Metcalfe Park, Hubbs Neighborhood Park, and the Grandview Public Pool.

The CFRA is the largest park located within the project area. The East Cerbat alternatives cross the CFRA as the alignment parallels US-93 within a BLM-designated utility corridor. The West Cerbat alternatives extend along BLM-administered land just within the westernmost boundary of the CFRA. The CFRA, jointly managed by the City of Kingman and BLM, is designated as an 11,300-acre Special Recreation

Management Area under the Kingman RMP (BLM 1993). The area consists of federal, state, county, and city land.

Recreational opportunities in the CFRA include hiking, mountain biking, equestrian activities, and a variety of other dispersed recreational activities. Four trailheads occur within 0.5 mile of the East Cerbat alternatives; none occur near the West Cerbat alternatives. Metwell Drive Trailhead is located about 0.5 mile north of the I-40 interchange in Kingman on the southwest side of US-93. Camp Beale Trailhead is located about 1.5 miles north of the I-40 interchange in Kingman on the north side of US-93. Coyote Pass Trailhead is located 1.5 miles north of Metwell Drive Trailhead on the southwest side of US-93. Badger Trailhead is located on the northeast side of the US-93 and SR-68 interchange. These trailheads are the 4 most accessible access points for approximately 38 miles of trails within the study area, including the Monolith Gardens, Foothills Rim, Rattler, Sidewinder, Camp Beale Loop, Badger, and Castle Rock trails.

In total, the CFRA has over 38 miles of non-motorized trails that receive year-round use from hikers, mountain bikers, and equestrian users. Visitation to the area has been documented using visitor sign-in boxes located strategically throughout the area and then recording that documented use in the Recreation Management Information System, a national BLM database. Since 2006, non-motorized annual visitation to the CFRA averages approximately 3,307 visits per year, while dispersed visitation (visitors participating in indirectly managed activities such as general recreational use) accounts for an average of about 1,407 visits per year.

Camp Beale Springs, a historic property, is located within the CFRA. It lies just southeast of a small segment of the common portion of East Cerbat alternatives that are proposed to be built on the east side of US-93. There are two historical markers memorializing the significance of this area as an outpost during the Hualapai War and later as a place of temporary resettlement for the Hualapai people. There are trails and picnic tables as well.

3.1.2.6 Range Land/Undeveloped

Large areas of undeveloped land are found throughout the majority of the study area, particularly west and south of the City of Kingman and north of Golden Valley along the US-93 corridor. Some of this land is used for livestock grazing, which primarily occurs on private land and open rangelands administered by the BLM and ASLD. Grazing allotments and leases issued by the BLM and ASLD within the study area are listed in Table 17 in Appendix A-2.

3.1.2.7 Transportation, Utilities, and Communication Towers

Transportation

Ground transportation features within the study area include I-40, US-93, and SR-68, as well as city and county jurisdictional roads and two railroads. There are numerous major local roadways within the study area, including Shinarump Road, Bacobi Road, and Mineral Park Road. There are no airports within the study area.

Utilities

Utilities inventoried include electrical transmission lines, electrical substations, major pipelines, fiber optic lines, communication lines, water lines, wells, and wastewater lines. Transmission lines are electric lines that transport electricity in bulk for long distances. Electrical transmission lines within the study area are operated by UNSE, Mohave Electrical Cooperative, and WAPA. UNSE operates several 69-kV transmission lines within the study area located primarily along major roadways. In addition, UNSE owns and operates several substations within the study area. These lines are built on varied structures such as lattice towers, steel monopoles, and wood poles. Electrical distribution lines are located throughout the study area, usually adjacent to roads.

A variety of fiber optic and telecommunication lines extend throughout the project study area, generally along the primary transportation routes.

Several public and private wells primarily associated with residential areas are also located within the study area. Water and wastewater pipelines are also found throughout the study area, generally within or adjacent to roads in developed areas.

Communication and Radio Towers

The KAAA 97.5 FM radio tower is located near the intersection of I-40 and US-66 in the southern portion of the project study area. It broadcasts 24-hour talk radio. A multi-use radio tower is located near the junction of US-93 and SR-68 in Golden Valley and primarily serves KYET 1170 AM radio broadcast. KYET broadcasts classic country.

There is also a major microwave tower located between the CFRA and I-40 in the southern part of the study area.

3.1.3 Zoning

Zoning is the single most commonly used legal device for implementing a land use plan or for controlling the type of development within a given area. Zoning is an exercise of police power. This police power resides with the state government, whose purpose is to promote the health, safety, and general welfare of the community. Most state legislatures delegate the power of zoning to local governments, and this is true of Arizona as well. The source of statutory authority for the Zoning Code is in the form of the State Enabling Act.

Zoning was inventoried and mapped for portions of Mohave County, City of Kingman, and all areas where land could be directly or indirectly affected by the proposed project (Figure 6, Appendix A-3). More details on zoning and residential information is found in Section 3.2 *Socioeconomics*.

3.1.4 Planned and Proposed Land Use

Planned land use information was obtained from general and comprehensive area plans adopted by federal, state, county, and municipal agencies. The primary purpose of general and comprehensive plans is defined in state law: "The comprehensive plan shall be developed to conserve the natural resources of the county (city), to ensure efficient expenditure of public funds, and to promote the health, safety, convenience, and general welfare of the public."

The Comprehensive Plan serves as a guide for decisions by the Planning and Zoning Commission and Board of Supervisors concerning growth and development, while also serving as a guide for the private sector in making informed investment decisions.

The planning efforts and information available from the BLM, State of Arizona, and Mohave County describe short- and long-term goals and expectations but vary substantially in complexity and level of accuracy. Planned land use designations have been generalized to incorporate different jurisdictional categories (Figure 7, Appendix A-3).

The primary planning documents with regulatory authority over the lands crossed by the alternatives include the Mohave County General Plan, City of Kingman General Plan Update 2030, and the RMP of the Kingman Field Office of the BLM.

3.1.4.1 BLM

The Kingman RMP (1995) designates two utility corridors within the study area: Davis-Prescott, a 2-mile-wide utility corridor extending east-west across the southern portion of the study area, and the Highway, a 1-mile corridor generally extending along US-93 northwest of Kingman and along I-40 both east and west of Kingman. These corridors are depicted in Figure 7 in Appendix A-3.

In addition, portions of the study area are managed for visual resources in accordance with the BLM's VRM objectives. Please refer to Section 3.5 *Visual Resources* for more information.

The BLM manages the area east of Tooman Road and northwest of the City of Kingman as part of the CFRA, referred to as the Kingman Regional Park Special Recreation Management Area in the RMP.

3.1.4.2 State of Arizona

Portions of the study area consist of undeveloped tracts of land administered by the ASLD. The State of Arizona does not have a Comprehensive Management Plan for lands in the vicinity of the study area. The majority of State of Arizona land in the study area is currently leased for grazing and no change is expected in the near future.

3.1.4.3 Mohave County

The Mohave County General Plan was adopted in September 2015. The primary purpose of the General Plan is to meet state requirements for future development of the county and provide the citizens of Mohave County an opportunity to incorporate their own ideas for the county into the plan. Most importantly, the 2015 General Plan is a public tool for the citizens of Mohave County to guide the growth they wish to see through the year 2035.

The county has been divided into a number of land use designations. The intent of these land use categories is to provide direction in determining the growth patterns for today and for the future. The General Plan Land Use Diagram is based on the goals, objectives, and policies developed through citizen, agency, and governmental participation and takes into consideration physical conditions and environmental constraints. None of the land use designations within the study area exclude an electrical transmission line.

3.1.4.4 City of Kingman

The City of Kingman General Plan was updated in 2014. Its goal is to guide long-term growth and development for the City of Kingman and its planning area. It calls for a balanced mix of land uses, improving traffic efficiency, and preserving air and water quality. None of the land use designations within the study area exclude an electrical transmission line.

3.1.4.5 Proposed Land Use

The proposed land use sub-category discusses specific land development proposals that have been identified by the land development departments of Mohave County and the City of Kingman as well as by the BLM. These jurisdictions were contacted in 2016 and 2017 in order to obtain information about current land use developments proposed in the study area. Proposed land uses are depicted in Figure 8 in Appendix A-3.

Western Wind, LLC has a lease for land next to its existing five-turbine Kingman project. The company has expressed interest in developing a similar number of turbines on this parcel. Additional small-scale solar energy-generating facilities are also a possibility in the vicinity of existing facilities.

For the purposes of this study, undeveloped areas are categorized as open space. These areas may also include subdivisions that have been platted and razed for development, but either no construction has taken place or the development appears to have been abandoned in portions or in its entirety. Known as "legacy

lots," thousands of lots in these subdivisions were platted and sold off in Mohave County as inexpensive land deals in the 1930s. Many of these lots remain vacant to this day. These lots are available for development pending permit approval.

ADOT and the Federal Highway Administration, in coordination with the BLM, have initiated a study to identify a preferred alternative for improving traffic flow at the I-40 and US-93 interchange in west Kingman. Alternatives for a new traffic interchange location, including possible improvements to the existing Beale Street traffic interchange, were evaluated for providing a free-flow connection between I-40 and US-93.

The Interstate 11 (I-11) and Intermountain West Corridor is envisioned to accommodate multiple modes and uses such as highway, rail, and utilities. The first phase of the project is underway between Nogales, Arizona and Wickenburg, Arizona. In the future, the north section of the project connecting Wickenburg to Las Vegas via US-93 and Interstate 515 will be revamped and replaced by I-11. Although construction has yet to commence, the northern extension of I-11 remains an integral part of the Intermountain West Corridor long range plan.

3.2 Socioeconomics

This section draws from some of the information provided above in *Land Use* to describe the environmental settings of the alternative routes in regard to the lands that are proximate to them. While this section concentrates on lands that are residential in nature, lands with other uses are mentioned where it is relevant to understand the context in which residential lands exist. The reason for this focus on residential lands is because where research has found effects to property values from transmission lines, these effects have mostly been to residential properties. In some instances, commercial and industrial property values could be affected; however, these effects appear to be limited to properties where a transmission line or its easement restricts the properties' ability to maximize revenue generation. To predict these effects is beyond the scope of this analysis. Refer to Appendix D for a discussion on the BLM's review of the research and its application for this analysis.

For purposes of this section, the affected environment is defined as those properties that have been developed for residential occupation or vacant lands where zoning would allow for residential development, except for the instances noted below where circumstances dictate otherwise. The comparisons between the alternative routes refer to the number of properties that are residential in nature and within 1,000 feet of the centerlines. This distance is used because the research shows that effects to residential properties most often occurred within 1,000 feet of transmission lines.

This analysis uses zoning and planning designations by Mohave County and the City of Kingman to consider which properties are residential. Properties that are zoned by Mohave County that may be used for residential uses and are within the affected environment are Single Family Residential/Manufactured Homes Prohibited (R-O), Residential Recreation (R-E), Agricultural-Residential (A-R), and General (A). In many cases properties zoned A are included if occupied residential properties and/or properties zoned for residential use are within their vicinity. There are a few vacant properties that have potential conflicts between their plan designation as commercial and their zone category as A. These conflicts arise when the surrounding land could be developed for either type of use. The A zone category acts as a placeholder until it becomes clear how the properties would be developed and the land could be rezoned. With zoning controlling the allowable use, there would be no legal conflicts with the planned designation should they be developed for residential use. Therefore, these properties have been included in the residential category for purposes of this analysis. Conversely, in a few limited instances, some properties are zoned A-R; however, their use is industrial in nature, as with properties occupied by railroads while their plan designations are industrial or commercial. In these cases, these would not be counted as residential properties.

