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## APPENDICES

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APPENDIX 4B	Past, Present, and Reasonably Foreseeable Projects, Developments, Disturbances, and Activities

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# CHAPTER 4 ENVIRONMENTAL CONSEQUENCES

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## 4.1 INTRODUCTION

This chapter presents the results of environmental impact analysis for the various resources introduced in Chapter 3 of this EIS.

This chapter includes the following:

**Section 4.1** provides an introduction to the chapter and the definitions for terms used to describe environmental effects.

**Sections 4.2** through **4.16** discuss the environmental consequences for each resource and use brought forward for analysis.

**Sections 4.17** through **4.19** discuss irreversible and irretrievable commitments of resources, the relationship between short-term uses and long-term productivity of resources, and cumulative effects by resource.

All figures referenced in the text of this chapter are found in the Figures section of Volume II.

### 4.1.1 Impact Assessment

The Proposed Action and Action Alternatives outlined in Chapter 2 may cause, directly or indirectly, changes in the human environment. This EIS assesses and analyzes these potential changes and discloses the effects to the decision-makers and public. This process of disclosure is one of the fundamental aims of NEPA.

Many concepts and terms used when discussing impacts assessment may not be familiar to the average reader. The following sections attempt to clarify some of these concepts.

#### 4.1.1.1 Effects/Impacts

The terms “effect” and “impact” are synonymous under NEPA. Effects may refer to ecological, aesthetic, historical, cultural, economic, social, or health-related phenomena that may be caused by the Proposed Action or Action Alternatives. Effects may be direct, indirect, or cumulative in nature. Cumulative effects are analyzed at the end of this chapter.

#### 4.1.1.2 Direct Effects

A direct effect occurs at the same time and place as the action. Direct and indirect effects are discussed in combination under each affected resource.

#### 4.1.1.3 Indirect Effects

Indirect effects are reasonably foreseeable effects that occur later in time or are removed in distance from the action. Direct and indirect effects are discussed in combination under each affected resource.

#### 4.1.1.4 Mitigation for Impacts

Where applicable, mitigation measures are proposed in this document. If residual effects remain after the mitigation is applied, those effects are described as well. Mitigation measures are means to address environmental impacts that are applied in the impact analysis to reduce intensity or eliminate the impacts. To be adequate and effective, CEQ rules (40 CFR 1508.20) require that mitigation measures fit into one of five categories:

- (a) Avoiding the impact altogether by not taking a certain action or parts of an action;
- (b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation;
- (c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
- (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; or
- (e) Compensating for the impact by replacing or providing substitute resources or environments.

#### 4.1.1.5 Cumulative Effects

Effects to a resource are cumulative when the effects from the Project are added to the effects (anticipated effects) from other past, present, or future projects in the cumulative effects area for the Project. The cumulative effects area may be larger than the direct effects area. Cumulative effects are discussed in detail in **Section 4.19** below.

#### 4.1.1.6 Significance

The word “significant” has a very particular meaning when used in a NEPA document.

Significance is defined by CEQ as a measure of the *intensity* and *context* of the effects of a major federal action on, or the importance of that action to, the human environment. Significance is a function of the beneficial and adverse effects of an action on the environment.

Intensity refers to the severity or level of magnitude of impact. Public health and safety, proximity to sensitive areas, level of controversy, unique risks, or potentially precedent-setting effects are all factors to be considered in determining intensity of effect. This EIS will primarily use the terms Major, Moderate, Minor, or Negligible in describing the intensity of effects.

Context means that the effect(s) of an action must be analyzed within a framework, or within physical or conceptual limits. Resource disciplines; location, type, or size of area affected (e.g., local, regional, national); and affected interests are all elements of context that ultimately determine significance. Both long- and short-term effects are relevant.

#### 4.1.1.7 Indicators

An impact indicator is an element or parameter used to determine change (and the intensity of change) in a resource. Impact indicators are the consistent currency used to determine change (and the intensity of change) in a resource. Working from an established existing condition (i.e., baseline conditions described in Chapter 3) this indicator would be used to predict or detect change in a resource related to causal effects of proposed actions. Use of the term “significant” when referring to effects indicates some threshold for a particular impact indicator is exceeded.

#### 4.1.2 Environmental Effect Categories

The following environmental effect categories (**Table 4.1-1**) are presented to define relative levels of effect intensity and context and to provide a common language when describing effects. The definitions in the table below are general. Descriptors are specifically defined for certain resources when the general definitions presented in this table are inadequate.

**Table 4.1-1 Summary of Terms Used to Describe Effects in the EIS**

ATTRIBUTE OF EFFECT		DESCRIPTION
Magnitude (Intensity)	Negligible	No measurable change in current conditions.
	Minor	A small, but measurable change in current conditions.
	Moderate	An easily discernible and measurable change in current conditions.
	Major	A large, easily measurable change in current conditions.
Duration	Short-term	During construction up to 10 years.
	Long-term	More than 10 years.

Note: Descriptions are typical, but may vary by resource.

#### 4.1.3 Bradshaw-Harquahala Proposed RMPA

The Bradshaw-Harquahala RMP may be amended to allow the BLM to:

- Establish a single-use utility corridor on BLM-managed public lands that would contain the transmission line ROW, and change the existing VRM Class designations on both sides of SR 74 (from Class III to Class IV) to allow for the utility corridor under the Proposed Action.
- Establish a multiuse utility corridor 0.5-mile wide on BLM-managed public lands on the north side of SR 74 and also the entire key-shaped block of BLM-managed public lands south of SR 74 that would contain the ROW for the transmission line, and change the existing VRM Class designations of the area (from Class III to Class IV) to allow for the utility corridor under Alternative 1.

- Establish a multiuse utility corridor for the entire key-shaped block of BLM-managed public lands south of SR 74 and change the existing VRM Class designations of the area (from Class III to Class IV) to allow for the utility corridor under Alternative 2.

Designating a multiuse utility corridor would identify the area where multiple future linear utilities could be developed. The locations for the utility corridors in the Bradshaw-Harquahala RMP would be selected to minimize impacts to and from the affected environment.

Amending the Bradshaw-Harquahala RMP to designate a new utility corridor and changing the VRM classification would not actually involve any ground disturbing activities, but would allow for ground disturbing activities to occur. Impacts from amending the plan to allow for designating a utility corridor could affect mineral resources, land use, socioeconomics, and other resources. Changing the VRM classification would affect the management of visual resources within the proposed utility corridor. These impacts are discussed under the corresponding sections below. Because amending the plan to allow designating a utility corridor would not immediately involve ground disturbance or development, this action would not directly or indirectly impact the remaining resources in the proposed corridor (air quality and climate change; geology, minerals and soils; paleontological resources; water resources; vegetation; wildlife; threatened, endangered, and sensitive species; range resources; recreation; cultural resources; public health and safety; or hazardous materials and waste). Direct or indirect impacts that arguably could be associated with amending a plan to designate a utility corridor would be the same impacts as those disclosed in relation to the transmission line's construction, operation, maintenance, and decommissioning activities.

Future development of linear utilities within a designated multiuse utility corridor would involve ground disturbing activities that would impact resources within the proposed corridor; ground disturbing activities for additional utilities would likely be similar to those described for the Proposed Action, depending upon the proposed utility. However, site-specific analyses of the impacts to resources of future proposed linear utilities within the corridor would be required prior to authorization of such utilities. Anticipated cumulative impacts of these potential future actions are analyzed in **Section 4.19**.

## **4.2 AIR QUALITY AND CLIMATE CHANGE**

### **4.2.1 Indicators and Methods**

The primary indicators for air quality and climate change include:

- The quantified emissions of air pollutants in tons per month for each type of regulated pollutant, also GHG emissions in total tons emitted for the construction phase, and a recurring ton/yr basis for the operational (post-construction) phase.
- Compliance with the NAAQS that define the allowable ambient concentrations of potential air pollutants.

## 4.2.2 SIP Conformity

The General Conformity Rule promulgated by EPA on November 30, 1993 (58 FR 63214) requires that any *federal actions* conform to the SIP applicable to the specific project area in order to ensure that emissions from the project activities would not cause or contribute to violations of NAAQS and would not cause a delay of attaining compliance with NAAQS. A *federal action* is defined in 40 CFR § 93.152 as any activity engaged in or permitted, licensed, funded, approved by or otherwise supported by a federal department or agency. A portion of this Project would be developed on BLM-managed public land, therefore construction, operation, maintenance, and decommissioning activities associated with the Project would be considered a federal action.

The General Conformity Rule requires that federal actions be evaluated for conformity to the local SIP if the project is located in a non-attainment area for a specific pollutant and if the project emissions of that specific pollutant would exceed the de minimis level for that pollutant. The de minimis threshold levels (above which a full SIP Conformity analysis would be required) are based on the annual emission rates of each pollutant (tons per year). If project emissions are below de minimis thresholds, the federal action is considered exempt from the General Conformity Rule and no further evaluation is necessary.

Since the Project is located in an area designated as ‘Serious’ non-attainment for PM<sub>10</sub> and ‘Marginal’ non-attainment for ozone, the de minimis levels are 70 tons per year for PM<sub>10</sub>, 100 tons per year for NO<sub>x</sub> (ozone precursor), and 100 tons per year for VOC (ozone precursor). The de minimis level for carbon monoxide (CO) is 100 tons per year for all nonattainment and maintenance areas. No portion of the Project Area is located in a CO nonattainment area. A portion of Maricopa County is designated as a CO attainment area that is subject to a maintenance plan. As a result, the 100 ton per year limit applies. Emissions calculations for the Construction and Operational phases of the Project demonstrate that PM<sub>10</sub>, NO<sub>x</sub>, VOC, and CO emissions would be below de minimis levels for SIP Conformity and therefore, the Project would be considered a minor source of air emissions and further analysis under the General Conformity Rule is not necessary.

Although the Project would be a minor source for particulate emissions, the applicant-committed particulate control measures (set forth in Maricopa County Air Pollution Control Rules 310 and 310.01) would serve to minimize particulate emissions due to ground disturbance activities (the largest contributor to PM<sub>10</sub>/PM<sub>2.5</sub> emissions), thereby ensuring compliance with SIP requirements.

## 4.2.3 Direct and Indirect Effects by Alternative

### 4.2.3.1 Impacts Common to All Action Alternatives

Emissions impacts common to all Action Alternatives include PM<sub>10</sub>, PM<sub>2.5</sub>, CO, NO<sub>x</sub>, VOC, SO<sub>x</sub>, and GHG such as CO<sub>2</sub>, methane (CH<sub>4</sub>), and N<sub>2</sub>O. Sources of emissions from the Project include products of combustion from construction vehicles and construction equipment, fugitive dust from earthmoving activities during construction, and fugitive dust from unpaved roads due to vehicular traffic during construction.