Lands that are under the jurisdiction of the City of Kingman that may be used for residential uses and are within the Affected Environment are Residential, Multiple Family, Low Density (R-2); Residential, Single-Family, 6,000 square foot Lot Minimum (R-6); and Recreation/Open Areas (R-O) that are 5 acres or greater and have an approved variance for residential use.

In addition to those categories specifically for residential use, Table 16 in Appendix A-2 summarizes the number of residential properties within 1,000 feet of the centerline of each of the alternative routes. Table 18 identifies the number of miles of proposed power line that would be within 1,000 feet of properties zoned residential by alternative and Table 19 summarizes the number of these properties with habitable structures.

3.2.1 Descriptions of Properties Along the Proposed Action Alternative Routes

3.2.1.1 Route Common to All Alternatives

This common route runs parallel with and west of US-93, and the proposed common route would be the same as the existing Hoover-Kingman 69-kV transmission line, except for the short segment crossing the highway to the proposed substation in the vicinity of Mineral Park Road. Should the ROW be granted, the wires for the Hoover-Kingman 69-kV line would be hung on new and taller poles along with the proposed 230-kV transmission line wires.

The northern approximate 6 miles of this route passes through vacant private lands, as well as State Trust and BLM public lands. The private lands along this portion are subdivided into parcels mostly 40 acres or larger and are all zoned A-R, with the exception of one zoned R-E. South and east of the State Trust and BLM public lands the private lands north of West Chino Drive proximate to this proposed route are mostly vacant and generally vary in size from 2.5 acres to 40 acres. South of West Chino Drive the parcels are generally smaller, from 1 to 2.5 acres, and contain a mix of developed and vacant properties. The lands closer to the traffic interchange of US-93 and SR-68 are mixed with vacant and developed properties, mostly residential in nature, with some commercial properties predominately in the vicinity of these highways. These lands are mostly zoned A-R, with several zoned R-E and R-O, and a few as R-O/A. This route common to all alternatives runs a distance of approximately 5.5 miles where it is within 1,000 feet of residential properties.

The vacant private, State Trust, and BLM public lands in the northern portion of this common route are primarily used for livestock grazing (see Table 17, Appendix A-2 for grazing allotments).

3.2.1.2 East Cerbat Alternatives

Both East Cerbat 1 and 2 alternatives share a common route for most of their lengths. This route, along with the route common to all alternatives, are where residential properties exist in relation to the East Cerbat alternatives. No residential properties are proximate to the two East Cerbat alternatives south of where they diverge from the East Cerbat common alternative.

As described above with the route common to all alternatives, the properties proximate to this route in eastern Golden Valley in the vicinity of the traffic interchange of US-93 and SR-68 are characterized as low-density residential and are mostly zoned A-R, except for two that are commercial with frontages along SR-68. These parcels generally range in size from 1 to 2.5 acres. East of these properties are lands administered by ADOT for the Kingman Port of Entry and Weigh Station, and in between that and the developed properties within Kingman's city limits are predominantly BLM public lands and lands owned by the City of Kingman that are within the CFRA. Approximately 0.1 mile along this portion of the East Cerbat common route is within 1,000 feet of residential properties.

Proximate to the East Cerbat common route within the City of Kingman the development is relatively dense, and all but a handful of residential properties are larger than 2 acres. The 69-kV transmission line in this area would not be collocated on the 230-kV transmission line structures. Rather, it would remain in place and the 230-kV line would be built next to it. In this area the properties fronting US-93 are commercial, most of them providing highway services. Residential properties exist immediately behind these. In this area the proposed route lies almost entirely south of the developed properties, some of which are zoned commercial but appear to be used primarily for residences and therefore, are included for this analysis as residential. As this route approaches I-40, the properties within 1,000 feet of this route's centerline are almost all commercial, except for one area of vacant subdivided land south of Highway 93 and west of I-40 that contains 212 contiguous parcels. Taken as a whole, these properties are unlike others in the affected area. The majority of these are 0.25 acre or less, and these parcels do not appear to have means of ingress/egress. Approximately 1.5 miles along this portion of the East Cerbat common route are within 1,000 feet of residential properties.

The properties east of I-40 in the vicinity of the I-40/US-93 traffic interchange are mostly public properties and include the Mohave County Sheriff's Department, several Mohave County offices, Kingman Cerbat Justice Court, and Mohave County Jail. In between these properties and US-66, the lands are privately owned vacant and mostly zoned A-R, with the larger vacant parcels within Kingman's city limits zoned Recreation-Open Area. These properties' sizes generally range from 10 to 100+ acres. Approximately 1.5 miles along this portion of the East Cerbat common route are within 1,000 feet of residential properties.

Still further south in the vicinity of US-66, I-40, and the Burlington Northern and Santa Fe Railway, the private lands are largely commercial and industrial. A recreational vehicle park is also located along US-66 in this area. Approximately 1 mile south of this area, the East Cerbat 1 and 2 alternatives diverge for approximately 1.5 miles, and the lands through which they pass are similar, being BLM public lands and private lands. Some of these private lands are vacant, interspersed with lands developed for commercial and industrial uses and livestock grazing.

There are 228 residential properties[1] within 1,000 feet of the East Cerbat 1 and 2 alternatives, 142 of which have habitable structures.

The total length of the East Cerbat 1 Alternative is 17 miles and that of the East Cerbat 2 Alternative is 18 miles. The lengths of both these alternatives within 1,000 feet of residential lands aggregate 8.6 miles, 50.7 percent and 47.9 percent of the East Cerbat 1 and East Cerbat 2 alternatives, respectively.

3.2.1.3 West Cerbat Alternatives

A majority of the West Cerbat alternatives are on BLM public lands that are adjacent to private lands, most of which are zoned for residential uses, which makes them distinctly different from the route common to all alternatives and the East Cerbat alternatives. The route common to all alternatives—except for that segment parallel with US-93 where that highway separates BLM public and private lands—the East Cerbat alternatives, and the West Cerbat 3 and 4 alternatives south of where they diverge from the West Cerbat 1 and 2 alternatives typically are surrounded with properties of the same ownerships as those that run through them. Where residential development exists or there is the potential for it to exist, this development is or would be on both sides of these routes. With the BLM public lands being vacant and within the CFRA, there is no potential for residential development on them, and so in these segments, should a ROW be granted for this alternative, the proposed transmission line would be on the boundary between the residential properties and the BLM public lands.

[1] This number of residential parcels does not include the vacant subdivided land south of US-93 and west of I-40 that contains 212 contiguous parcels, as these parcels are undeveloped, appear to have no access, and do not seem to be developable.

Much of the private lands along this West Cerbat Common route are vacant and predominantly zoned A-R, except for the southern portion where developed parcels are more prevalent. This area is characterized with a mixture of developed and vacant properties that are generally 1 to 4 acres, with some in the 10- to 20-acre range. These are mostly zoned A-R except for some parcels closer to SR-68 that are zoned commercial. This West Cerbat common route is approximately 4.1 miles, all of which are within 1,000 feet of residential lands.

3.2.1.4 West Cerbat 1 and 2 Alternatives

The West Cerbat 1 and 2 and the West Cerbat 3 and 4 alternatives diverge near the intersection of South Tooman Road and West Unkar Drive. The West Cerbat 1 and 2 alternative turn east, following a common route on BLM public lands with private residential lands to the south. These private lands are mostly vacant, with some developed for residential use, and are zoned A-R. Approximately 600 feet east of the private lands the route turns southward and diverges into the West Cerbat 1 and 2 alternatives. The West Cerbat 1 Alternative continues south following a route roughly 600 to 900 feet east of the private properties. The West Cerbat 2 Alternative turns southwestward, where it follows the boundary of BLM public and private lands. This setting would have the same characteristics of those described above where this route is adjacent to private lands and, to a lesser extent, where they are further away but still within the viewshed of the private lands. These alternatives are within 1,000 feet of residential properties for approximately 2.2 miles (West Cerbat 1 Alternative) and approximately 2.4 miles (West Cerbat 2 Alternative). These alternative routes continue southwards through BLM public lands and turn southeast along Shinarump Road where they converge with the West Cerbat 3 Alternative and, after a short distance further southeast, the West Cerbat 4 Alternative.

The total length of the West Cerbat 1 Alternative is 17.6 miles. The length of this route within 1,000 feet of residential lands is 11.8 miles (67.1 percent of the total route). The total length of the West Cerbat 2 Alternative is 17.7 miles. The length of this route within 1,000 feet of residential lands is 12 miles, 67.6 percent of the total route.

There are 266 residential properties within 1,000 feet of the West Cerbat 1 Alternative, 76 of which have habitable structures. There are 267 residential properties within 1,000 feet of the West Cerbat 2 Alternative, 76 of which have habitable structures.

3.2.1.5 West Cerbat 3 and 4 Alternatives

From where the West Cerbat 3 and 4 alternatives diverge from the West Cerbat 1 and 2 alternatives, they continue south along a common route through private property where they diverge in the vicinity of West Shinarump Drive and South Pine Road. The West Cerbat 3 Alternative follows West Shinarump Drive through private lands and then onto BLM public lands. The West Cerbat 4 Alternative continues southward along South Pine Road, then turns southeast and follows the Davis-Prescott 230-kV transmission line onto BLM public lands. Except for some of the parcels along West Shinarump that are close to the private/BLM public lands boundary, most of the parcels are vacant. The private lands in this area are zoned A-R and range in size from approximately 2 to 40 acres. The lengths of the proposed action alternatives in this area where they are within 1,000 feet of residential properties are approximately 1.8 miles for the West Cerbat 3 Alternative and approximately 2 miles for the West Cerbat 4 Alternative.

After the four West Cerbat alternatives converge, they continue southeast towards McConnico and the Harris substation. The private lands in this area proximate to this alternative are a mixture of vacant lands and lands developed for commercial and industrial uses.

The total length of the West Cerbat 3 Alternative is 17.4 miles, 11.4 miles—or 65.6 percent—of which is within 1,000 feet of residential lands. The total length of the West Cerbat 4 Alternative is 17.6 miles, 11.6 miles—or 65.8 percent—of which is within 1,000 feet of residential lands.

There are 307 residential properties within 1,000 feet of the West Cerbat 3 Alternative, 87 of which have habitable structures. There are 343 residential properties within 1,000 feet of the West Cerbat 4 Alternative, 79 of which have habitable structures.

3.3 Biological Resources

A Biological Evaluation (BE) has been prepared for this project and is contained within Appendix E. A summary of the findings is provided below.

3.3.1 General Wildlife

A diverse array of wildlife species associated with the Mojave Desert Scrub vegetation community can be found within the project area. Fish and amphibian species are not found in the project area because of the desert environment and lack of perennial water sources. The largest mammals that could be found in the project area are mule deer (*Odocoileus hemionus*) and, less frequently observed, the mountain lion (*Puma concolor*). Some of the smallest include species of rodents and bats such as the Arizona pocket mouse (*Perognathus amplus)* and Harris's antelope squirrel (*Ammospermophilus harrisii*).

Many resident and migratory bird species frequent the area; examples include the red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), loggerhead shrike (*Lanius ludovicianus*), turkey vulture (*Cathartes aura*), mourning dove (*Zenaida macroura*), cactus wren (*Campylorhynchus brunneicapillus*), and the common raven (*Corvus corax*). As it is a desert environment, reptiles are common; several species of lizard, such as the spiny lizard (*Sceloporus* spp.), and snakes occur in the project area. Invertebrates such as insect species are also numerous. A list of wildlife species observed during field reviews can be found in Appendix C of the BE.

3.3.2 BLM Sensitive Wildlife Species

Five BLM-listed sensitive wildlife species have the potential to be impacted by the project. Condensed information extracted from the BE is presented below.

3.3.2.1 Sonoran Desert Tortoise (Gopherus agassizii)

All proposed action alternatives would pass through desert tortoise habitat known to support low densities of the Sonoran desert tortoise (see BE for a map of habitat as well as a detailed description of the species' protection status, occurrences, distribution, and habitat) (Peck 2007).

3.3.2.2 Golden Eagle (Aquila chrysaetos canadensis)

There is one potential nest approximately 1.25 miles south of all proposed action alternatives near their origination point. No other nest locations are known.

3.3.2.3 Western Burrowing Owl (Athene cunicularia)

No burrowing owls or signs of burrowing owls were identified, but suitable burrowing owl habitat was identified by biologists along proposed action alternatives (Table 20, Appendix A-2).

3.3.2.4 Greater Western Bonneted Bat (Eumops perotis californicus)

No known bat roosts are located along the proposed action alternatives, but potentially suitable cliff roosting habitat was identified along the East Cerbat alternatives.

3.3.2.5 Desert Kit Fox (Vulpes macrotis arsipus)

Suitable kit fox habitat overlaps the habitat of the western burrowing owl. Additionally, one potential kit fox den was observed along the W3 and W4 West Cerbat alternatives.

3.3.3 Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act

With the exception of domestic pigeons, house sparrows, and European starlings, all of the numerous species of birds in the project area are protected under the Migratory Bird Treaty Act of 1918, as amended (16 USC 703-712), and the Bald and Golden Eagle Protection Act.

3.3.4 Wildlife Linkages

The Arizona Wildlife Linkages Workgroup (2006) identified a potential wildlife linkage zone and a habitat block along both East Cerbat alternatives (ADOT 2010). Additionally, two wildlife movement corridors described in the BLM's 1995 RMP are found along the East Cerbat alternatives.

3.3.5 General Vegetation

Vegetation in the project area is classified as the Mojave Desert scrub/semi-desert grassland community. Low valley floors are generally dominated by a combination of creosote bush (*Larrea tridentata*), catclaw acacia (*Acacia greggii*), Mojave yucca (*Yucca schidigera*), and cholla (*Opuntia* spp.). Some mountainous areas are similar in species composition, but cacti and yucca are dominant. Other mountainous areas are dominated by canotia (*Canotia holacantha*), and others contain a mix of shrubs and cacti, some of which are generally not found in lower areas—ocotillo (*Fouquieria splendins*), oak (*Quercus* sp.), graythorn (*Ziziphus obtusifolia*), and palo verde (*Parkinsonia* sp.).

3.3.6 Noxious and Invasive Plants

No noxious weeds were identified during field reviews; however, it is common for diffuse knapweed (*Centaurea diffusa*), spotted knapweed (*Centaurea stoebe*) and yellow starthistle (*Centaurea solstitialis*) to grow in the area, and these plants or their seed may be located within the project area. Also, invasive plants such as red brome (*Bromus rubens*), Russian thistle (*Salsola iberica*), and Sahara mustard (*Brassica tournefortii*) are common in the area, and their seed may be located within the project area as well.

3.4 Cultural Resources

Transcon Environmental (Transcon) conducted surveys to determine if cultural resources which could potentially be affected by the proposed action alternatives are present within the project area. Important cultural resources may include historic or prehistoric archaeological sites or objects, historically or architecturally significant structures or buildings, or landscapes and traditional cultural properties that are eligible for inclusion in the National Register of Historic Places (NRHP). Section 106 of the National Historic Preservation Act and its implementing regulations (36 CFR Part 800) require federal agencies to account for the effects of their undertakings on historic properties and to give the State Historic Preservation Office and other interested parties the opportunity to comment on such undertakings.

The findings of this survey are detailed in the cultural resources survey report prepared for the project by Transcon (Tactikos 2019). In summary, a total of 25 sites (13 newly recorded sites and 12 re-evaluated/re-recorded sites) were identified within the project area. Of the 12 sites that had been previously recorded during prior surveys, the majority are historic sites related to transportation, with only one pre-historic site and one proto-historic site revisited. Ten sites were determined eligible or were recommended as eligible for inclusion in the NRHP. One of these previously discovered, eligible sites within City of Kingman jurisdiction lands (East Cerbat alternatives) includes an interpretive trail established around the ruins of a military camp that is important to the history of the temporary resettlement of the indigenous Hualapai people in this region after the Hualapai War of the 1860s. All 13 newly recorded sites are historic features,

and only 2 of these sites have been recommended as eligible for inclusion in the NRHP. The majority of these sites are Historic-period refuse scatters.

The distribution of eligible historic properties and ineligible cultural resource sites within the separate alternatives for this project is as follows: 15 eligible sites and 14 ineligible sites within the East Cerbat 1 and 2 alternatives, no eligible sites and 17 ineligible sites within the West Cerbat 1 and 2 alternatives, and no eligible sites and 15 ineligible sites within the West Cerbat 3 and 4 alternatives.

In addition to the 25 sites, 184 isolated occurrences were found; these are isolated finds consisting of one or very few artifacts. Only 11 of these isolated occurrences were prehistoric.

3.5 Visual Resources

The affected environment is described in terms of landscape character, which is a composite of the form, line, color, and texture of landform/water, vegetation, and the built environment as well as specific visual resources within the landscape such as landmarks. The existing landscape character will be used as the baseline for analyzing compliance with VRM objectives (measurement indicator 1); dominance of change in form, line, color, or texture (measurement indicator 2); and effects to scenic vistas (measurement indicator 4). The identified specific visual resources within the landscape will be used in analyzing damage to scenic resources (measurement indicator 3). A description of inventory methods can be found in Appendix F-1.

3.5.1 West Cerbat Alternatives

The area generally consists of natural-appearing landscapes around the base and up into the Cerbat Foothills, with scattered roads, infrastructure, residences, and commercial facilities south of and within Golden Valley. Features of note within the existing landscape are the dark maroon-purple-brown rocks on the surface of the hills that transition to browns and lighter colors of rock and soil in the valley (Photos 1 to 3, Appendix F-2), the visibility of light buff-colored soil in recently disturbed areas (Photo 3, Appendix F-2), the general lack of tall, vertical, geometric structures near the southwest end of the Cerbat Foothills (Photos 1 to 3, Appendix F-2), the general limited visibility of existing power poles and other development when viewing the larger landscape (Photos 1 to 3, Appendix F-2), and the generally contiguous pattern of vegetation across much of the foothills and valley (Photos 1 to 3, Appendix F-2). Detailed descriptions of existing form, line, color, and texture as seen from key observation points (KOPs) can be found in Section B in the contrast worksheets (Appendix F-4). Additional existing condition photographs can be found in the simulation panels (Appendix F-5).

No specific scenic resources or scenic vistas were identified in the area. US-66, a National Scenic Byway and All-American Road (FHWA 2019), passes near the south end of the West Cerbat alternatives. The West Cerbat alternatives follow the edge of the CFRA, a sensitive scenic area. Residents and visitors to the area would likely be able to view the project from local roads, residences, businesses, and a few limited locations within the CFRA.

3.5.2 East Cerbat Alternatives

The area consists of natural-appearing landscapes dissected by major roads and utility corridors, infrastructure, residences, and commercial facilities to the north, west, and south of Kingman. Features of note within the existing landscape are the presence of large infrastructure in close proximity to view locations (Photos 4 to 6, Appendix F-2), the dark maroon-purple-brown rocks on the surface of the hills that transition to browns and lighter colors of rock and soil (Photos 4 to 6, Appendix F-2), the visibility of light buff-colored soil and rock in recently disturbed areas (Photos 4 to 6, Appendix F-2), and the generally bisected pattern of vegetation across much of the visible area (Photos 4 to 6, Appendix F-2).

I-40 and US-66 are particularly sensitive view corridors, I-40 due to the number of viewers and US-66 due to the sensitivity of the viewer experience given the less developed and more historic nature of the corridor (Photos 6 and 8 [US-66] and Photos 4, 6, 7, and 9 [I-40], Appendix F-2). The East Cerbat alternatives cross I-40 near the highway's intersection with Beale Street and cross US-66 about 2 miles south of Beale Street. A few additional features to note within the existing landscape are the presence of large infrastructure in close proximity to view locations (Photos 7 to 9, Appendix F-2), the general lack of larger landscape views, and the visibility of existing power poles and other development (Photos 7 to 9, Appendix F-2). Detailed descriptions of existing form, line, color, and texture as seen from KOPs can be found in Section B of the contrast worksheets (Appendix F-4). Additional photographs can be found in the simulation panels (Appendix F-5).

No specific scenic resources or scenic vistas were identified in the area. US-66, a scenic byway, passes near the south end of the East Cerbat alternatives (Photos 6 and 8, Appendix F-2) and the East Cerbat alternatives pass through a portion of the CFRA, a Special Recreation Management Area with highly trafficked non-motorized trails where viewers may be more sensitive to visual change in the area.

3.6 Air Quality

The U.S. Environmental Protection Agency (EPA) Office of Air Quality Planning and Standards has established National Ambient Air Quality Standards (NAAQS) (40 CFR Part 50) for six pollutants considered harmful to public health and the environment: sulfur dioxide, carbon monoxide, ozone, lead, particulate matter less than 10 microns in aerodynamic diameter, particulate matter less than 2.5 microns in diameter, and nitrogen dioxide. NAAQS places limits on acceptable ambient concentrations of these pollutants. The EPA is authorized to designate areas exceeding the NAAQS limits as "non-attainment areas" and classify them according to their degree of severity (i.e., primary, moderate, or serious). The project area is in attainment for all criteria pollutants (EPA 2016).

According to the City of Kingman General Plan (City of Kingman 2014), air quality is generally good in the Kingman area, and it is noted that anecdotal evidence indicates the primary problem is dust from construction development sites and vehicles travelling on unpaved roads; a secondary source is regional brush and forest fires.

3.7 Water Resources

The project area is located within the Sacramento Valley surface water basin, which drains to the Colorado River (ADWR 2016). Within the project area there are only ephemeral desert washes; there are no perennial waters, including wetlands, ponds, and canals. The East Cerbat alternatives pass near two springs: Camp Beale Spring is located approximately 500 feet east of the alignment and an unnamed spring is located approximately 100 feet west of the alignment near I-40.

Surface water quality data is not available because of the ephemeral nature of the surface waters. The desert washes are often naturally turbid when they flow because of high amounts of surface runoff. There are no impaired waters in the project area based upon a review of Arizona Department of Environmental Quality's eMap (ADEQ 2016).