Emissions from construction related activities are subject to a high degree of variability due to the transient nature of the emission sources and variability in the amount and type of activities. Therefore, assessment of emissions impacts were based on worst-case (maximum) monthly emission rates (during highest activity construction months) which were then compared to the most recent cumulative emission rates for all pollutant sources in Maricopa County based on the most current county emissions inventory.

The most current emission rates for CO and VOC were obtained from the 2005 MCAQD Periodic Emissions Inventory Report and those for PM<sub>10</sub>, PM<sub>2.5</sub>, NO<sub>x</sub>, and SO<sub>x</sub> were obtained from the 2008 MCAQD Periodic Emissions Inventory Report (June 2011 updated version). The total emission rates for each pollutant from the county emissions inventory reports were used for comparison to the total construction emissions impacts from the Project. The impact of construction emissions from the Project is expressed as a percentage increase for each pollutant in the MCAQD emissions inventory. For the Proposed Action and for each of the Action Alternatives, the increase of VOC, CO, NO<sub>x</sub>, SO<sub>x</sub>, and GHGs would be essentially the same; however, the total PM<sub>10</sub> and PM<sub>2.5</sub> impacts may differ slightly (but not significantly) for each option due to the slight variation in total acreage disturbed.

### Construction

#### *Construction Equipment Exhaust Emissions*

Emissions from construction equipment would result from the combustion of fossil fuels (primarily diesel fuel used in compression ignition engines) used to power construction equipment and would comprise the bulk of the total gaseous pollutants (CO, VOC, NO<sub>x</sub>, SO<sub>x</sub>, GHGs) emitted from the Project. Exhaust from various types of construction equipment taken into consideration for emissions estimation include bulldozers, graders, cranes, pickup trucks, water trucks, hole diggers, backhoes, dump trucks, drills, pole haul trucks, drum pullers, tensioners, splicing equipment, 2-ton trucks, 5-ton trucks, and boom trucks. The types of activities that would take place during the construction phase include access road construction, pad preparation, surveying, hole digging, foundation installation, hauling and erecting transmission line structures, conductor stringing (stringing of power lines), clean up, and reclamation.

Criteria pollutant emissions (PM<sub>10</sub>, PM<sub>2.5</sub>, CO, VOC, NO<sub>x</sub>, SO<sub>x</sub>) from construction equipment exhaust (diesel engines) were estimated using the EPA document *Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling-Compression Ignition* (EPA 2004). The emission factors were calculated using the methodology presented in the document and are based on Tier II engine performance (engine emissions standards adopted

in 2004 and in widespread use today). The emission factor calculations account for the highly variable loads placed on engines used in construction activities which result in the transient nature of pollutant emissions. The Non-Road Model utilizes steady state emission factors along with various adjustment factors to account for transient effects and changes in emissions due to the aging of the engines. The emission factors calculated from the Non-Road Model were then used in conjunction with parameters such as engine size (horsepower rating), number of units on site, and the estimated average hours of operation for each type of equipment. It should be noted that construction equipment would utilize ultra-low sulfur diesel (15 ppm) that would result in lower SO<sub>2</sub> emissions as well as lower particulate matter and NO<sub>x</sub> emissions.

GHG emissions from the construction equipment were also estimated. Carbon dioxide and CH<sub>4</sub> emissions from construction equipment were calculated based on *Off-Road Mobile Source Emission Factors* from the *South Coast Air Quality Management District (SCAQMD) Emissions Handbook (1993, 2008)* using 2012 as the basis year. N<sub>2</sub>O emissions were calculated using the emission factor for diesel construction equipment from *Appendix H of Form EIA-1605* published by the U.S. Energy Information Administration (EIA; 2007). Emissions of CH<sub>4</sub> and N<sub>2</sub>O were then converted to their CO<sub>2</sub>e using their respective Global Warming Potentials (GWP) of 21 and 310. The resulting CO<sub>2</sub>e emissions due to CH<sub>4</sub> and N<sub>2</sub>O were subsequently added to the CO<sub>2</sub> emissions to determine the total GHG impact expressed in terms of CO<sub>2</sub>e.

Helicopter emissions would possibly be another potential source of emissions during construction. At this time it is not known if the stringing of the conductors would involve the use of a helicopter; however, since this is a possible option, the emissions estimates include the use of one helicopter with a 450 hp engine utilizing kerosene jet fuel (Jet A). For purposes of emission estimation, the helicopter was assumed to be a Hughes MD500N (representative of a typical helicopter used in wire stringing operations) and a conservative estimate of 200 LTO (landing/take-off) cycles per month and 90 hours of operation per month was assumed. Criteria pollutant emission estimates were based on emission factors and fuel consumption rates from the document *Guidance on the Determination of Helicopter Emissions* (Federal Office of Civil Aviation in Switzerland 2009), except for SO<sub>2</sub> emissions which were based on a 0.3 percent maximum sulfur content permitted in Jet A fuel (ASTM 1655 specification) and assuming 100 percent conversion of elemental sulfur to SO<sub>2</sub>. GHG emissions estimates for CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O were calculated using jet fuel emission factors from the *Appendix H of Form EIA-1605* from EIA.

Construction equipment exhaust emissions due to combustion of fossil fuels, employee commuter vehicles, and concrete transport trucks would be similar for the Proposed Action and all Action Alternatives since the amount and duration of construction activities would be nearly identical for all options.

#### *Concrete Truck Transport Emissions*

Concrete required for the transmission line structures would be transported to the construction site by truck. Exhaust emissions were estimated to account for the truck transportation air quality impacts. The calculations were based on the assumption of 10 roundtrips per day, assuming a roundtrip distance of 44 miles and a total of 100 days of

concrete truck transport. The estimated horsepower rating of the concrete trucks was assumed to be 400 hp. Emission factors for *Heavy-Heavy Duty Vehicles* from the *SCAQMD Emissions Handbook (1993, 2008)* were used in conjunction with the aforementioned assumptions to estimate the criteria pollutant and GHG emissions, with the exception of N<sub>2</sub>O emissions calculations which were based on the heavy duty diesel truck emission factor from *EIA Appendix H of Form EIA-1605*.

*Employee Commuter Vehicle Emissions*

Emissions generated due to employee commuter vehicle exhaust (employee tailpipe emissions) would consist of PM<sub>10</sub>, PM<sub>2.5</sub>, CO, VOC, NO<sub>x</sub>, SO<sub>x</sub>, and GHGs. Emission factors used in the calculation of criteria pollutant emissions were based on Mobile 6.2 vehicle emissions modeling conducted as part of the emissions inventory for the Rosemont Copper Project in southern Arizona. Mobile 6.2 emission factors are dependent on the ambient temperature input data, vehicle travel speeds, operating mode, and fuel volatility. The Rosemont facility is located approximately 30 miles southeast of Tucson, Arizona, and has a nearly identical climate and meteorological profile to the proposed location of this Project, making the Mobile 6.2 output suitable for use in determining vehicle emission factors. Vehicle usage and operating modes for the two sites are also likely to be similar. The Mobile 6.2 program output provides base emission factors for various vehicle types which are designated as follows: LDGV – Light Duty Gasoline Vehicles, LDGT12 – Light Duty Gasoline Truck (less than 6000 lbs), LDGT34 – Light Duty Gasoline Truck (greater than 6000 lbs), HDGV – Heavy Duty Gasoline Vehicles, LDDV – Light Duty Diesel Vehicles, LDDT – Light Duty Diesel Trucks, HDDV – Heavy Duty Diesel Vehicles, and MC – Motorcycles. A site specific vehicle distribution based on the proportionate number of each vehicle type is then used in conjunction with the base emission factors to derive a weighted composite emission factor for each pollutant. The vehicle distribution was adjusted to more accurately reflect the anticipated vehicle mix for this Project. The resulting composite emission factors (based on the adjusted distribution) were then used in the subsequent calculation of vehicle emissions for the Proposed Action and all Action Alternatives.

The following vehicle mix listed in **Table 4.2-1** was utilized for the composite emission factor calculations.

**Table 4.2-1 Commuter Vehicle Distribution**

VEHICLE TYPE	LDGV	LDGT12	LDGT34	HDGV	LDDV	LDDT	HDDV	MC
% of Total	33.3%	33.3%	10%	5%	6%	6%	5%	1.4%

The employee vehicle emission calculations were based on the maximum number of workers per vehicle, the duration of each phase of construction (days), and the round trip distance of each vehicle commute. A five-day work week was used as a basis, and for most phases of construction a 40-mile round trip commute was assumed, except for the Survey phase which assumed a 72-mile round trip commute.

GHG emission factors from employee commuter vehicles were also calculated using the same vehicle mix used for criteria pollutant emissions, in conjunction with *On-Road Emission Factors* from *SCAQMD Emissions Handbook (1993, 2008)* for CO<sub>2</sub>, and *EIA Appendix H of Form EIA-1605* emission factors for CH<sub>4</sub> and N<sub>2</sub>O (US Energy Information Administration 2007). The resulting composite emission factors were then used in the calculation of GHG emissions.

*Ozone Impacts*

As shown in **Table 4.2-2**, the maximum increases of VOC, CO, and NO<sub>x</sub> in the ozone non-attainment area would be 0.003 percent, 0.003 percent, and 0.087 percent, respectively.

**Table 4.2-2 Maximum Monthly Construction Emission Rates - Proposed Action**

EMISSIONS CATEGORY	MAXIMUM MONTHLY EMISSIONS (TONS/MO)					
	VOC	CO	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>
Construction Equipment Exhaust	0.53	2.79	7.73	0.25	0.23	0.04
Temporary Ground Disturbance	0	0	0	4.08	0.85	0
Employee Commuting	0.01	0.09	0.01	0.0004	0.0004	0.0001
Concrete Truck Transportation	0.02	0.07	0.20	0.0099	0.0085	0.0003
TOTAL	0.55	2.94	7.94	4.33	1.08	0.04
MCAQD Inventory (ton/mo)	21,963	109,950	9,139	4,012	1,126	151
TOTAL as % of MCAQD Inventory	0.003%	0.003%	0.087%	0.11%	0.10%	0.028%

Notes: VOC and CO emission inventory figures based on 2005 MCAQD Inventory Report (MCAQD 2005)  
 PM<sub>10</sub>, SO<sub>2</sub> and NO<sub>x</sub> emission inventory figures based on 2008 MCAQD Inventory Report (MCAQD 2008)  
 MCAQD ton/mo figures based on dividing annual rate in MCAQD Inventory Reports by 12

Maricopa County is currently designated as a non-attainment area for ozone. The number of violations based on the 8-hour standard of 0.08 ppm (established in 1997) has been on a declining trend over the past few years. However, in March, 2008 the EPA lowered the 8-hour ozone NAAQS from 0.08 ppm to 0.075 ppm which has resulted in more monitoring sites showing exceedances of the new standard. In April, 2012 the EPA provided final designations of ozone non-attainment areas and Maricopa County was designated as ‘Marginal’ non-attainment (for parts of the county). At least part of the Project would be in or near the ozone non-attainment area; however, the minute magnitude of the NO<sub>x</sub> and VOC emissions from the Project make it highly unlikely that the emissions impacts from the Project would cause or contribute to an exceedance of the ozone NAAQS despite the more stringent ozone standard. It is also important to note that these construction related emissions increases would be temporary (i.e. the Project would not result in a permanent stationary source with recurring emissions) and that these figures represent the maximum monthly emission rates expected during the construction phase of the Project.