3.8 Soils

Soil data from the Natural Resources Conservation Service soil survey was gathered for the project area (NRCS 2016). Specifically, data was gathered to determine the erodibility of the soil and if there is any prime farmland or hydric soil. Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops with a suitable growing climate. There are no prime farmland soil types within the project area. Hydric soils indicate soils formed under wet conditions and are an indicator of wetlands. There are also no hydric soil types in the project area.

Table 21 in Appendix A-2 displays the wind erodibility rating (i.e. the soil's susceptibility to wind erosion) of the soil types within the project area. Wind erodibility is based on the assumption that the soil is bare, lacks a surface crust, occurs in an unsheltered position, and is subject to the weather at Garden City, Kansas (note: Garden City is where tests were performed to determine wind erodibility ratings) (Woodruff and Siddoway 1965).

Table 22 in Appendix A-2 displays the relative susceptibility of bare, cultivated soil to erosion by rainfall based on the soil's K factor, an index that quantifies the soil's susceptibility to sheet and rill erosion.

3.9 Noise

3.9.1 Noise Impacts

Noise impacts are analyzed using an A-weighting of sound intensities. Noise generated by humans is well represented by an equivalent A-weighted sound level over a given time period or by the average day-night noise averages (L_{dn}). Equivalent energy level (L_{eq}) is the average noise intensity over a given time period, typically 1, 8, or 24 hours; because it accounts for loudness and duration, it is often referred to as the exposure level. Day-night noise averages are the average A-weighted equivalent sound level during a 24-hour period obtained by adding 10 decibels to the hourly average measured during the night. A-weighted sound pressure level (dBA) is measured using the A-weighting filter on a sound meter which emphasizes the sounds audible to humans.

3.9.2 Audible Noise

Outdoor ambient noise levels vary depending on the land use. In wilderness areas, the L_{dn} noise levels typically average 35 dBA. In small towns, the L_{dn} averages 50 dBA; it is typically 75 dBA in downtown urban areas and 85 dBA near busy freeways or airports.

With the exception of the industrial area surrounding the origination point of all alternatives and the commercial area and Mohave County Jail along the common portion of the East Cerbat alternatives on Beale Street, the project is mostly within rural areas.

Sensitive noise receptors are generally defined as residences, schools, religious facilities, hospitals, and parks preserved for the outdoor experience (i.e., not city parks). Table 23 in Appendix A-2 summarizes sensitive noise receptors within 1,000 feet of the transmission line along all alternatives. All the noise receptors within Table 23 are residences, with the exception of the single religious facility approximately 500 feet from the shared portion of the West Cerbat alternatives. In addition to these facilities, all proposed action alternatives will also pass along and within the CFRA, a park utilized by hikers and bikers that provides a natural desert landscape. Both East Cerbat alternatives are within—or within a distance of 1,000 feet of—the CFRA for 4.7 miles. The W1 and W2 West Cerbat alternatives are within—or within a distance of 1,000 feet of—the CFRA for 7.3 miles, and the W3 and W4 West Cerbat alternatives are within—or within a distance of 1,000 feet of—the CFRA for 5.1 miles.

3.9.3 Radio Noise

Radio noise is a combination of radio interference and television interference and is measured in decibels; in this case, decibels is a measure of a weak electrical energy, not sound energy, propagated through the air. Radio interference primarily interferes with the 535- to 1605-kilohertz frequency range; this includes AM band operational frequencies and is in the range of the lowest end of amateur (ham) radio operational frequencies. Television interference refers to interference in the 54- to 88-megahertz (MHz) range. The location of broadcast towers is provided in *Land Use* (Section 3.1.2).

3.10 Environmental Justice

Executive Order (EO) 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requires federal agencies to determine if proposed actions have disproportionate and adverse environmental impacts on minority, low-income, and American Indian populations of concern. BLM policy, as contained in BLM Land Use Planning Handbook H-1601-1 provides direction on how to fulfill agency responsibilities for EO 12898.

Environmental justice refers to the fair treatment and meaningful involvement of people of all races, cultures, and incomes with respect to the development, implementation, and enforcement of environmental laws, regulations, programs, and policies (CEQ 1997).

Before determining if an environmental justice population of concern is present, the BLM must first determine the area of analysis for the issue. The area of analysis defined for the Golden Valley 230 kV Transmission Project is Mojave County, Arizona, which includes the communities of Kingman and Golden Valley. Tables 24 and 25 in Appendix A-2 provide the most recent available demographic and income data for the study area.

There are also three federally recognized Tribes within or adjacent to the area of analysis: the Hualapai Tribe, the Fort Mojave Indian Tribe, and the Colorado River Indian Tribe. Federally recognized Tribes are considered to be environmental justice populations of concern that must be considered for environmental justice impacts. The BLM, in coordination with the above listed Tribes, has determined that there are no disproportionate and adverse impact to the listed Tribes from the proposed action.

3.11 Health and Safety

3.11.1 Hazardous Materials

There are no clean-up sites or Superfund sites within the project area (EPA 2017a, 2017b).

3.11.2 Emergency Infrastructure

The project area is served by the Arizona Department of Public Safety, the Kingman Police Department, and the Mohave County Sheriff's Office. Residents in the project area also receive fire protection services from the Golden Valley Fire Department and Kingman Fire Department. There are medical centers located in Golden Valley and Kingman. Emergency transport services to medical facilities include ambulance and air transport, via helicopter, to the Western Regional Medical Center in Bullhead City.

3.11.3 Public and Worker Safety

Electrical hazards exist to residents, employees, and others within the ROW. Hazards could include vegetation or equipment fires, electrical burns, or electrocutions of humans or animals. These electrical hazards could occur anywhere near energized conductors or facilities, although they are primarily a concern for construction and maintenance workers.

3.11.4 Electric and Magnetic Fields

Electric fields are related to voltage and are generated by electrons. A higher voltage results in a stronger electric field. A cord of an appliance will generate an electric field regardless of whether the appliance is turned on. Electric field strength can be greatly reduced by things that act as a screen, such as a building or trees. Electric fields are measured in volts per meter or kV per meter.

Magnetic fields are generated by electric current (i.e., the movement of electrons). As soon as an appliance is turned on, it generates a magnetic field. Magnetic fields are not blocked by barriers. Magnetic fields are measured in microteslas (μT).

Electric and magnetic fields (EMF) are everywhere; they occur naturally in every atom of matter. The Earth's surface has a natural electric field which is created by electric charges in the upper atmosphere. The Earth also has a strong magnetic field which is evidenced by our use of a compass for navigation. The magnetic field is created by electric currents in the magma of the Earth's core.

Use of electricity in residences and other facilities produces EMFs. In the United States, the average household background magnetic field away from appliances is about 0.055 to 0.11 µT, and the background electric field is approximately 0.003 to 0.03 kV per meter. EMFs are stronger closer to appliances, and the fields drop rapidly as the distance increases from the source (Table 26, Appendix A-2). (EPA 1992)

Electric transmission lines produce EMFs. The EMFs are usually strongest directly underneath the transmission line and are reduced as one moves away from the transmission line. Actual field strengths vary depending on the height of the conductors from the point of measurement (Figure 9, Appendix A-2). On average, EMFs for a 230-kV transmission line are near typical background levels experienced in homes at a distance of approximately 200 feet from the transmission line.

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

This chapter describes the impacts that can be expected from implementing the proposed action alternatives and the no action alternative. The effects will be analyzed in terms of their duration, intensity, and scale.

The terms "effects" and "impacts" are used synonymously in this document. Effects include ecological effects (i.e., effects on natural resources and on the components, structures, and functions of the affected ecosystems) as well as aesthetic, historic, cultural, economic, social, and health effects—whether direct or indirect. Effects may also include actions that could have beneficial or adverse consequences. Environmental effects that may occur are described using the following terms:

- *Beneficial Effect*—A change that would improve the resource condition, use, or value compared to its current condition, use, or value
- *No Effect*—No change to a resource condition, use, or value
- *Negligible Adverse Effect*—A localized degradation to a resource condition, use, or value that is not measurable or perceptible
- *Minor Adverse Effect*—A measurable or perceptible and localized degradation of a resource's condition, use, or value that is of little consequence or significance
- *Moderate Adverse Effect*—A localized degradation of a resource condition, use, or value that is measurable and has consequences
- *High Adverse Effect*—A measurable degradation of a resource condition, use, or value that is large and/or widespread and could have permanent consequences for the resource
- *Short-term or Temporary Effect*—An effect that would result in the change of a resource condition, use, or value lasting less than 1 year
- *Long-term Effect*—An effect that would result in the change of a resource condition, use, or value lasting more than 1 year and probably much longer
- *Direct Effect*—An effect that is caused by the action and occurs at the same time and place as the action
- *Indirect Effect*—An effect that is caused by the action but occurs later in time or at a different location but is still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate and related effects on air and water and other natural systems, including ecosystems

4.1 Land Use

The impact assessment for land use is based on four general factors: resource sensitivity, resource quantity or duration of impact, resource quality, and resource or project compatibility. The combination of these four variables, along with consideration of resource protection measures (RPMs) where applicable, were used to determine the level of impact.

Resource sensitivity is a measure of how the proposed action would make various land use characteristics susceptible to change and is based on regulatory guidelines and professional judgment. Resource quantity is measured by the number of individual occurrences or area of a given impact type; duration of impact is the period of time over which the resource would be affected. Resource quality represents the present condition of the potentially affected resource. Resource compatibility is the level to which the proposed project facilities are harmonious with specific land uses.

4.1.1 Proposed Action Alternatives

4.1.1.1 Land Ownership and Jurisdiction

Negligible changes to BLM and ASLD jurisdiction would occur as a result of project implementation. Easements are nonpossessory and do not change land ownership or jurisdiction. UNSE would be granted

rights to operate and maintain the transmission line on federal- and state-managed lands, but the BLM and ASLD would maintain ownership.

Minor adverse effects to private land ownership are expected as a result of the project. UNSE must obtain legal authorization (i.e., by securing an easement or less frequently through purchase) to access private property. The easement is expected to be for a width of 125 feet, and the landowner would be compensated for the easement. The easement would allow UNSE the right to access the transmission line at any time for construction, maintenance, or operation. Easements are nonpossessory and therefore do not change land ownership or jurisdiction. By granting an easement, the private land owner would most likely be prohibited from developing the land within the easement in a manner that would damage or interfere with UNSE's legally defined right to access the easement for construction, operation, and maintenance of the transmission line. Some examples of typical restrictions include no construction of houses or other substantial structures or buildings, planting of trees and shrubs that exceed a certain height, or placement of any type of obstruction within a certain distance of transmission line towers within the easement.

For some private land, the impacts to land ownership would be expected to be negligible because there is already an existing UNSE transmission line easement on these lands. Depending on the alternative selected, there is existing UNSE transmission line easement on approximately 45 to 70 percent of the land (Table 27, Appendix A-2). Some of the existing easements may need to be expanded in width to allow for a higher voltage transmission line. Each individual easement would need to be reviewed to determine changes, if any, that would be necessary.

4.1.1.2 Existing Land Use

Residential

Residential land would be impacted regardless of the alternative selected (see Table 28 in Appendix A-2, which shows the lengths of each alternative that are within 1,000 feet of residential properties). No alternative would displace a residence.

The impacts upon residential land would be similar to those described is Section 4.1.1.1 for privately owned land. Granting UNSE an easement would restrict development within the easement, resulting in minor adverse effects to residential land use.

Temporary, short-term, and minor adverse impacts may result from obstruction of access during construction as driveways are temporarily blocked by construction equipment and vehicles. These indirect impacts would be short-term, temporary, and minimized through the application of the RPMs described in Appendix C.

Public/Quasi Public

There would be no effect to public/quasi-public land uses along the West Cerbat alternatives because there are no such facilities along these alternatives. Negligible impacts to existing public/quasi-public uses of land are expected along the East Cerbat alternatives. None of the facilities identified in Section 3.1.2 will be displaced. Negligible to minor adverse indirect impacts to some of the public/quasi-public areas may arise temporarily during construction if access is temporarily restricted.

Commercial

There would be no effect to existing commercial land uses along the West Cerbat set of alternatives because there are no such facilities along these alternatives. Negligible impacts to existing commercial uses are expected along the East Cerbat alternatives. None of the facilities identified in Section 3.1.3 will be displaced. Negligible to minor adverse impacts to some of the commercial facilities may arise temporarily during construction if access is temporarily restricted.

Industrial

There is expected to be no effect or minor, adverse, short-term effects for any alternatives from travel restrictions on local roads to the Nucor Steel, Harris and McConnico electrical substations, a variety of warehouses and trucking distribution centers, the material extraction pit near US-93 and SR 68, and the several vehicle scrap yards found within the project area. There could be minor adverse effects to the material extraction pit along the W4 alignment located south of Shinarump Road resulting from short-term restrictions on access to the pit, but this alternative would not be expected to interfere with future operation of the pit.

Parks, Recreation, and Preservation

Both sets of alternatives pass within the CFRA. Impacts to recreation within the CFRA would vary depending upon the alternative selected. There is currently no trailhead or other means of access (e.g., trail, road, etc.) to the area of the CFRA affected by the West Cerbat alternatives. The Foothill Rims Trail, the nearest trail, is over 1.5 miles to the east and on top of the mesa in the CFRA. The transmission line would be visible for a short duration and at a long distance from some points along the trail and may result in minor adverse effects to recreational users of the area who are seeking natural settings and views.

Additionally, long-term impacts resulting from implementation of the West Cerbat alternatives would include creating a new transmission line corridor and access road within with CFRA where none currently exists. The resulting effects would have minor, long-term, adverse impacts to the CFRA because the road and utility corridor development would change a portion of the CFRA that currently has characteristics of undeveloped open space. Negative impacts to the CFRA would be minimized because the transmission line and access road would be built along the western edge of the CFRA and, therefore, would not fragment the park. This corridor would conflict with the utility corridor designation through the CFRA outlined in the BLM Kingman RMP.

The East Cerbat alternatives would have short-term, minor to moderate, adverse impacts on recreational use of the CFRA during project construction. These alternatives would both pass near to the Metwell and Coyote Pass trailheads and access could be temporarily disrupted during certain construction activities. During construction of the 230-kV power line located adjacent to the Metwell and Coyote Pass trailheads, construction crews would be working at each trailhead for an estimated time of twelve (12) days and recreational access to the trailheads would only be limited, not restricted. There would also be short-term, minor to moderate impacts to the recreation experience (e.g., potential displacement of users) because of the elevated activity and noise levels associated with construction. These impacts would lessen as users move further into the park. RPMs have also been developed to further minimize impacts and outline coordination with BLM.

Once built, the East Cerbat alternatives would be expected to result in long-term, minor, adverse impacts to recreation users of the CFRA. While these two alternatives extend through the most frequented area of the CFRA, they cross trails and are close to two trailheads and across the highway from a third trailhead, the alignment of the alternatives is within a BLM-designated utility corridor which already has a UNSE 69-kV transmission line constructed on similar compositional structures. Thus, while visitors participating in activities such as hiking, mountain biking, and equestrian riding would be affected by more prominent views of the new transmission line, the views would be similar to that which currently exists, just more pronounced. Additionally, this utility corridor also contains US-93, which is a busy highway. Thus, users are accustomed to the setting of a built environment near the trailheads and traffic noise associated with being near US-93. Views of the transmission line would dissipate as users travel further from the trailhead, deeper into the park.

The impacts described for the East Cerbat alternatives would be the same for the Camp Beale Springs area of the CFRA, which would only be affected by the East Cerbat alternatives.

Range Land/Undeveloped

All proposed action alternatives cross several BLM- and state-administered grazing allotments. Only minor adverse effect on grazing are expected. The loss of vegetation for grazing livestock where towers and access roads are built would be a minor adverse effect, and the effects of clearing vegetation for construction would be short term, but the amount of grazing vegetation or land lost to grazing would not affect the number of animal unit months that the allotments could support. Temporary impacts to grazing area access points may occur during project construction, but these would be minor and short term.

Implementation of all proposed action alternatives would have long-term, minor, adverse effects to undeveloped land. Undeveloped land would be converted to a developed transmission line ROW. On undeveloped private land, impacts would restrict future development within the easement as discussed in Section 4.1.1.1.

Transportation, Utilities, and Communication Towers

Short-term, minor adverse impacts to traffic would be expected along all alternatives. Based on the current level of service, roads in the Kingman area would be expected to be able to accommodate construction traffic associated with construction of the project. There is no level of service data for Golden Valley but approximately 10 vehicles on average would be expected to commute to the project area daily, and these would be expected to be accommodated by the existing roads. During the peak of construction, as many as 25 to 30 vehicles may commute to the project area daily, but the existing road network in both Mohave County and Kingman is expected to be able to accommodate the increase in traffic. Temporary delays may be caused by large, slower-moving vehicles. No lane closures are anticipated. To ensure emergency response vehicles have adequate access during construction, UNSE would notify emergency responders of any temporary road closures or restrictions. During project operation, impacts to traffic would be negligible because there would be very little traffic associated with operation and maintenance of the transmission line. In regard to infrastructure interfering with roads or road ROWs, the project infrastructure is not expected to affect roads or road ROWs. In the event UNSE wishes to place infrastructure within a road ROW, they would have to seek approval and negotiate terms of use with the ROW holder.

Project construction, operation, and maintenance of all alternatives will not affect air traffic patterns. The project is not in proximity to any airports.

Short- and long-term negligible effects to utilities are expected to result from the project. Construction, operation, and maintenance of all project alternatives would be expected to generate some construction waste, which would end up in landfills, and the workforce would use waste facilities, water, and electricity for normal living purposes, but such use would not necessitate an expansion of wastewater treatment, electricity, communication service, or water services, nor would it necessitate an expansion of landfill facilities.

Radio and television interference from the transmission line is addressed in Section 4.9.1.2. The East Cerbat alternatives are about 500 feet from the KYET radio tower and 1,300 feet from the KAAA 97.5 FM radio tower. AM radio antenna systems are sensitive to tall structures made of conductive material. Tall conducting structures, such as steel transmission line towers, can reradiate the AM signal, modifying the radiation patterns of the broadcast signals. UNSE has been in conversations with the radio tower owners and effects to the KAAA radio tower are unlikely because of the proposed height of the structures and distance between the radio tower and transmission line. Nonetheless, UNSE has committed to mitigating any impacts to the broadcast if they were to occur. The KYET radio tower is closer; therefore, there could be adverse effects to the broadcast. The effects, if there are any, will not be known until the project is

constructed. UNSE has committed to working with the KYET radio tower owners to ensure that no interference results from construction or operation of the transmission line. In the event that any interference results from construction and operation of the transmission line, UNSE will be required to follow mitigation outlined in Section 4.13. With such mitigation, no long-term effects to radio towers and their broadcast are expected. No effects to radio broadcast towers are expected to result from any of the West Cerbat alternatives because they do not pass near any radio towers.

The microwave tower located between the CFRA and I-40 in the southern part of the study area is 3,300 feet from any of the alternatives; therefore, it is not expected to be impacted.

4.1.1.3 Zoning

Mohave County and the City of Kingman have designated zoning classifications for the project area. These classifications are particularly relevant because approximately two-thirds of the East Cerbat alternatives and half of the West Cerbat alternatives are located on private land. The majority of lands within the study area are zoned as Agricultural-Residential, Heavy Manufacturing, and General. None of these categories, or other categories crossed by proposed action alternatives, restrict transmission lines or transmission line ROWs; therefore, no impacts to zoning would be expected as a result of implementation of any of the project alternatives.

4.1.1.4 Planned and Proposed Land Use

Planned Land Use

BLM

Alternatives are within BLM-designated utility corridors (Table 29, Appendix A-2). The entirety of the East Cerbat alternatives are within BLM-designated utility corridors; this includes the portions that extend through the CFRA. As such, no effects to planned BLM-administered land use are expected to result from implementation of the East Cerbat alternatives.

Nearly three-quarters of the West Cerbat alternatives are within a BLM-designated utility corridor. They depart from the designated utility corridors mainly where they pass along the western boundary of the CFRA. This segment of the alignment would conflict with the planned location of utility corridors on BLM-administered land. As such, all West Cerbat alternatives would result in moderate, long-term, adverse effects to the planned BLM-administered land use (see Section 4.5 for a description of visual resources impacts on the Class II VRM area in the project study area).

Arizona State Land

While no land use plans have been formally adopted for land managed by the ASLD in the project area, it is likely that most of the ASLD lands within the project area would maintain similar land use characteristics for the foreseeable future. As a result, impacts to use of ASLD land along any of the proposed action alternatives would be negligible.

Mohave County

No proposed action alternative would conflict with management goals outlined in the Mohave County General Plan.

City of Kingman

None of the proposed action alternatives would result in a General Plan Amendment, so impacts to planned land use would not occur.

Proposed Land Use

For all proposed action alternatives, the construction, operation, and maintenance of the proposed project facilities are expected to have no or negligible impacts to the majority of proposed land uses. Two proposed land uses, development of a subdivision and expansion of a wind farm, could have minor adverse impacts resulting from the construction of the project.

The vacant Legend Ranch in the Golden Valley Subdivision is located west of US-93 along the proposed alignment for the East and West Cerbat alternatives, but no development plans have been proposed in the area. In addition, an existing transmission line is already built in this area and the 230-kV transmission line would be built in the same ROW; therefore, minor adverse impacts to any future residential development in this area would be expected.

An expansion of Western Wind Energy's wind turbine farm is proposed approximately 1,000 feet east of the E2 East Cerbat Alternative in the southern portion of the study area near the Harris Substation. The wind turbine farm currently consists of five turbines and the proposal suggests doubling this number in its expansion. The E2 East Cerbat Alternative is located along the section line between the wind farm property and BLM-administered land, approximately 750 feet east of the closest existing wind turbine. Depending upon the location of the future turbines, potential indirect impacts may exist if the E2 East Cerbat Alternative is constructed. Because there would be no direct impacts to the wind farm and indirect impacts would be most likely related to access or changes to wind flow, only minor impacts to the proposed wind farm expansion would result.

4.1.2 No Action Alternative

No direct or indirect adverse impacts on land use would result through implementation of the no action alternative. Under this alternative, UNSE would not construct, operate, or maintain a 230-kV transmission line as proposed, and the BLM and ASLD would not issue ROWs for the project. Because the project would not be constructed as proposed, the land uses of the area would remain unchanged and no effects adverse effects would be expected.