### *Greenhouse Gas Impacts*

GHG emissions from the Project were calculated by considering emissions from construction equipment exhaust, employee commuter vehicle tailpipe exhaust, and concrete truck exhaust. Emissions from these activity categories, expressed in terms of CO<sub>2</sub>e for the entire duration of the Project are shown in **Table 4.2-3**.

**Table 4.2-3 Total Construction Related GHG Emissions (as CO<sub>2</sub>e)  
- Proposed Action**

<b>ACTIVITY CATEGORY</b>	<b>TOTAL TONS</b>
Construction Equipment Exhaust	616.9
Employee Commuting	113.5
Concrete Truck Transportation	93.5
<b>PROJECT TOTAL</b>	<b>823.9</b>

As can be seen in **Table 4.2-3**, the total CO<sub>2</sub>e emissions from construction activities over the duration of the Project would be 823.9 tons with construction equipment being the source of about 75 percent of total GHG emissions. At this time, there is no established method to assess the impact of GHG emissions and in the absence of any applicable ambient standard or significance levels, a meaningful assessment of the climate change impacts of the Project cannot be determined. Therefore, the climate change impact analysis for the Project is limited to quantification of the GHG emissions for the duration of the Project.

### **Operations, Maintenance, and Decommissioning**

Post-construction emissions at the site would mainly consist of wind-blown dust emissions (PM<sub>10</sub>/PM<sub>2.5</sub>) and emissions from vehicular traffic due to surveying and maintenance activities.

Maintenance activities would be performed on an as-needed basis, would be intermittent in nature, and generally of short duration. As such, residual emissions from these activities would likely be minimal and much smaller in magnitude than construction emissions.

#### **4.2.3.2 Proposed Action**

##### **Construction**

###### *Ground Disturbance/Earthmoving Emissions*

The majority of the particulate emissions from the Proposed Action would be due to fugitive dust emissions caused by ground disturbance activities. Fugitive dust emissions (PM<sub>10</sub> and PM<sub>2.5</sub>) would result from earthmoving activities such as road construction, grading, land clearing, excavation, cut and fill operations, track-out emissions, and vehicular traffic over paved and unpaved access roads. Additional fugitive emissions would be generated due to

windblown dust (erosion) from areas where the ground is disturbed and exposed to wind effects.

Particulate emissions from construction related ground disturbances (earthmoving activities) were estimated using the generally accepted emission factors of 0.42 ton/acre-month for heavy construction (cut and fill activities), 0.11 ton/acre-month for light construction activities, and 0.13 ton/acre-month for ground disturbance activities that are a mix of material handling and transfers, vehicular traffic, and some heavy construction activity. The heavy construction emission factor (0.42 ton/acre-month) was developed by Midwest Research Institute (MRI) for the SCAQMD as a worst-case emission factor for large scale projects in California. The general construction activity emission factor was developed by MRI based on observations of construction sites in Las Vegas and California and site specific emission factors from EPA AP-42, *Compilation of Air Pollution Emission Factors* documents.

PM<sub>2.5</sub> (fine particulate) emissions are a subset of PM<sub>10</sub> and may be present in the fugitive dust emissions generated from ground disturbance activities. PM<sub>2.5</sub> emissions for ground disturbance were calculated by multiplying the calculated PM<sub>10</sub> emissions by the PM<sub>2.5</sub>/PM<sub>10</sub> fraction of 0.208 from the document *SCAQMD Methodology to Calculate PM<sub>2.5</sub> and PM<sub>2.5</sub> Significance Thresholds* (Krause and Smith 2006). This fractional value is generally accepted for estimating PM<sub>2.5</sub> emissions from ground disturbance activities.

Ground disturbance emissions calculations were performed for both temporary and permanent ground disturbance activities. The particulate emissions were determined for each of the main construction activity categories involving ground disturbance emissions (Access Road Construction, Laydown Material Sites, Transmission Structure Pad Construction, and Transmission Conductor Pulling/Tensioning Sites) by multiplying the total disturbed acreage of each activity category by the appropriate emission factor and the expected duration of each activity and then adjusting the emission rate by the expected control efficiency.

The ton per month PM<sub>10</sub>/PM<sub>2.5</sub> emission rate estimate used to assess impacts was based on maximum construction activity which is expected to occur during the overlapping activities of support structure construction, foundation pad construction, access road construction, and laydown material site construction. The ground disturbance emission calculations assume that 50 percent of the access road acreage, 75 percent of the laydown material site acreage, 10 percent of the transmission line support structure/foundation acreage, and 20 percent of the transmission line conductor sites would be actively disturbed at any given time during the construction phase of the Project. This conservative approach results in an estimate that accounts for any short-term peak emission rates of PM<sub>10</sub> and PM<sub>2.5</sub> during the brief periods when these activities would take place concurrently and present a cumulative impact. The estimated maximum PM<sub>10</sub>/PM<sub>2.5</sub> ground disturbance emission rates based on this methodology are 4.08 and 0.85 tons per month, respectively.

For temporary ground disturbances, expected control efficiencies ranged from 61 percent for the initial set up and preparation of each activity category (during which control measures may not be fully implemented and up to optimal performance) to 74 percent for the principal earthmoving phase (at which time the control measures such as watering would be fully implemented and at optimal performance). The control efficiencies of 61 percent and 74 percent were obtained from the Western Regional Air Partnership (WRAP; 2006) Dust

Control Handbook and are based on watering frequencies of every 3.1 and 2.1 hours, respectively.

A portion of the Project would be constructed within the designated PM<sub>10</sub> non-attainment area. Due to its PM<sub>10</sub> non-attainment status, the MCAQD has instituted stringent fugitive dust control regulations and control measure requirements for earthmoving projects within the county. Therefore, frequent watering would be required along with other mitigation measures to minimize fugitive dust emissions impacts as described in **Section 4.2.4**.

#### *Total Emissions Impact Summary for Construction Activities*

Emissions from each activity category were calculated and summed on a ton per month basis. A summary of the total maximum monthly emissions (worst-case ton/month emission rate) for criteria pollutants and the corresponding MCAQD emission inventory amounts is shown in **Table 4.2-2**.

#### *Particulate Impacts*

As shown in **Table 4.2-2**, at levels of maximum construction activity, the emission increase of PM<sub>10</sub> and PM<sub>2.5</sub> in the PM<sub>10</sub> non-attainment area would be 0.11 percent and 0.10 percent, respectively. Calculations indicate that maximum total PM<sub>10</sub> and PM<sub>2.5</sub> emission rates due to construction (which includes fugitive dust, vehicular particulate, and construction equipment emissions) would be 4.33 and 1.08 tons per month and 39.97 and 10.49 tons per year, respectively. Maricopa County is designated as ‘Serious’ non-attainment for PM<sub>10</sub> and in attainment for PM<sub>2.5</sub>. Given the transient nature of the PM<sub>10</sub> and PM<sub>2.5</sub> emissions, and the fact that, even during peak construction activity, the resulting emissions represent relatively small increases (less than one percent) above the current emission rates in Maricopa County, it is highly unlikely that the Project would cause or contribute to an exceedance or violation of any applicable particulate standard. The nearest particulate monitoring station to the Project is the Zuni Hills monitor at 109<sup>th</sup> Ave. and Deer Valley Rd. (about 8.5 miles south of the Project Area) which has not shown any exceedances of the PM<sub>10</sub> standard. In 2010, the maximum 24-hour PM<sub>10</sub> value at the monitor was 70 µg/m<sup>3</sup>, well below the 24-hour PM<sub>10</sub> Primary Standard of 150 µg/m<sup>3</sup>.

Furthermore, the stringent particulate control measures set forth in Maricopa County dust control regulations (Maricopa County Air Pollution Control Rule 310 and 310.01) and the commitment by APS to effectively implement those measures on a frequent and consistent basis would serve to minimize particulate emissions due to ground disturbance (earthmoving) activities (the largest contributor to PM<sub>10</sub>/PM<sub>2.5</sub> emissions). Specific dust control measures are discussed in **Section 4.2.4**.

Additionally, the use of ultra-low sulfur diesel fuel in the construction equipment (now required in virtually all of the U.S. and Arizona) would result in lower SO<sub>2</sub> and NO<sub>x</sub> emissions (fine particulate precursors) thereby resulting in lower PM<sub>10</sub>/PM<sub>2.5</sub> emissions.

### **Operations, Maintenance, and Decommissioning**

#### *Post-Construction Operation Phase Fugitive Emissions*

Fugitive particulate emissions would occasionally be emitted due to road maintenance activities. Emissions calculations for PM<sub>10</sub> and PM<sub>2.5</sub> were performed utilizing the acreages

of the permanently disturbed areas and then accounting for control efficiencies due to mitigation measures such as revegetation, graveling, and the use of dust palliatives. The calculations involved three separate areas: transmission line spur roads, acreage around the transmission structures, and access roads along the ROW. Overall control efficiencies for fugitive dust mitigation measures were developed taking into account the estimated percentage of each area to be revegetated and/or treated with other measures such as dust palliatives or gravel. Control efficiency estimates of 90 percent for revegetation, 84 percent for dust palliatives, and 84 percent for gravel are provided for in the WRAP (2006) Dust Control Handbook. A conservative assumption of 84 percent control efficiency for all three control measures was used for calculating emissions. The 84 percent control efficiency was used in conjunction with the pro-rated acreage percentage estimates to develop overall control efficiencies for the transmission line spur roads, areas around the transmission structures, and the ROW access roads. The resultant overall control efficiencies were then used in conjunction with the total acreages of each of the three areas to estimate the emissions. The AP-42 emission factor of 0.11 ton/acre-month for fugitive emissions from general construction was used.

Permanent structures such as the transmission line towers and foundation pads help to prevent wind erosion and minimize fugitive dust emissions. An overall control efficiency of 81.5 percent for the transmission structure acreages was used which is based on fugitive dust mitigation due to revegetation and transmission line structures/foundations occupying 50 percent of the transmission structure acreage, and the use of revegetation, gravel and dust palliatives in the remaining 50 percent of the area. Similarly, for the transmission line spur roads an overall control efficiency of 75.6 percent was used, assuming that 90 percent of the acreage would be controlled by revegetation and the use of dust palliatives and/or gravel as needed (providing 84 percent control efficiency). For the access road along the ROW, an overall control efficiency of 71.4 percent was used, assuming relatively low traffic volumes, and that 85 percent of the acreage would be controlled with the use of dust palliatives, gravel, and revegetation (at 84 percent control efficiency). The emission calculations indicate maximum annual PM<sub>10</sub> and PM<sub>2.5</sub> operational emissions (post-construction) of 9.8 and 2.0 ton per year, respectively.

#### *Residual Wind Erosion Fugitive Emissions*

Post-construction emission estimates of wind-blown dust emissions (PM<sub>10</sub>/PM<sub>2.5</sub>) were calculated using emission factors from AP-42 and assuming 50 percent control for revegetation after activity stops, and 50 percent improvement in control efficiency each year thereafter due to subsequent vegetation growth. PM<sub>2.5</sub> emissions were calculated by multiplying the PM<sub>10</sub> emission rates by the PM<sub>2.5</sub>/PM<sub>10</sub> fraction of 0.208 from the document *SCAQMD Methodology to Calculate PM<sub>2.5</sub> and PM<sub>2.5</sub> Significance Thresholds* (Krause and Smith 2006). Emission estimates for PM<sub>10</sub> and PM<sub>2.5</sub> due to wind erosion for each year after the conclusion of construction activities are shown in **Table 4.2-4**.

**Table 4.2-4 Wind Erosion Emissions (TONS/YR) - Proposed Action**

	YEAR 1	YEAR 2	YEAR 3	YEAR 4
PM <sub>10</sub>	1.6	0.8	0.4	0.2
PM <sub>2.5</sub>	0.3	0.2	0.1	0.04

*Residual Vehicular Exhaust Emissions*

Post-construction operational phase emission estimates due to emissions from employee vehicular traffic associated with surveying and maintenance activities were based on an estimated 19,993 vehicle miles traveled per year and assuming the same vehicle distribution in the construction phase documented in **Table 4.2-1**. The resulting yearly residual emissions are shown in **Table 4.2-5**.

**Table 4.2-5 Operational Phase Vehicular Emissions (TONS/YR) - Proposed Action**

	VOC	CO	NOX	PM <sub>10</sub>	PM <sub>2.5</sub>	SOX	CO <sub>2</sub> (e)
Vehicle Emissions	0.017	0.203	0.025	0.278	0.034	0.0002	16.4

There is no established method to assess the impact of GHG emissions and in the absence of any applicable ambient standard or significance levels, a meaningful assessment of the climate change impacts of the post-construction GHG emissions cannot be determined. Therefore, the climate change impact analysis for the post-construction operational phase of the Project is limited to quantification of the GHG emissions from vehicular exhaust related to surveying and maintenance activities.

**4.2.3.3 Alternative 1: Proposed Action with Additional Corridor**

**Construction**

*Ground Disturbance/Earthmoving Emissions*

Emissions from ground disturbance and earthmoving activities would be similar to those from the Proposed Action, with the maximum PM<sub>10</sub>/PM<sub>2.5</sub> ton/month emission rate due to temporary disturbances at 4.08 and 0.85 tons/month, respectively. The emissions calculation methodology is identical to that used for the Proposed Action.

*Total Emissions Impact Summary for Construction Activities*

Emissions from each activity category were calculated and summed on a ton per month basis. A summary of the total maximum monthly emissions (worst-case ton/month emission rate) for criteria pollutants and the corresponding MCAQD emission inventory amounts is shown in **Table 4.2-6**.

*Particulate Impacts*

Particulate impacts would be identical to the Proposed Action and are due to construction equipment exhaust, concrete truck transport exhaust, employee vehicle exhaust and ground disturbance/earthmoving activities. The calculation methodology and impact assessment are identical to that used for the Proposed Action. As shown in the preceding table, at levels of maximum construction activity, the emission increase of PM<sub>10</sub> and PM<sub>2.5</sub> in the PM<sub>10</sub> non-attainment area would be 0.11 percent and 0.10 percent, respectively and would not cause or contribute to a NAAQS violation.

**Table 4.2-6 Maximum Monthly Construction Emission Rates – Alternative 1**

EMISSIONS CATEGORY	MAXIMUM MONTHLY EMISSIONS (TONS/MO)					
	VOC	CO	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>
Construction Equipment Exhaust	0.53	2.79	7.73	0.25	0.23	0.04
Temporary Ground Disturbance	0	0	0	4.08	0.85	0
Employee Commuting	0.01	0.09	0.01	0.0004	0.0004	0.0001
Concrete Truck Transportation	0.02	0.07	0.20	0.0099	0.0085	0.0003
TOTAL	0.55	2.94	7.94	4.33	1.08	0.04
MCAQD Inventory (ton/mo)	21,963	109,950	9,139	4,012	1,126	151
TOTAL as % of MCAQD Inventory	0.003%	0.003%	0.087%	0.11%	0.10%	0.028%

Notes: VOC and CO emission inventory figures based on 2005 MCAQD Inventory Report (MCAQD 2005)  
 PM<sub>10</sub>, SO<sub>2</sub> and NO<sub>x</sub> emission inventory figures based on 2008 MCAQD Inventory Report (MCAQD 2008)  
 MCAQD ton/mo figures based on dividing annual rate in MCAQD Inventory Reports by 12

The total construction monthly and annual emission rates would be identical to that of the Proposed Action. Post-construction operational emissions would also be identical to that calculated for the Proposed Action.

*Other Impacts*

Under this alternative, there would be a change in management of lands managed by the BLM, both north and south of SR 74. Co-location of future utilities within the proposed additional corridor could result in additional projects that would likely have additional emissions and thus air quality and GHG impacts. However, any future projects would be subject to NEPA and other environmental review, therefore avoidance or mitigation would minimize additional impacts to air quality and climate change.

**Operations, Maintenance, and Decommissioning**

*Residual Wind Erosion Fugitive Emissions*

Post-construction operational PM<sub>10</sub> and PM<sub>2.5</sub> emissions would be identical to those from the Proposed Action as shown in **Table 4.2-4**. The emissions estimation methodology is identical to that for the Proposed Action.

### *Residual Vehicular Exhaust Emissions*

Post-construction operational vehicle emissions from employee commuter vehicle exhaust (tailpipe emissions) would be identical to those from the Proposed Action as shown in **Table 4.2-5**, and the calculation methodology and vehicle mix assumed is identical to that used for the Proposed Action.

#### **4.2.3.4 Alternative 2: ROW South of SR 74**

### **Construction**

#### *Ground Disturbance/Earthmoving Emissions*

Particulate impacts would be essentially the same, just slightly lower than the Proposed Action due to a slightly smaller disturbed acreage in the access roads and transmission structure sites. The calculation methodology and impact assessment are identical to that used for the Proposed Action. At levels of maximum construction activity, the emission increase of PM<sub>10</sub> and PM<sub>2.5</sub> in the PM<sub>10</sub> non-attainment area would be 0.11 percent and 0.10 percent, respectively and would not cause or contribute to a NAAQS violation. The total construction monthly and annual emission rates would be identical to that of the Proposed Action. Post-construction operational emissions would also be identical to that calculated for the Proposed Action.

#### *Concrete Truck Transport Emissions*

Emissions from concrete truck transportation exhaust would be similar to those from the Proposed Action, and the calculation methodology is identical to that of the Proposed Action.

#### *Employee Commuter Vehicle Emissions*

Emissions from employee commuter vehicle exhaust (tailpipe emissions) would be similar to those from the Proposed Action and the calculation methodology and vehicle mix assumed is identical to that of the Proposed Action.

#### *Total Emissions Impact Summary for Construction Activities*

Emissions from each activity category were calculated and summed on a ton per month basis. A summary of the total maximum monthly emissions (worst-case ton/month emission rate) for criteria pollutants and the corresponding MCAQD emission inventory amounts is shown in **Table 4.2-7**.

#### *Particulate Impacts*

Particulate impacts would be identical to the Proposed Action and are due to construction equipment exhaust, concrete truck transport exhaust, employee vehicle exhaust and ground disturbance/earthmoving activities. The calculation methodology and impact assessment are identical to those for the Proposed Action. As shown in **Table 4.2-7**, at levels of maximum construction activity, the emission increase of PM<sub>10</sub> and PM<sub>2.5</sub> in the PM<sub>10</sub> non-attainment area would be 0.11 percent and 0.10 percent, respectively and would not cause or contribute to NAAQS violations. The total construction monthly and annual emission rates would be identical to that of the Proposed Action. Post-construction operational emissions would also be identical to that calculated for the Proposed Action.

**Table 4.2-7 Maximum Monthly Construction Emission Rates – Alternative 2**

EMISSIONS CATEGORY	MAXIMUM MONTHLY EMISSIONS (TONS/MONTH)					
	VOC	CO	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>
Construction Equipment Exhaust	0.53	2.79	7.73	0.25	0.23	0.04
Temporary Ground Disturbance	0	0	0	3.99	0.83	0
Employee Commuting	0.01	0.09	0.01	0.0004	0.0004	0.0001
Concrete Truck Transportation	0.02	0.07	0.20	0.0099	0.0085	0.0003
TOTAL	0.55	2.94	7.94	<u>4.25</u>	<u>1.07</u>	0.04
MCAQD Inventory (ton/mo)	21,963	109,950	9,139	4,012	1,126	151
TOTAL as % of MCAQD Inventory	0.003%	0.003%	0.087%	0.11%	0.10%	0.028%

Notes: VOC and CO emission inventory figures based on 2005 MCAQD Inventory Report (MCAQD 2005)  
 PM<sub>10</sub>, SO<sub>2</sub> and NO<sub>x</sub> emission inventory figures based on 2008 MCAQD Inventory Report (MCAQD 2008)  
 MCAQD ton/mo figures based on dividing annual rate in MCAQD Inventory Reports by 12

*Other Impacts*

Under this alternative, there would be a change in management of lands managed by the BLM, south of SR 74. Co-location of future utilities within the proposed additional corridor could result in additional projects that would likely have additional emissions and thus air quality and GHG impacts. However, any future projects would be subject to NEPA and other environmental review, therefore avoidance or mitigation would minimize additional impacts to air quality and climate change.

**Operations, Maintenance, and Decommissioning**

*Residual Wind Erosion Fugitive Emissions*

Post-construction emission estimates for PM<sub>10</sub> and PM<sub>2.5</sub>, due to wind erosion for each year after the conclusion of construction are shown in the **Table 4.2-8**.