4.2 Socioeconomics

This section describes the potential impacts to residential property values from the proposed action. While the research is not wholly conclusive, it indicates that there is potential effect for the proposed undertaking to impact residential property values. Conclusions from the research have been mixed and findings range from no effects to negative effects. The research also stresses that there is no way to predict whether or how a particular transmission line would impact property values, and conclusions have only been drawn after construction. Based on this research, the BLM cannot speculate whether the Proposed Golden Valley 230 kV Transmission Line would affect property values, or to what degree. The BLM acknowledges there is potential for impacts to property values. This section summarizes the numbers of residential properties and the numbers of habitable structures within 1,000 feet of each alternative as a proxy for estimating levels of impact. The BLM assumes that the greater the number of residential properties in the area of analysis for each alternative would equate to a greater potential for impacts, should impacts be realized. The figures provided for each of the alternatives not only include the properties in their particular section, but also include the properties proximate to the route(s) common to each of these.

The research also indicates that any adverse impacts to property values that may result from the presence of a transmission line in proximity to residential property would most probably be from individual perceptions of visual impacts. Impacts to VRM is a separate area of analysis and is addressed in Section 3.5 and 4.6.

4.2.1 East Cerbat Alternatives

A total of 228 properties that are residential in nature are proximate to both of the East Cerbat alternatives and could be devalued as a result of selecting either of the East Cerbat alternatives

4.2.2 West Cerbat Alternatives

There are 266 residential properties proximate to the West Cerbat 1 alternative that could be devalued as a result of selecting the West Cerbat 1 alternative.

There are 267 residential properties proximate to the West Cerbat 2 alternative that could be devalued as a result of selecting the West Cerbat 2 alternative.

There are 307 residential properties proximate to the West Cerbat 3 alternative that could be devalued as a result of selecting the West Cerbat 3 alternative.

There are 343 residential properties proximate to the West Cerbat 4 alternative that could be devalued as a result of selecting the West Cerbat 4 alternative.

If the BLM assumption of greater numbers of residential properties equals greater potential for impact is valid, then Table 30, Appendix A-2 illustrates the relative potential for impacts to residential properties from each proposed alternative route.

4.2.3 No Action Alternative

No direct or indirect adverse socioeconomic impacts would result through implementation of the no action alternative. Under this alternative, UNSE would not construct, operate, or maintain a 230-kV transmission line as proposed, and the BLM and ASLD would not issue ROWs for the project. Because the project would not be constructed as proposed, the area would remain unchanged, and no effects would be expected.

4.3 Biological Resources

Below is a summary of the analysis outlined in the BE.

4.3.1 Proposed Action Alternatives

4.3.1.1 General Wildlife

All proposed action alternatives would have similar direct impacts. Direct impacts would include the potential for direct strikes or crushing animal species by equipment and negative biophysical responses (e.g., modification to feeding or reproductive behavior) to increased noise, human activity, and ground vibrations. Activities would also temporarily displace wildlife from the construction area and during periodic maintenance activities. While these impacts to individuals could be lethal or reduce individual fitness, impacts to the populations of general wildlife are expected to be minor and adverse and would not result in a threat to the species at the population level.

All proposed action alternatives would have similar indirect impacts and would include the loss or modification of habitat which could displace species or remove forage or shelter for wildlife species. The amount of habitat that would be impacted is outlined in Section 4.3.5. These impacts to general wildlife populations are expected to be minor, adverse, and both short and long term.

4.3.2 Bureau of Land Management Sensitive Wildlife Species

4.3.2.1 Sonoran Desert Tortoise

All proposed action alternatives would result in disturbance to desert tortoise habitat categorized as Class III habitat (note: Class III is the lowest quality of habitat) (Table 31, Appendix A-2). USNE would be required to mitigate permanent or long-term disturbances to all Class III habitat. All proposed action alternatives would result in short- and long-term, minor, adverse impacts to desert tortoise habitat.

Other direct impacts include increased potential for a vehicle or equipment to crush a tortoise, potential entrapment within excavations, and negative biophysical responses (e.g., modification to feeding or reproductive behavior) resulting from elevated disturbance levels. These impacts would be common to all proposed action alternatives and short term. Impacts would be reduced through the implementation of RPMs. These impacts would be expected to have minor adverse impacts on the population of Sonoran desert tortoises.

Long-term, minor, adverse, indirect impacts resulting from all proposed action alternatives could include localized reductions in foraging habitat or quality by fragmenting habitat through the construction of access roads and/or spreading of noxious and invasive plants. Fragmentation of habitat would be more severe along the West Cerbat alternatives because habitat is already fragmented along the East Cerbat alternatives, which cross the BNSF Railroad, US-66, and I-40 and run parallel to US-93. The West Cerbat alternatives pass along the base of the Cerbat Foothills where there is more intact habitat with less development and major arterial roads/highways.

4.3.2.2 Golden Eagle

No impacts to golden eagles are expected to result from any of the proposed action alternatives. Spatial and seasonal buffer zones are a regularly used means to protect individual nest sites/territories to ensure successful breeding. The only known potential golden eagle nest is located over 1 mile from any of the proposed action alternative alignments. Generally, a 0.5-mile buffer is applied to protect golden eagles at their nest site from construction disturbance. Thus, the potential golden eagle nest is not expected to be impacted by construction activities. In the event a new golden eagle nest is discovered, the RPM which states all construction avoids a radius of up to 0.5 mile of any active nests between December 15 and August 1 will be implemented.

4.3.2.3 Western Burrowing Owl

While no burrowing owls, burrows, or signs of burrowing owl have been found within the project vicinity, there is habitat that could be suitable. Because of the mountainous terrain, there is no suitable habitat for burrowing owls within the areas south of the CFRA along the East Cerbat alternatives except for the area immediately around the Harris Substation. There is also no suitable habitat where the East Cerbat alternatives pass through the mountainous terrain in the CFRA. Suitable habitat occurs north of the CFRA where the East and West Cerbat alternatives share the same alignment. Along the West Cerbat alternatives, there is suitable habitat from the Harris Substation to where the alternatives start to run along the western border the CFRA and north of the CFRA where the East and West Cerbat alternatives share the same alignment. The total number of miles of burrowing owl habitat identified along each alternative is presented in Table 32 in Appendix A-2.

No burrowing owls or their sign have been found within the project area during reconnaissance surveys. If burrowing owls occur within the project footprint or project area, potential direct impacts from project activities could include increased potential for a strike and/or mortality resulting from excavations, potential entrapment within burrows (partial burrow collapse), and negative biophysical response (e.g., modification to feeding or reproductive behavior) to elevated disturbance levels (e.g., human presence, elevated noise and ground vibration levels, etc.). These impacts would be limited to the period of construction and to

intermittent maintenance activities. The potential for impacts to this species will be reduced through the implementation of RPMs outlined in Appendix C. RPMs include a preconstruction survey to detect burrowing owls, measures to reduce impacts if owls are found, a training program to help construction workers identify and avoid the burrowing owl and their burrows, and reclamation of disturbed habitat. With implementation of RPMs, all alternatives would potentially result similar minor, adverse, short- and long-term effects to burrowing owls.

4.3.2.4 Greater Western Bonneted Bat

Minor adverse impacts to the greater western bonneted bat could result from implementation of the East Cerbat alternatives. If bats are roosting in the cliffs found along the routes, they could be disturbed by noise and vibration from installation of transmission line structures. These impacts would be temporary and limited to the construction period. No suitable roosting cliffs were identified in proximity to the West Cerbat alternatives.

4.3.2.5 Desert Kit Fox

Minor adverse effects to the kit fox could result from all alternatives. One potential kit fox den was observed along the W3 and W4 alternatives. If the W3 or W4 alternatives are selected as the alternatives to be built, or if previously undiscovered kit fox dens are found during preconstruction surveys, there could be potential impacts to kit foxes. Impacts could result from destruction of the den, entrapment of individuals within the den, and negative biophysical responses (e.g., foraging, reproductive behavior, rest, etc.). RPMs will be implemented to ensure impacts to kit fox are reduced. These include determining if there is an occupied kit fox den and minimizing work activities near active kit fox dens, especially during periods when young are being raised. Surveys for kit fox dens will also be documented during preconstruction surveys for the burrowing owl. If any kit fox dens are identified, they will be reported to the BLM biologist and consultation with the BLM biologist will occur to determine RPMs necessary to avoid impacts to kit foxes.

4.3.3 Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act

Minor adverse impacts to migratory birds are expected to result from implementation of any of the proposed action alternatives. RPMs will be implemented to identify active bird nests and restrict construction activities occurring during the breeding season. No impacts to bald eagles are expected. Golden eagles were previously discussed.

Construction activities occurring during the breeding season (February 1 to August 15) could potentially impact nesting migratory birds through indirect or direct take resulting from bird sensitivity to noise and human activity that causes them to abandon the nest or through nest destruction. In order to minimize impacts to migratory birds, RPMs will be implemented as outlined in the section above.

4.3.4 Wildlife Linkages

Minor adverse impacts to the potential linkage zone, wildlife habitat block, and BLM wildlife corridors are expected to result from implementation of the East Cerbat alternatives; no impacts to potential linkage zones, blocks, or corridors would result from the West Cerbat alternatives because none are found along these alternatives. Unlike highways, canals, railroads, and urbanization, electric transmission lines are porous and therefore are not expected to impede wildlife movement within the potential wildlife linkage zone, habitat block, or BLM wildlife corridors. New transmission line access roads are expected to have minimal impact on wildlife movement because of their small road surface area, unimproved surface, and the low volume of traffic that will use these roads once the transmission line is constructed.

4.3.5 General Vegetation

Short- and long-term direct impacts to general vegetation would result from areas cleared to create temporary workspace and where permanent infrastructure is built (e.g., structures, roads, and substations) (Table 33, Appendix A-2). Temporarily disturbed vegetation will re-establish both/either naturally and/or when aided by revegetation efforts, but this process could take several years. Common vegetation along all proposed action alternatives could be indirectly impacted by the introduction of noxious weeds.

4.3.6 Noxious and Invasive Plants

No or minor adverse impacts resulting from the introduction or spread of noxious weeds are expected from any proposed action alternative. RPMs such as washing construction equipment prior to entering the work site would reduce the spread of noxious and invasive plants.

4.3.7 No Action Alternative

No direct or indirect adverse impacts to biological resources would result through implementation of the no action alternative. Under this alternative, UNSE would not construct, operate, or maintain a 230-kV transmission line as proposed, and the BLM and ASLD would not issue a ROW for the project. Because the project would not be constructed as proposed, the biological resources of the area would remain unchanged, and no effects would be expected.

4.4 Cultural Resources

4.4.1 Proposed Action Alternatives

All the proposed action alternatives are expected to have no direct effects to historic properties if NRHP-eligible sites are avoided or recommended RPMs (see Appendix C for RPMs) are employed. Indirect effects could result from implementation of all proposed action alternatives due to increased pedestrian and vehicular use of the area where newly developed access is created. The increase of vehicles driving over and through the sites may cause damages to surface features, including the crushing and destruction of diagnostic artifacts. These indirect effects may also include the collecting or redistribution of artifacts and vandalism to features by pedestrians visiting the sites. Additionally, there is a chance that undiscovered sites could be encountered during project activities. If cultural remains or human burials are identified during construction, excavation at that location must cease and the appropriate land agency archaeologist must be contacted.