**Table 4.2-8 Wind Erosion Emissions (TONS/YR) – Alternative 2**

	YEAR 1	YEAR 2	YEAR 3	YEAR 4
PM <sub>10</sub>	1.5	0.8	0.4	0.2
PM <sub>2.5</sub>	0.3	0.2	0.1	0.04

The wind erosion emission rates are very similar to the Proposed Action and would be about 0.1 tons lower for PM<sub>10</sub> in Year 1 (1.5 ton/yr compared to 1.6 ton/yr from the Proposed Action).

### *Residual Vehicular Exhaust Emissions*

Post-construction operational vehicle emissions from employee commuter vehicle exhaust (tailpipe emissions) would be identical to those from the Proposed Action as shown in **Table 4.2-5**, and the calculation methodology and vehicle mix assumed is identical to that of the Proposed Action.

### **4.2.3.5 Alternative 3: Carefree Highway Route**

#### **Construction**

##### *Ground Disturbance/Earthmoving Emissions*

Emissions from ground disturbance and earthmoving activities would be similar to those from the Proposed Action, with the maximum PM<sub>10</sub>/PM<sub>2.5</sub> ton/month emission rate due to temporary disturbances at 4.08 and 0.85 tons/month, respectively. The emissions calculation methodology is identical to that used for the Proposed Action.

##### *Concrete Truck Transport Emissions*

Emissions from concrete truck transportation exhaust would be similar to those from the Proposed Action, and the calculation methodology is identical to that described in the Proposed Action.

##### *Employee Commuter Vehicle Emissions*

Emissions from employee commuter vehicle exhaust (tailpipe emissions) would be similar to those from the Proposed Action, and the calculation methodology and vehicle mix assumed is identical to that of the Proposed Action.

##### *Total Emissions Impact Summary for Construction Activities*

Emissions from each activity category were calculated and summed on a ton per month basis. A summary of the total maximum monthly emissions (worst-case ton/month emission rate) for criteria pollutants and the corresponding MCAQD emission inventory amounts is shown in **Table 4.2-9**.

##### *Particulate Impacts*

Particulate impacts would be identical to the Proposed Action and are due to construction equipment exhaust, concrete truck transport exhaust, employee vehicle exhaust and ground disturbance/earthmoving activities. The calculation methodology and impact assessment are identical to that used for the Proposed Action. As shown in the preceding table, at levels of maximum construction activity, the emission increase of PM<sub>10</sub> and PM<sub>2.5</sub> in the PM<sub>10</sub> non-attainment area would be 0.11 percent and 0.10 percent, respectively and would not cause or contribute to a NAAQS violation. The total construction monthly and annual emission rates would be identical to that of the Proposed Action. Post-construction operational emissions would also be identical to that calculated for the Proposed Action.

**Table 4.2-9 Maximum Monthly Construction Emission Rates – Alternative 3**

EMISSIONS CATEGORY	MAXIMUM MONTHLY EMISSIONS (TONS/MO)					
	VOC	CO	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>
Construction Equipment Exhaust	0.53	2.79	7.73	0.25	0.23	0.04
Temporary Ground Disturbance	0	0	0	4.08	0.85	0
Employee Commuting	0.01	0.09	0.01	0.0004	0.0004	0.0001
Concrete Truck Transportation	0.02	0.07	0.20	0.0099	0.0085	0.0003
TOTAL	0.55	2.94	7.94	4.33	1.08	0.04
MCAQD Inventory (ton/mo)	21,963	109,950	9,139	4,012	1,126	151
TOTAL as % of MCAQD Inventory	0.003%	0.003%	0.087%	0.11%	0.10%	0.028%

Notes: VOC and CO emission inventory figures based on 2005 MCAQD Inventory Report (MCAQD 2005)  
 PM<sub>10</sub>, SO<sub>2</sub> and NO<sub>x</sub> emission inventory figures based on 2008 MCAQD Inventory Report (MCAQD 2008)  
 MCAQD ton/mo figures based on dividing annual rate in MCAQD Inventory Reports by 12

**Operations, Maintenance, and Decommissioning**

*Residual Wind Erosion Fugitive Emissions*

Post-construction emission estimates for PM<sub>10</sub> and PM<sub>2.5</sub> due to wind erosion for each year after the conclusion of construction are identical to Alternative 3, and are shown in **Table 4.2-10**.

**Table 4.2-10 Wind Erosion Emissions (TONS/YR) – Alternative 3**

	YEAR 1	YEAR 2	YEAR 3	YEAR 4
PM <sub>10</sub>	1.5	0.8	0.4	0.2
PM <sub>2.5</sub>	0.3	0.2	0.1	0.04

The wind erosion emission rates are very similar to the Proposed Action and would be about 0.1 tons lower for PM<sub>10</sub> in Year 1 (1.5 ton/yr compared to 1.6 ton/yr from the Proposed Action).

*Residual Vehicular Exhaust Emissions*

Post-construction operational vehicle emissions from employee commuter vehicle exhaust (tailpipe emissions) would be identical to those from the Proposed Action as shown in **Table 4.2-5**, and the calculation methodology and vehicle mix assumed is identical to that of the Proposed Action.

#### 4.2.3.6 State Trust Land Route Variation Sub-alternative

##### Construction

Construction Equipment Exhaust Emissions - Emissions from construction equipment exhaust would be similar to those from the Proposed Action, and the calculation methodology is identical to that of the Proposed Action.

Ground Disturbance/Earthmoving Emissions - Emissions from ground disturbance and earthmoving activities would be identical to those from the Proposed Action, and the emissions calculation methodology is identical to that of the Proposed Action.

Concrete Truck Transport Emissions - Emissions from concrete truck transportation exhaust would be similar to those from the Proposed Action, and the calculation methodology is identical to that of the Proposed Action.

Employee Commuter Vehicle Emissions - Emissions from employee commuter vehicle exhaust (tailpipe emissions) would be similar to those from the Proposed Action, and the calculation methodology and vehicle mix assumed is identical to that of the Proposed Action.

Total Emissions Impact Summary for Construction Activities - Emissions from each activity category were calculated and summed on a ton per month basis. A summary of the total maximum monthly emissions (worst-case ton/month emission rate) for criteria pollutants and the corresponding MCAQD emission inventory amounts is shown in **Table 4.2-11**.

Particulate Impacts - Particulate impacts would be identical to the Proposed Action and are due to construction equipment exhaust, concrete truck transport exhaust, employee vehicle exhaust, and ground disturbance/earthmoving activities. The calculation methodology and impact assessment are identical to that of the Proposed Action. As shown in **Table 4.2-11**, at levels of maximum construction activity, the emission increase of PM<sub>10</sub> and PM<sub>2.5</sub> in the PM<sub>10</sub> non-attainment area would be 0.11 percent and 0.10 percent, respectively and would not cause or contribute to NAAQS violations. The total construction monthly and annual emission rates would be identical to that of the Proposed Action. Post-construction operational emissions would also be identical to that calculated for the Proposed Action.

**Table 4.2-11 Maximum Monthly Construction Emission Rates – State Trust  
Land Route Variation Sub-Alternative**

EMISSIONS CATEGORY	MAXIMUM MONTHLY EMISSIONS (TONS/MONTH)					
	VOC	CO	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>
Construction Equipment Exhaust	0.53	2.79	7.73	0.25	0.23	0.04
Temporary Ground Disturbance	0	0	0	4.08	0.85	0
Employee Commuting	0.01	0.09	0.01	0.0004	0.0004	0.0001
Concrete Truck Transportation	0.02	0.07	0.20	0.0099	0.0085	0.0003
TOTAL	0.55	2.94	7.94	4.33	1.08	0.04
MCAQD Inventory (ton/mo)	21,963	109,950	9,139	4,012	1,126	151
TOTAL as % of MCAQD Inventory	0.003%	0.003%	0.087%	0.11%	0.10%	0.028%

Notes: VOC and CO emission inventory figures based on 2005 MCAQD Inventory Report (MCAQD 2005)  
 PM<sub>10</sub>, SO<sub>2</sub> and NO<sub>x</sub> emission inventory figures based on 2008 MCAQD Inventory Report (MCAQD 2008)  
 MCAQD ton/mo figures based on dividing annual rate in MCAQD Inventory Reports by 12

### **Operations, Maintenance, and Decommissioning**

Residual Wind Erosion Fugitive Emissions - Post-construction operational PM<sub>10</sub> and PM<sub>2.5</sub> emissions would be identical to those from the Proposed Action as shown in **Table 4.2-4**. The emissions estimation methodology is identical to that of the Proposed Action.

Residual Vehicular Exhaust Emissions - Post-construction operational vehicle emissions from employee commuter vehicle exhaust (tailpipe emissions) would be identical to those from the Proposed Action as shown in **Table 4.2-5**, and the calculation methodology and vehicle mix assumed is identical to that of the Proposed Action.

### **Primary Segment Common to All Action Alternatives**

Impacts for this Primary Segment would be identical to those from the Proposed Action.

#### **4.2.3.7 No Action Alternative**

Under the No Action Alternative the BLM would not issue a ROW, the Bradshaw-Harquahala RMP would not be amended to establish a single- or multiuse utility corridor, and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives.

The No Action Alternative would result in no air quality impacts from construction activities and post-construction operational survey and maintenance activities that would have occurred in conjunction with the Proposed Action or Action Alternatives. However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed lands. Under this situation, impacts to air quality could be similar to those described for the Proposed Action and Action Alternatives. Should the route be longer

or shorter than the Proposed Action or Action Alternatives (resulting in different amounts of ground disturbance and generated emissions), adverse impacts may be increased or decreased.

Air quality impacts to the area could arise from any future projects or alternative uses of the land. It should be noted that if the Project is not built, the area that would have been served by the transmission line could instead become more reliant on “distributed power generation” which utilizes locally generated power in order to meet growing power demand. Localized power generation would involve the use of smaller generators (e.g. gas turbine or diesel generators) to satisfy power demand which could result in ambient air quality impacts and climate change impacts.

#### **4.2.4 Mitigation and Residual Effects**

##### *Control of Construction Related Fugitive Particulate Emissions*

Maricopa County Air Pollution Control Rule 310 requires any earthmoving project that disturbs greater than one-tenth (0.1) of an acre to obtain a dust control permit from the MCAQD and to have a Dust Control Plan detailing dust control measures for the project and contingency measures. Additionally, for any site requiring a dust control permit, all water truck and water-pull drivers must have successfully completed the Maricopa County Basic Dust Control Training Class within the last three years.

For project sites greater than one-tenth of an acre, additional requirements apply as follows: For projects disturbing greater than one acre, the soil texture of the site must be identified, either by a soil assessment report or by Appendix F (Soil Designations) of Maricopa County Air Pollution Control Rules, and the site superintendent is required to have completed the Basic Dust Control Training Class within the last three years (County Rule 310 Sec. 309). For project sites of two acres or larger (or sites where 100 cubic yards/day of bulk material is hauled on/off), a trackout control device is required at all exits. For project sites of five acres or greater, an on-site Dust Control Coordinator is required and must have successfully completed the Maricopa County Comprehensive Dust Control Training Class within the last three years. Additionally, for sites 5 acres or larger, a project information sign must be posted in accordance with Rule 310 Section 308 requirements. The sign must include the MCAQD complaint number allowing the public to report dust related complaints.

Maricopa County Rule 310 limits fugitive dust visible emissions to no more than 20 percent opacity and requires extensive monitoring of earthmoving activities to ensure compliance with this limit and all applicable requirements. Additionally, Maricopa County Rule 310.01 specifies requirements for open areas and vacant lots. Such areas would possibly be a source of particulate emissions during both the construction phase and post-construction operational phase. Section 302.5 of the rule specifies that the owner of open land areas or vacant lots must not allow any particulate matter visible emissions beyond the property line and also requires implementation of control measures, such as establishment of vegetative ground cover, application of palliatives, or other control measures approved by the county to minimize windblown dust emission. The rule also requires periodic evaluation and measurements of soil stability and surface conditions to ensure the effectiveness of control measures.

A variety of fugitive dust control measures are available to minimize fugitive dust emissions which include:

- Frequent watering to maintain visible moisture and/or form soil crust (stabilization)
- Treatment of actively disturbed areas with dust palliatives
- Trackout control devices such as grizzly bars, wheel washers, gravel pads located at all entrances and exits
- Utilize street sweepers to remove any visible soil/mud/dirt carried onto paved access roads
- Limiting vehicle speeds on access roads to less than 15 mph
- Covering haul truck cargo beds with tarps and maintain 3 inches of freeboard
- Cessation of construction on high-wind event days, and/or during periods of adverse meteorological conditions which could cause or contribute to NAAQS violations
- Revegetation to stabilize soil
- Minimization of disturbed land areas to the extent practicable with project design considerations
- Maintain a visible crust and sufficient moisture on any storage piles
- During the post-construction operational phase apply dust suppression measures such as watering (to form crust), application of dust palliatives, or gravel on vacant lots and disturbed areas in accordance with Maricopa County Rule 310.01

#### *Minimization of Emissions from Mobile Sources and Construction Equipment*

Emissions from mobile and construction equipment are due primarily to combustion of diesel fuel in engines. Ultra-low sulfur diesel fuel, limited to 15 ppm sulfur is now in widespread use in Arizona and is virtually the only type of diesel fuel available for use in both on-road and non-road construction vehicles in the United States. Use of ultra-low sulfur diesel fuel drastically reduces SO<sub>2</sub> emissions and would serve to mitigate the associated secondary fine particulate emissions (of which SO<sub>2</sub> is a precursor), thereby lessening overall particulate impacts. Use of ultra-low sulfur diesel also results in lower NO<sub>x</sub> emissions. Additional mitigation measures for mobile sources and construction equipment include the following:

- Construction related trips of workers and equipment would be minimized
- Idling of heavy equipment would be minimized
- Manufacturer recommendations for engine maintenance and operation would be followed to optimize emission performance
- Newer equipment meeting the most stringent of applicable federal or state standards would be utilized as much as practicable
- Diesel engines, motors and equipment would be located as far as practicable from residential areas and other sensitive areas (i.e., schools, daycare centers, and hospitals).

Since the majority of adverse impacts related to air resources would be temporary, following mitigation, residual effects are expected to be minimal.

#### **4.2.5 Unavoidable Adverse Impacts**

The Project would result in temporary air quality impacts from fugitive dust due to ground disturbance activities, and from engine exhaust. There would be some limited long-term air quality impacts due to emission from surveying and maintenance activities previously described.

### **4.3 CULTURAL RESOURCES**

#### **4.3.1 Indicators and Methods**

The term "historic property" is defined in the NHPA as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register of Historic Places (National Register)"; such term includes artifacts, records, and remains which are related to such district, site, building, structure, or object. 16 USC Section 470(w)(5).

The following indicators were considered when analyzing potential impacts to historic properties (i.e., National Register-eligible cultural resources):

- The number of National Register-eligible sites potentially impacted
- The number of historic properties within the viewshed potentially impacted indirectly by the Project

Assessment of potential effects or impacts on cultural resources is based on the NHPA regulations that define an effect as a direct or indirect alteration to the characteristics of a "historic property" that qualify it for inclusion in the National Register. Adverse effects diminish the integrity of a property's location, setting, design, materials, workmanship, feeling, or association.

As defined in 36 CFR 800.5, adverse effects on historic properties include, but are not limited to:

- (i) Physical destruction of or damage to all or part of the property;
- (ii) Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation, and provision of handicapped access, that is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR part 68) and applicable guidelines;
- (iii) Removal of the property from its historic location;
- (iv) Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance;
- (v) Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;

- (vi) Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and
- (vii) Transfer, lease, or sale of property out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

BLM, in consultation with the SHPO, ASLD, tribes, and other consulting parties, will apply the above criteria of adverse effect to arrive at a determination of effect for the entire proposed undertaking. BLM shall also to the extent practicable ensure that adverse effects to historic properties are avoided through project design, redesign, or relocation of facilities where feasible. Until final project designs are developed and approved, it must be assumed that the Project could adversely affect one or more of the historic properties, leading to a determination of adverse effect. The BLM would continue to work with the consulting parties to develop modifications or measures to avoid, minimize, or mitigate adverse effects to historic properties. Such consultation would result in the development and implementation of a Memorandum of Agreement (MOA) containing the terms and conditions agreed upon to resolve the adverse effects.

## **4.3.2 Direct and Indirect Effects by Alternative**

### **4.3.2.1 Proposed Action**

#### **Construction**

Prehistoric and historic sites eligible for listing in the National Register are distributed throughout the Project Area. Direct impacts to prehistoric and historic sites, including surface or subsurface disturbance incurred during Project construction could occur anywhere along the Proposed Action. Activities such as access road improvements; transmission line construction, including foundations, structure pads, and guy wire anchor points; vegetation management; and material yards for construction equipment and personnel have the potential to disturb cultural resources during the construction phase.

All sites would be avoided where practicable by Project design, such as locating transmission towers, access routes, and other facilities outside site boundaries; or by using helicopters for construction in sensitive areas. If avoidance is not feasible due to technical issues or resource conflicts, BLM would develop a MOA to address the adverse effect. Regardless of whether a MOA is required, BLM and ASLD would work with APS to develop a Discovery Plan, and if warranted a Monitoring Plan, which would define procedures for evaluating and treating discoveries of unrecorded cultural resources or recognition of unanticipated adverse effects. If any unanticipated cultural resources discoveries occur, all work within 50 meters of the boundary of the discovery would cease immediately and the BLM Field Manager would be notified. If the discovery occurs on State Trust land, the appropriate official at ASLD would be immediately notified. The BLM or ASLD would then evaluate the discovery in coordination with other consulting parties in order to determine and implement appropriate treatment. These actions would follow the provisions of a Monitoring and Discovery Plan developed in accordance with the terms of the MOA.

Nine National Register-eligible cultural resource sites (i.e., historic properties) are known to be within the Proposed Action ROW route (**Table 3.3-1**). These include three historic sites (US 60/70/89 [AZ V:2:101(ASM), AZ C:2:174(ASM), AZ I:3:10(ASM)], Santa Fe, Prescott & Phoenix Railway [AZ N:3:32(ASM)], and the Beardsley Canal [AZ T:3:55(ASM)]), four prehistoric sites (AZ T:3:10(ASM), AZ T:3:11(ASM), AZ T:3:325(ASM), and AZ T:3:348(ASM)), and two multi-component sites (AZ T:3:350(ASM) and AZ T:3:351(ASM)). The greatest challenge for avoiding impacts on National Register eligible properties is along the east side of the Agua Fria River. Transmission line structure placement would be modified to avoid and span National Register-eligible sites where possible. Direct adverse impacts could potentially be avoided through construction design modification or mitigated through data recovery studies. Impacts would likely be minor to moderate and long-term.

### **Operations, Maintenance, and Decommissioning**

No additional direct impacts to National Register-eligible cultural resources from operations, maintenance, and decommissioning would be anticipated.

Procedures would be implemented, as warranted, to ensure that if any National Register-eligible properties in the ROW are designated for avoidance by construction activities, that they would not be inadvertently damaged during operation, maintenance, and decommissioning of the Project. If BLM and ASLD conclude that National Register-eligible properties might be threatened, BLM and ASLD would work with APS to implement measures to avoid adverse impacts. BLM and/or ASLD staff, perhaps assisted by Arizona Site Stewards program volunteers, would conduct long-term monitoring as warranted. Long-term monitoring on privately owned land would be at the discretion of the land owner.

Indirect visual impacts to the settings of historic properties were evaluated in relation to the applicable National Register criteria and current integrity of setting, as well as the distance and visibility of proposed facilities (**Table 4.3-1**).

The Beardsley Canal (AZ T:3:55(ASM)) is eligible for the National Register under Criterion A (association with significant historical events). The linear site extends through areas that have been extensively developed (in the southern portion of the APE - which is an approximately 3 to 5 mile buffer area from the route) and less developed (on the north end of the site) with visual intrusions from power lines, roads (including SR 74 and Highway 303), residential development, the Canyon Raceway, Morgan and Raceway Substations, and the Pleasant Valley Airport. The CAP canal is crossed by the site as well. The Proposed Action would cross the Beardsley Canal (AZ T:3:55(ASM)) and therefore be visible in the foreground, middle ground, and background. Due to the numerous developed facilities in the area, there would be minor additional impacts to the Beardsley Canal's integrity of setting. Further, since the setting of this historic property is not essential to understanding its significance, the introduction of a new feature in that setting would not diminish the characteristics that make it eligible for the National Register.

The Calderwood Butte Archaeological District is recommended eligible for the National Register under Criterion D (potential to yield important information). Although designated as a preserve, housing developments have encroached on the southern and eastern sides of the butte. The Agua Fria Recharge Station, Beardsley Canal, the CAP canal, and other industrial developments are present in the foreground. At its closest point, the Proposed Action would

be 4.0 miles from this site and therefore would be visible in the middle ground. There would be minor impacts to the Calderwood Butte Archaeological District's integrity of setting. However, since the setting of this historic property is not essential to its significance, the introduction of a new feature in the middle ground would not diminish the characteristics that make it eligible for the National Register.