4.4.2 No Action Alternative

The no action alternative would have no effect on cultural resources. The BLM would not grant a ROW and UNSE would not be authorized to build the project as proposed.

4.5 Visual Resources

4.5.1 Proposed Action Alternatives

Efforts have been made to incorporate design features intended to reduce the overall visual impact of the project, including limited disturbance, placement of roads to limit cut and fill, restoration of natural contours to the extent possible, softening of the edges of cleared work spaces by selectively removing vegetation toward the edges and rounding corners, use of non-specular conductors, use of naturally weathering poles, use of self-weathering steel through plates for attachments of the insulator bases to the poles, and use of matte gray insulators.

The purpose of this analysis is to determine if any proposed action alternative would result in a significant impact to visual resources. The following is a summary of the analysis of potential impacts based on four

measurement indicators (Note: Appendices F-1 and F-3 contain a description of inventory and analysis methods):

1. Compliance with BLM VRM objectives: There will be no adverse effect with the incorporation of resource protection measures. All proposed action alternatives crossing BLM VRM Class IV are in compliance with VRM objectives to limit impact to visual resources where possible. Where the East Cerbat alternatives cross VRM Class III, they are also in compliance with VRM objectives to not dominate the view. Portions of the W1, W2, west common, and east common alternatives cross BLM VRM Class II areas where compliance will be obtained with the following resource protection measures (see contrast worksheets in Appendix F-4 and Tables 1 and 3 in Appendix F-3 for detailed analysis):
    a. W1, W2, West common—Overland travel only (for W1 and W2 alternatives), monitor disturbed soil and cut and fill slopes, apply BLM-approved soil colorants where soil color does not match existing conditions, and powder coat poles with BLM-approved standard environmental color selected by the BLM
    b. East common—Monitor disturbed soil and cut and fill slopes, apply BLM-approved soil colorants where soil color does not match existing conditions, perform seeding and/or reclamation of access roads, and powder coat poles with BLM-approved standard environmental color selected by the BLM
2. Dominant visual change in form, line, color, or texture: There will be a moderate adverse effect from the proposed Mineral Park Substation and minor adverse effect from the transmission line. Based on the contrast analysis (see contrast worksheets in Appendix F-4), no proposed action alternative would result in a dominant visual change to form, line, color, or texture. Some alternatives like W1 and W2 West Cerbat alternatives would be more dominant given the proximity to homes/rural roads and the generally undeveloped setting. The development of the Mineral Park Substation would be visible by people driving US-93 in either direction; however, the substation is not likely to represent a dominant visual change to the landscape
3. Substantial damage to a scenic resource: There would be a minor adverse effect. US-66 and the CFRA were identified as scenic resources. No proposed action alternative would result in substantial damage to either resource
4. Substantial effect on a designated scenic vista: There would be no effect. No designated scenic vistas are present

Based on the viewshed analysis (Appendix F-1), the contrast analysis from KOPs (Appendix F-4), and the use of visual simulations (Appendix F-5), it is not anticipated that any proposed action alternative would result in a significant impact to visual resources requiring further analysis in an environmental impact statement.

4.5.2 No Action Alternative

The no action alternative would have no effect on visual resources. The BLM would not grant a ROW and UNSE would not be authorized to build the project as proposed.

4.6 Air Quality

4.6.1 Proposed Action Alternatives

Impacts associated with air quality for all proposed action alternatives are anticipated to be minor, adverse, and short-term. As discussed in Chapter 3.5, the project area is in attainment for all criteria pollutants. Emissions will result primarily from the operation of construction vehicles and equipment. These emissions will result in a direct, short-term, minor, adverse effect that is not expected to affect ambient air quality or expose sensitive receptors to detrimental pollution concentrations. Additionally, implementation of a Stormwater Pollution Prevention Plan which prevents soil loss is also expected to minimize air pollution

from dust. Once constructed, the transmission line and substation will not be sources of emissions. Emissions from long-term operation and maintenance would be less than those resulting during construction and are expected to have short-term, negligible, adverse effects on air quality.

4.6.2 No Action Alternative

The no action alternative would have no effect on air quality. The BLM would not grant a ROW and UNSE would not be authorized to build the project as proposed.

4.7 Water Resources

4.7.1 Proposed Action Alternatives

There are no wetlands within the entire project area; therefore, there will be no effect to wetlands. No surface waters will be lost; transmission line structures and the substation will not be constructed in drainages. Along all proposed action alternatives, construction of access roads has potential to temporarily increase runoff and sedimentation, but because of the small scale of impacts and the already turbid nature of desert washes, the impacts are expected to be minor adverse. Additionally, implementation of a Stormwater Pollution Prevention Plan would further minimize impacts to water quality. Concrete truck wash-out will be performed at designated areas so that it does not impact surface waters. During operation of the transmission line, impacts would be similar to those described for construction and would result when access road maintenance occurs.

4.7.2 No Action Alternative

The no action alternative would have no effect on water resources. The BLM would not grant a ROW and UNSE would not be authorized to build the project as proposed.

4.8 Soils

4.8.1 Proposed Action Alternatives

The impacts to soil would be similar for all proposed action alternatives. All alternatives would have short-term, minor, adverse, direct effects to soil as a result of erosion. Construction activities (e.g., excavation, road construction, etc.) create potential for soils to be lost through erosion as they are exposed to wind and water and no longer bound in place. The greatest potential for soil loss from erosion is where ground disturbance would occur in soils that are classified as having a high susceptibility to erosion from wind or water. As presented in Chapter 3, there is little difference between the susceptibility of erodible soils amongst the alternatives. That is, no alternative will impact soils that have a high susceptibility to either wind or water erosion, and all alternatives would cross soil that has moderately high susceptibility to wind erosion; the distances of soil categorized as having a moderately high susceptibility to wind erosion crossed by each alternative is very similar. Soil erosion will be controlled during and after construction according to erosion and sediment controls outlined in a project-specific Stormwater Pollution Prevention Plan which will be prepared for the project. No soil classified as prime farmland will be impacted.

Top layers of soil which are most suitable to vegetation growth can also be lost if they are not excavated and stored separately. When not stored separately, the topsoil is mixed in with the subsurface layers of soil. Layers below the topsoil typically have less organic matter and have been leached of mineral and nutrients, which makes the soil less able to support vegetation. To minimize this long-term, direct, minor, adverse effect, the topsoil will be stored separately and replaced as the top layer of soil following excavation.

In addition to soil loss, soils could also be compacted where roads are constructed and equipment is driven. Compaction can reduce water infiltration, soil activity, and root growth. Soils typically take several years to return to pre-disturbance functions after compaction. To avoid unnecessary compaction, construction

activities will use access roads where feasible, and off-road travel will be limited to the minimum necessary to complete construction activities.

Soil compaction is expected to result in a short-term, minor, adverse, direct effects and will be similar along all proposed action alternatives since the alternatives are similar in length.

4.8.2 No Action Alternative

The no action alternative would have no effect on soils. The BLM would not grant a ROW and UNSE would not be authorized to build the project as proposed.

4.9 Noise

4.9.1 Proposed Action Alternatives

4.9.1.1 Audible Noise

During construction, noise will be generated from the use of construction equipment and vehicles used to transport crews and materials. Uncontrolled noise levels for typical construction equipment are displayed in Table 34 in Appendix A-2 (FHWA 2017). The maximum noise levels will range between 80 to 85 dBA at 50 feet from construction equipment. As a general rule of thumb, noise levels drop 6 dBA every time the distance from a point source is doubled.

Mohave County has a general noise ordinance that prohibits loud and disturbing noise. There is an exemption for reasonable construction noise as long as it occurs between the hours of 6:00 a.m. and sunset; however, neither Mohave County nor the City of Kingman has a detailed noise standard that directly dictates impact assessment criteria in decibels. In lieu of such standards, construction criteria used by the U.S. Department of Transportation (USDOT) were used for this assessment (Table 35, Appendix A-2). These criteria are not standardized, but they are considered reasonable guidelines for determining construction noise impacts (USDOT 2012). The acceptability standards are given in terms of the 1-hour equivalent noise level (L_{eq}), the 8-hour equivalent noise level (L_{eq}), and the weighted day-night average (L_{dn}) noise level.

Existing land uses are detailed in *Land Use* (Section 3.1) of this EA. Sensitive noise receptors within 1,000 feet of the transmission line were discussed in Section 3.9. In summary, there are nearly double the noise receptors along the East Cerbat alternatives. There is no difference in the amount of noise receptors between the two East Cerbat alternatives, but there is difference among the West Cerbat alternatives. The W3 West Cerbat Alternative has the most noise receptors along it. Parks are also sensitive noise receptors, and both the East and West Cerbat alternatives would affect the CFRA. The East Cerbat alternatives would have the least amount of transmission line within 1,000 feet of the park, 2.7 miles less than the W1 and W2 alternatives, which would have the most transmission line within 1,000 feet of the east CFRA. Based on typical usage factors, the average construction noise level is conservatively estimated to be 83 dBA at 50 feet from the centerline of the transmission line. The noise levels are anticipated to decrease according to typical point source distance attenuation (Table 36, Appendix A-2). As such, at a distance over 100 feet, noise is expected to be within suitable limits. Within 100 feet from the transmission line, construction noise levels would slightly exceed the USDOT 8-hour L_{eq} standards for construction in residential areas. Impacts would be similar amongst all alternatives since the number of noise receptors within 100 feet is similar amongst all alternatives (i.e., approximately 10 noise receptors). Construction noise impacts will be temporary. Construction is focused around structures. Construction of transmission line structures can take anywhere from several days to several weeks, depending on various factors. This makes the duration of noise impacts within 100 feet of noise receptors brief, and thus, direct impacts are expected to be temporary and moderately adverse. To reduce noise impacts whenever a receptor is within approximately 100 feet of the active transmission construction area, any idling equipment should be parked as far away as possible from the receptor.

The majority of noise impacts (i.e., those beyond 100 feet) are expected to have minor, adverse, short-term, direct, impacts. The noise levels will be below the USDOT standards for construction. It is expected that the majority of the work will occur during the daytime in accordance with the Mohave County guidelines. No nighttime work is planned, but in the event nighttime work is necessary, UNSE will notify residents who would be affected. In order to further limit noise impacts in general, equipment not in use for a reasonable amount of time should be turned off when possible.

Operation of the transmission line and substation is expected to have long-term, minor, adverse effects. According to U.S. Department of Housing and Urban Development standards, permanent noise levels of 65 dBA or less are considered normally acceptable (HUD 2009). Noise from the transmission line is expected to be less than 25 dBA and in certain weather conditions could be as high as 50 dBA. The vast majority of the time, the noise from the transmission line will be inaudible outside the ROW. The transmission line will generate noise from the corona effect, a phenomenon that can cause a tiny electric discharge that can ionize air close to the conductors, creating a humming noise. During dry weather, corona effect noise from a double-circuit 230-kV transmission line is generally less than 25 dBA, and when the conductors are wet or during heavy rain, noise can be as high as 50 dbA (CPUC 2010). Corona effects are typically not a design concern for transmission lines operating at 230 kV or less. Operation of the Mineral Park Substation would result in long-term, negligible impacts. Noise would be generated in the Mineral Park Substation in the range of 65 to 80 dBA, primarily by the transformers, reactors, and circuit breakers. There are no residences or sensitive noise receptors within 1,000 feet of the substation.