The Morristown Store (#91001003) is listed on the National Register under Criterion A (association with significant historical events). The property is adjacent to SR 74. There is an existing 69kV transmission line, a modern post office, and the Morristown Elementary School near the Morristown Store, as well as some residential development. The Proposed Action route would be 3.8 miles from the Morristown Store so would be visible in the middle ground. There would be minor impacts to the Morristown Store's integrity of setting. Since the setting of this historic property is not essential to understanding its significance, the introduction of a new feature in the middle ground would not diminish the characteristics that make it eligible for the National Register.

The Santa Fe, Prescott, & Phoenix Railway (AZ N:3:32(ASM)) is eligible for the National Register under Criterion A (association with significant historical events). The site is linear and extends through areas that have been extensively developed on the southeast and less developed on the northwest with visual intrusions from modern developments such as SR 74, US 60, Wittmann, Circle City, Morristown, Cactus Ranch Trailer Park, Chrysler Proving Ground, the CAP canal, LAFB, Speedworld Raceway Park, and miscellaneous residential development (Desert Oasis, etc.). The Proposed Action would cross the railway and therefore be visible in the foreground, middle ground, and background. There would be negligible impacts to the Santa Fe, Prescott, & Phoenix Railway's integrity of setting. However, since the setting of this historic property is not essential to understanding its significance, the introduction of a new feature would not diminish the characteristics that make it eligible for the National Register.

The Seymour III site (AZ T:2:27(ASM)), the remnants of a historic mining town, is eligible for the National Register under Criterion D (potential to yield important information). It has a well used two-track road running generally east-west through it to access the west side of the Hassayampa River. There is some residential development to the east on the opposite side of the river, but generally the area is undeveloped. At its closest point, the Proposed Action would be 4.3 miles from this site and therefore would be visible in the middle ground. There would be negligible impacts to the Seymour III site's integrity of setting. However, since the setting of this historic property is not essential to its significance, the introduction of a new feature in the middle ground would not diminish the characteristics that make it eligible for the National Register.

The Surly site (AZ T:4:13(ASM)) is the remnants of a small Hohokam irrigation system that used water from the western channel of New River; it is eligible for the National Register under Criterion D (potential to yield important information). There is a bladed dirt road as well as numerous two-tracks and trails through the site. Residential development is encroaching to the southeast and south, currently appearing in the middle ground and background. Other developments include the New River Dam and the Hayden Rhodes Aqueduct built to the north. The Proposed Action would be about 3.2 miles from the site at its closet point so would be visible in the middle ground. There would be negligible impacts

to the Surly site's integrity of setting. However, since the setting of this historic property is not essential to its significance, the introduction of a new feature in the middle ground would not diminish the characteristics that make it eligible for the National Register.

**Table 4.3-1 Visual Impacts**

SITE NAME AND/OR NUMBER	NATIONAL REGISTER ELIGIBILITY	TRANSMISSION LINE LOCATION	DISTANCE (MILES) TO ALTERNATIVE AT CLOSEST POINT			VISUAL IMPACT TO SETTING
			P.A./ ALT1	ALT 2	ALT 3	
Santa Fe, Prescott & Phoenix Railway AZ N:3:32(ASM)	Eligible, Criterion A	Foreground, Middle ground, Background	0	0	0	Negligible
Seymour III AZ T:2:27(ASM)	Recommended eligible, presumably Criterion D	Middle ground	4.3*	4.3*	4.3*	Negligible
Beardsley Canal AZ T:3:55(ASM)	Eligible, Criterion A	Foreground, Middle ground, Background	0	0	0	Minor
Surly Site AZ T:4:13(ASM)	Eligible, Criterion D	Middle ground	3.2	3.2	3.1	Negligible
Morristown Store (#91001003)	Listed 1991, Criterion A	Middle ground	3.8*	3.8*	3.8*	Minor
Calderwood Butte Archaeological District	Recommended eligible, Criterion D	Middle ground	4.0	4.0	2.9	Minor

Note: Unless specifically noted; impacts would be the same under the State Trust Land Route Variation Sub-alternative.\*Under the State Trust Land Route Variation Sub-alternative, the distance would be 5.7 miles to the Seymour III site and 4.4 miles to the Morristown Store, both an increase in distance.

In summary, indirect impacts to visually sensitive National Register eligible cultural resource sites would be negligible to minor and long-term under the Proposed Action.

**Native American Consultation and Concerns**

Various Tribes have been consulted and informed of the Project; however, no specific concerns have been raised to date by these various tribes regarding any religious site, sacred site, or traditional cultural property. However, Tribes have expressed interest and concern about potential effects to archaeological sites that are within their traditional territories and may have been inhabited or used by their ancestors. As Native American concerns emerge through consultation, BLM would consult with the appropriate Tribe(s) and individuals to obtain information about those concerns, the importance of the resource, and what mitigation

measures might be appropriate, such that BLM can determine an appropriate course of action taking that information into account.

#### **4.3.2.2 Alternative 1: Proposed Action with Additional Corridor**

##### **Construction**

Impacts to cultural resources during construction of the Project would be the same as the Proposed Action.

##### **Operations, Maintenance, and Decommissioning**

Direct and indirect impacts to cultural resources during operations, maintenance, and decommissioning would be similar to those described under the Proposed Action. In addition, under this alternative, there would be a change in management of lands managed by the BLM. Co-location of future utilities within the proposed corridor could impact National Register eligible cultural resource sites located on these lands. However, any future projects would be subject to NEPA, Section 106 of the NHPA, and other environmental review, therefore avoidance or mitigation would reduce impacts to cultural resources.

##### **Native American Consultation and Concerns**

Impacts would be similar to those of the Proposed Action.

#### **4.3.2.3 Alternative 2: ROW South of SR 74**

##### **Construction**

Eight National Register-eligible cultural resource sites are known to be within the Alternative 2 route (**Table 3.3-1**), the same sites as the Proposed Action, with the exception of AZ T:3:348(ASM) which is located north of SR 74. Impacts to cultural resources during construction of the Project would be the same as the Proposed Action.

##### **Operations, Maintenance, and Decommissioning**

Direct and indirect impacts to cultural resources during operations, maintenance, and decommissioning would be similar to those described under the Proposed Action.

##### **Native American Consultation and Concerns**

Impacts would be similar to those of the Proposed Action.

#### **4.3.2.4 Alternative 3: Carefree Highway Route**

##### **Construction**

Six National Register-eligible cultural resource sites are known to be within the Alternative 3 route (**Table 3.3-1**); three historic sites (Santa Fe, Prescott & Phoenix Railway [[AZ N:3:32\(ASM\)](#)], US 60/70/89 [[AZ V:2:101\(ASM\)](#), [AZ C:2:174\(ASM\)](#), [AZ I:3:10\(ASM\)](#)], and the Beardsley Canal [[AZ T:3:55\(ASM\)](#)]) and three prehistoric sites (AZ T:3:19(ASM), AZ T:3:20(ASM), and AZ T:3:21(ASM)). Impacts to cultural resources during construction of the Project would be similar to the Proposed Action.

## **Operations, Maintenance, and Decommissioning**

Direct and indirect impacts to cultural resources during operations, maintenance, and decommissioning would be similar to those described under the Proposed Action. The Project would be 2.9 miles from the Calderwood Butte Archaeological District, closer than the Proposed Action but still within the middle ground, a long-term and minor indirect impact.

## **Native American Consultation and Concerns**

Impacts would be similar to those of the Proposed Action.

### **4.3.2.5 State Trust Land Route Variation Sub-alternative**

#### **Sub-alternative**

##### *Construction*

No Project-specific survey has been conducted along the Sub-alternative, however, there is one known historic site, AZ T:2:144(ASM), located along the route variation that is not eligible for the National Register (**Table 3.3-1**). A cultural resource inventory would be required prior to construction activities if this Sub-alternative were selected. It seems likely that cultural resources along the State Trust Land Route Variation Sub-alternative would be similar to those along the nearby originally proposed alignment, the Primary Segment Sub-alternative.

##### *Operations, Maintenance, and Decommissioning*

Indirect visual impacts would be the same as the Proposed Action for the Beardsley Canal (AZ T:3:55(ASM)), Calderwood Butte Archaeological District, Santa Fe, Prescott, & Phoenix Railway (AZ N:3:32(ASM)), and the Surley Site (AZ T:4:13(ASM)) (**Table 4.3-1**). Distance to the Seymour III site (AZ T:2:27(ASM)) would increase to 5.7 miles; the Project would be visible in the background rather than middle ground. Distance to the Morristown Store (#91001003) would increase to 4.4 miles, still within the middle ground. Impacts to cultural resources during operations, maintenance, and decommissioning would be similar to those described under the Proposed Action.

#### **Native American Consultation Concerns**

Impacts would be similar to those of the Proposed Action.

### **Primary Segment Common to All Action Alternatives**

##### *Construction*

Three archaeological sites have been recorded along the Primary Segment Sub-alternative Route. All three of those sites, AZ T:3:145, 146, and 147(ASM), are scatters of trash (dating from approximately the 1920s to 1950s) that were evaluated as not eligible for the National Register. There would be no impacts to National Register-eligible cultural resource sites under the Primary Segment Sub-alternative.

### *Operations, Maintenance, and Decommissioning*

Direct and indirect impacts to cultural resources during operations, maintenance, and decommissioning would be similar to those described under the Proposed Action.

### **Native American Consultation Concerns**

Impacts would be similar to those of the Proposed Action.

#### **4.3.2.6 No Action Alternative**

Under the No Action Alternative the BLM would not issue a ROW, the Bradshaw-Harquahala RMP would not be amended to establish a single- or multiuse utility corridor, and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives. There would be no Project impacts on National Register-eligible cultural resource sites (historic properties) or historic resources as described for the Proposed Action and Action Alternatives. However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed lands. Under this situation, impacts to cultural resources located on lands that are crossed or in the vicinity of the Project could occur. The degree of potential for impacts to cultural resources and the magnitude of those impacts would depend on the route selected.

### **Native American Consultation and Concerns**

Under the No Action Alternative, there would be no direct or indirect construction or operational impacts to known places of cultural and/or geographic interest to the Tribes related to the Proposed Action or Action Alternatives. However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed lands. Under this situation, impacts to known places of cultural and/or geographic interest to the Tribes located on lands that are crossed or in the vicinity of the project could occur. The degree of potential for impacts and the magnitude of those impacts would depend on the route selected.

#### **4.3.3 Mitigation and Residual Effects**

Avoidance/protection: APS will implement actions to ensure that historic properties that are avoided by Project design or redesign are not impacted during construction, operation, or maintenance activities. Such actions are subject to agency approval and may include, as appropriate, temporarily placing barriers or marking areas to be avoided during construction; monitoring by a professional archaeologist during construction; and/or placing locked gates to restrict public access to transmission line access roads that may increase the potential for indirect impacts. BLM and/or ASLD staff, possibly assisted by Arizona Site Steward Program volunteers, would monitor and document the condition of National Register-eligible properties within the ROW as warranted.