Maintenance of the transmission line is expected to result in negligible noise impacts. Routine inspections of the transmission line will occur infrequently. Assuming these inspections are performed by a small crew in a single vehicle during daylight hours, the magnitude of any noise impacts will be likely be less than 65 dBA at the edge of the ROW. Additionally, due to the infrequency of the routine patrols and the minimal noise level, these impacts are considered negligible.

4.9.1.2 Radio Noise

Federal Communications Commission (FCC) Part 15 regulations govern radio and television noise, which is frequently generated by electric utility facilities and lines. Under this regulation, utility companies are required to rectify the problem creating the radio or television noise. For an electrical transmission line, radio noise is most frequently caused by an equipment defect or an incidental emission. When there is a defect, sparking or gap discharge (i.e., sparking or arcing of electricity across transmission line hardware) has potential to impact radio frequencies into the ultrahigh frequency range (above 300 MHz).

Short-term moderately adverse effects resulting from radio noise are expected. The FCC mandates that incidental emitters must not cause harmful interference; therefore, all effects resulting from the transmission line must be rectified. When UNSE receives a complaint about radio interference, they will go through the process of identifying the source, and if the source is determined to be their equipment, they will take corrective actions.

4.9.2 No Action Alternative

The no action alternative would have no effect on noise. The BLM would not grant a ROW and UNSE would not be authorized to build the project as proposed.

4.10 Environmental Justice

4.10.1 Proposed Action Alternatives

None of the proposed action alternatives would cause disproportionately high or adverse environmental effects on minority populations and/or low-income populations. Temporary and long-term project impacts

would not be restricted to a single population in the area. Although minority and low-income populations may experience impacts from the project, impacts would not be borne solely, or in their majority, by these populations.

4.10.2 No Action Alternative

The no action alternative would have no effect on environmental justice. The BLM would not grant a ROW and UNSE would not be authorized to build the project as proposed.

4.11 Health and Safety

4.11.1 Proposed Action Alternatives

4.11.1.1 Hazardous Materials

There are no clean-up sites or superfund sites within the project area and thus, no effects to existing sites are expected. The project is not expected to introduce any hazardous materials into the environment.

4.11.1.2 Emergency Infrastructure

All proposed action alternatives are expected to have a short-term, minor, adverse impact to emergency infrastructure. Construction activities are not expected to hinder or alter emergency service access. Construction activities for crossing roads would require road closure for a short period of time. UNSE would maintain the flow of public traffic along alternate access routes.

4.11.1.3 Public and Worker Safety

During construction, standard health and safety practices would be implemented in accordance with the Occupational Safety and Health Administration's policies and procedures and UNSE's safety standards, which would reduce worker safety risks. Project implementation would not affect any local or regional emergency response plan or evacuation plan. Construction of the W1 and W2 West Cerbat alternatives would necessitate construction of an access road near homes in Golden Valley. There is concern that the road could give access to the backside of private properties and aid people with criminal intent. If the W1 or W2 West Cerbat alternative is selected, UNSE will gate and lock the access road in this area in order to prevent its use by the public. No impacts to the public or the safety of workers would be anticipated.

4.11.1.4 Electric and Magnetic Fields

There is a large body of scientific research regarding potential human health risks associated with exposure to EMFs. The most thorough, authoritative, and scientifically accepted review of the health impacts resulting from EMFs is the Environmental Health Criteria on Extremely Low Frequency Fields (EHC-ELF) document of the World Health Organization (WHO 2007). The EHC-ELF found that scientific evidence is not strong enough to be considered causal that daily, chronic, low-intensity power frequency magnetic field exposure increases the risk of childhood leukemia but is sufficiently strong to remain a concern. They also noted that several other diseases have been scientifically investigated for possible association with ELF magnetic field exposure. These include cancers, depression, suicide, reproductive dysfunction, developmental disorders, immunological modifications, and neurological disease. The scientific evidence supporting an association between ELF magnetic fields and these diseases is much weaker than for childhood leukemia and in some cases (e.g., cardiovascular disease or breast cancer), the evidence is sufficient to give confidence that magnetic fields do not cause the disease. The EHC-ELF report states that because of the weak scientific evidence, the health benefits of reducing exposure to extremely low frequency are unclear; therefore, policies for adopting arbitrary low extremely low frequency EMF limits are unnecessary. A few of the recommendations from the report are:

- Policymakers should establish guidelines for exposure and recommends the use of international guidelines to establish exposure limits for short-term, high-level ELF fields. The current recommended limit is 83–900 µT. These limits are rarely encountered by the public
- Policymakers and community planners should implement low-cost precautionary measures when designing new facilities and appliances to reduce exposure
- Local authorities should improve planning of ELF EMF-emitting facilities, including better consultation between industry, local government, and citizens when siting major ELF EMF-emitting sources

4.11.2 No Action Alternative

The no action alternative would have no effect on health and safety. The BLM would not grant a ROW and UNSE would not be authorized to build the project as proposed.

4.12 Cumulative Impacts

Cumulative impacts are additive or interactive effects that would result from the proposed action's incremental impact when added to past, present, and reasonably foreseeable future actions. Council of Environmental Quality guidelines limit cumulative impacts analysis to "important issues of national, regional, or local significance" (CEQ 1997); not all direct and indirect impacts are analyzed for cumulative impacts. A project could have a significant cumulative impact if a change in the environment resulted from the incremental impact of the proposed action when added to other closely related past, present, and reasonably foreseeable future projects. Cumulative impacts can result from individually minor, but collectively significant, projects taking place over a period of time.

For this project, the cumulative impacts study area was defined as a 3-mile buffer surrounding the project facilities. Within the cumulative impacts study area, past, present, and future actions were identified.

4.12.1 Past Actions

Several past actions have affected the cumulative impacts study area. Table 37 in Appendix A-2 summarizes past actions within the cumulative impacts study area.

4.12.2 Ongoing Actions

Besides routine maintenance of existing facilities and infrastructure, no ongoing actions were identified.

4.12.3 Reasonably Foreseeable Future Actions

A few reasonably foreseeable future actions were identified within the cumulative impacts study area (Table 38, Appendix A-2).

Past project effects were considered earlier in Chapter 4 when direct and indirect effects were analyzed for the proposed action. These past effects, coupled with the effects of the proposed action and present and future projects, are expected to result in no or negligible cumulative effects on the following resources: cultural, water, soil resources, noise, public health and safety, and environmental justice. These resources are not further analyzed for cumulative impacts. An analysis of potential cumulative effects to the remaining resources follows.

4.12.3.1 Land Use

Long-term impacts resulting from implementation of all the West Cerbat alternatives would include creating a new transmission line corridor and access road along the western boundary of the CFRA where none currently exists or is designated by the BLM. Although no future linear infrastructure projects such as

a transmission line or pipeline have been identified in this area, it is known that identifying the locations of existing infrastructure to parallel is a criterion used to identify potential routes. As such, the West Cerbat alternatives could attract new linear infrastructure along the western boundary of the CFRA. Because no such future linear infrastructure projects have been identified, there is currently no cumulative effect to analyze, but it is recognized that infrastructure ROWs can attract other infrastructure ROWs. This same effect is not expected along the East Cerbat alternatives because these alignments are within a BLM-designated corridor and mostly follow existing transmission lines.

On their own, the East Cerbat alternatives would be expected to result in long-term, minor, adverse impacts to recreation users of the CFRA, and these impacts could act additively (i.e., the effects of the projects add together to make up a cumulative effect) with the effects of ADOT's future I-11 corridor project. While these two projects could act additively, they would both be modifications/expansions to existing infrastructure, and thus, their effects would result in the increased prominence of infrastructure to recreation users but not an outright modification that would introduce recreationists to built features not already present. This would occur within an area already designated as a utility corridor. The effects would be expected to be minor to moderate adverse to recreation and views and would dissipate as users travel further from the trailhead, deeper into the park.

If construction of the US-93 and I-40 interchange and the proposed action overlap, all project alternatives could act additively with the US-93 and I-40 interchange project to negatively affect traffic in the Kingman area. If the two projects' construction periods overlap, the increased traffic associated with the construction of transmission line would add to traffic delays likely to be associated with construction of the new traffic interchange. Because the transmission line project at its peak is expected to result in an additional 25 to 30 vehicles on the roadways, the effects are expected to be minor to moderate and they will be short term. Such effects would only be expected if the two construction periods overlap.

4.12.3.2 Biological Resources

Impacts to biological resources such as loss of habitat, modification of habitat, temporary and permanent displacement of wildlife, disturbance to routine wildlife behaviors resulting in increased stress, removal of vegetation, etc. have resulted from past projects and would continue to result from future projects. The proposed action alternatives would result in similar impacts and these impacts are expected to have only minor adverse impacts upon biological resources. While biological resources have been, and will continue to be, affected by development projects, combined with the effects from all known past, present, and future projects the effects resulting from this proposed transmission line project are minor adverse impacts and would not be expected to act cumulatively in a manner with other projects that would lead toward more adverse impacts to biological resources.

4.12.3.3 Visual Resources

Many of the past actions described in Table 37 happened long enough ago that they are generally considered part of the affected environment baseline condition. The following have happened more recently, visually overlap with the proposed project, and are considered in the cumulative analysis for visual resources:

- A 190-foot radio tower was constructed in 2012 near Coyote Pass
- A five-turbine wind farm was constructed in 2011 east of the Nucor Steel Plant and Harris Substation
- Recent development and expansion along I-40

Reasonably foreseeable future actions that may overlap in time and space with the visual impacts of the proposed project include the following:

- Additional turbines and additional small-scale solar energy farm in the vicinity of the existing wind turbines
- The I-11 and Intermountain West Corridor
- The traffic interchange between US-93 and I-40
- The proposed UNSE Coyote Breaker Relocation
- The UNSE Distribution Substation near the Shinarump Drive and I-40 intersection

Based on analysis of cumulative effects, at no point would the proposed action alternatives combined with past and proposed future actions represent a significant impact to visual resources based on the four measurement indicators above, provided future development conforms to VRM requirements and implements visual resources protection measures.

4.13 Mitigation Measures and Residual Impacts

RPMs have been incorporated into the proposed action and thus, are considered design features of the project. These have been considered in the analysis of the project. With the exception of land use, no mitigation measures are proposed for resources analyzed in this EA. Land use impacts to be mitigated are related to radio towers and the potential to interfere with the broadcast signal. The following mitigation measure will be implemented to reduce potential impacts:

- UNSE shall make every reasonable effort to promptly investigate, identify, and correct, on a case-specific basis, all complaints of interference with radio signals from operation of the project, and where such interference is caused by the project, take reasonable measures to mitigate such interference. In addition, implementation of either of the East Cerbat alternatives will require that UNSE notify the owners of the KYET radio tower at least 1 month in advance of commencing construction within 1,500 feet of the radio tower

With incorporation of the mitigation measure, no high adverse impacts to land use are expected. With proper study and design the impact to the radio towers will be mitigated such that interference is not expected.

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