Under the Proposed Action, Alternative 1, or Alternative 2, spanning the historic properties near the Agua Fria River may not be possible; therefore a supplemental Class III cultural resource survey (Rogge and Kirvan 2013), located within the ACC corridor, was conducted so that options for avoiding impacts by shifting the alignment to the east could be considered. The recently inventoried potential alignment shift (Rogge and Kirvan 2013) would avoid

disturbance of all the National Register eligible sites between the river and the Morgan Substation. Four sites are present along the potential alignment shift (**Table 4.3-2**), all eligible for the National Register. The alignment shift could easily span the one newly recorded small site (AZ T:3:358(ASM)), the Beardsley Canal (AZ T:3:55(ASM)), as well as the edges of two larger sites (AZ T:3:350(ASM) and AZ T:3:351(ASM)).

**Table 4.3-2 Known Cultural Resource Sites along Potential Alignment Shift**

<u>SITE NUMBER / NAME</u>	<u>SITE TYPE</u>	<u>NATIONAL REGISTER STATUS</u>
<u>Beardsley Canal</u> <u>AZ T:3:55(ASM)</u>	<u>Historic irrigation canal</u>	<u>Eligible, Criterion A</u>
<u>AZ T:3:350(ASM)</u> <u>SVM-16</u>	<u>Prehistoric artifact scatter and historic rock features with artifact scatter</u>	<u>Eligible, Criterion D</u>
<u>AZ T:3:351(ASM)</u> <u>SVM-17</u>	<u>Prehistoric and historic artifact scatters</u>	<u>Eligible, Criterion D</u>
<u>AZ T:3:358(ASM)</u> <u>SVM-20</u>	<u>Hohokam petroglyph with flaked stone and rock features</u>	<u>Eligible, Criterion D</u>

Mitigation through a data recovery program: Scientific data recovery may be implemented to mitigate impacts to historic properties that cannot be avoided. Procedures for scientific investigations, reporting, and long-term preservation of data and collections would be specified in a Historic Properties Treatment Plan implemented in accordance with the terms of the MOA.

Mitigation of visual impacts: The impact analysis indicates negligible to minor impacts to the setting of historic properties within five miles of the Action Alternatives. Impacts could be reduced by selecting transmission line structures or facility designs and shades that would lessen visual contrast.

Following the implementation of the mitigation measures, potential residual effects to cultural resources should be greatly reduced, although the potential for residual effects could still occur through providing additional access routes into previously undisturbed areas.

#### **4.3.4 Unavoidable Adverse Impacts**

Unavoidable impacts to National Register-eligible cultural resource sites could include compromised site integrity and loss of data due to physical damage to the sites. Impacts would be mitigated to the extent possible through data recovery or other appropriate treatment prior to any construction activities through an approved treatment plan. The presence of upgraded public access roads could lead to increased casual visitation to nearby site locations resulting in greater vulnerability to site disturbance, unauthorized artifact collection, and vandalism.

## **4.4 GEOLOGY AND MINERALS**

### **4.4.1 Indicators and Methods**

The primary indicator for mineral resources is the mineral potential of the Study Area as established by a mineral potential report in accordance with Bureau policy and guidelines. In addition, active mining claims or other mineral authorizations such as leases or active mineral material sites within the Project Area disturbance footprint are indicators of mineral resources.

### **4.4.2 Direct and Indirect Effects by Alternative**

#### **4.4.2.1 Impacts Common to All Action Alternatives**

The entire Study Area has been determined to have low potential for leasable minerals and no mineral leases have been issued by BLM within the Study Area. Areas outside of the Study Area to the southwest, south, and west have been identified with moderate potential for geothermal, oil and gas, and sodium resources and these areas would be expected to be explored and developed before any such activity would be proposed within the Study Area. As such, the Action Alternatives would have a negligible impact on leasable mineral resources.

If issuance of mineral leases were proposed after approval of and within a ROW and establishment of a utility corridor through an RMPA, those leases could be subject to lease stipulations and permit conditions of approval designed to protect use of the ROW for the purposes for which it was approved. Such stipulations and permit conditions of approval could reduce the area available for development of the leasable mineral by precluding operations near ROW structures or within the ROW. Those restrictions could also require the mineral lessee to modify lease operations, such as by relocation of access, structures, or operations sites, which could increase the cost of such operations. On the other hand, deposits of oil and gas, sodium and geothermal resources generally underlie areas of hundreds to thousands of acres or more. Directional drilling and mining methods can allow leaving undisturbed surface areas to protect ROW structures and the transmission line facilities. In the event that exploration, leasing, and development of leasable minerals were to occur within the Study Area, considering the relatively small acreage that would be disturbed by any of the Action Alternatives as compared with the extent of such deposits, the Action Alternatives would have a negligible impact on the exploration for and development of leasable mineral resources.

A small north-south trending drainage approximately 3 miles east of Morristown in the north central portion of the Study Area has potential for the occurrence of sand and gravel deposits. This deposit underlies all three Action Alternatives in a narrow north-south band in that area. Implementation of any of the Action Alternatives would reduce or preclude development of that portion of these sand and gravel deposits that underlie the ROW. However, because of the relatively small acreage of the portion of those deposits covered by the Action Alternatives, as compared to the overall size of the sand and gravel potential area, there would be a negligible impact on the ability to develop and mine the sand and gravel resource.

Impacts common to All Action Alternatives also include a portion of the transmission line route from the Sun Valley Substation to 179<sup>th</sup> Avenue. This section is approximately 25-miles long with a 200-foot wide ROW. Included in this section is a Saleable Mineral Restriction area for saleable minerals (**Figure 3.4-3**) along an approximate 2.2 mile section of the ROW near the Sun Valley Substation within which no saleable mineral authorizations could be approved by BLM. Management decisions in the 2010 Bradshaw-Harquahala RMP preclude BLM approval of saleable mineral activities on these lands. Since saleable minerals could not be developed on these lands, implementation of any of the Action Alternatives would have no impact on development of saleable mineral resources within the Mineral Restriction areas.

### **Construction**

Construction activities for the transmission line could locally alter surface topography if large cut and/or fill earth moving work is needed to install the transmission line structures or construct access roads.

### **Operations, Maintenance, and Decommissioning**

Access roads may actually increase accessibility to existing and any future authorized mining claims, geothermal leases and oil and gas leases. The anticipated level of impacts to geology and minerals from the operations and maintenance of the transmission facilities would be negligible.

#### **4.4.2.2 Proposed Action**

The Proposed Action route would be located on Quaternary surficial deposits, Tertiary sedimentary rocks, Tertiary volcanic rocks, Early Proterozoic metamorphic rocks, and Early Proterozoic metavolcanics.

Presently there are three active lode mining claims, or portions of claims, and one metallic mineral district including or adjacent to these claims, located within the Proposed Action. Active mining claims (subject to a determination by BLM that they are valid claims under the regulations) establish valid existing rights for access to the claim(s) and to explore for, develop and mine the applicable mineral commodity in accordance with BLM regulations. In addition, approval of a ROW does not preclude the location of mining claims within the ROW and the mining claim(s) would have superior rights to those granted under the ROW. However, no Notices or Plan of Operations to conduct exploration operations are currently approved or pending action by BLM for these claims. Since mining claims establish a valid existing right, future exploration, development, or mining operations on any of the three existing mining claims, or others that may be located within the Proposed Action if the ROW is approved, could conflict with transmission line structures or use of the ROW. The mining claim would have superior rights to the ROW which could result in impacts to the operation of the ROW including structures that could need to be removed, relocated and/or redesigned. Removal of transmission line structures could result in temporary interruptions or reductions in service of variable lengths of time for residential and commercial customers. ROW structure removal, relocation, and/or re-design would add costs to the Project and may require additional environmental review under NEPA, which would also add cost and delays to service. The cost of structure removal, relocation, re-design, and additional NEPA review,

as well as the amount of time of interruption, reduction or delays in service would depend on the nature and extent of the conflict with the mining claim operation.

Impacts to geology, leasable, and saleable mineral resources for the Proposed Action would be the same as described in **Section 4.4.2.1**. Based on the available data, the Project would not be expected to impact any existing mining activities.

### **Construction**

Impacts to geology and mineral resources during construction activities would be the same as described in **Section 4.4.2.1**.

### **Operations, Maintenance, and Decommissioning**

Impacts to geology and mineral resources during operations, maintenance, and decommissioning activities would be the same as described in **Section 4.4.2.1**.

#### **4.4.2.3 Alternative 1: Proposed Action with Additional Corridor**

The Proposed Action route and the proposed additional corridor would be located on Tertiary volcanic rocks, Tertiary basaltic rocks, Early Proterozoic metamorphic rocks, and Early Proterozoic metavolcanics.

There are 12 active lode mining claims, or portions of claims, and one metallic mineral district including or adjacent to these claims, located within Alternative 1. Active mining claims (subject to a determination by BLM that they are valid claims under the regulations) establish valid existing rights for access to the claim(s) and to explore for, develop, and mine the applicable mineral commodity in accordance with BLM regulations. In addition, approval of a ROW does not preclude the location of mining claims within a ROW and the mining claim(s) would have superior rights to those granted under the ROW. However, no Notices or Plan of Operations to conduct exploration operations are currently approved or pending action by BLM for these claims. Since mining claims establish a valid existing right, future exploration, development, or mining operations on any of the 12 existing mining claims, or others that may be located within Alternative 1 if the ROW is approved, could conflict with transmission line structures or use of the ROW. The mining claim(s) would have superior rights to the ROW which could result in impacts to the operation of the ROW including removal of the transmission line structures that would need to be relocated and/or redesigned. Impacts related to the removal of transmission line structures would be the same as that for the Proposed Action.

Impacts to geology, leasable, and saleable mineral resources for Alternative 1 would be the same as described in **Section 4.4.2.1**.

### **Construction**

Impacts to geology and mineral resources during construction of the Project would be the same as described in **Section 4.4.2.1**.

### **Operations, Maintenance, and Decommissioning**

Impacts to geology and mineral resources during operations, maintenance, and decommissioning activities would be the same as described in **Section 4.4.2.1**.

#### **4.4.2.4 Alternative 2: ROW South of SR 74**

The Alternative 2 ROW and additional corridor south of SR 74 would be located on Tertiary volcanic rocks, Tertiary basaltic rocks, Early Proterozoic metamorphic rocks, and Early Proterozoic metavolcanics.

Presently there is one sand and gravel site, one Active Lode Mining Claim and one Metallic Mineral District in the additional corridor area; however, there are no authorized metallic or nonmetallic mining claims; geothermal leases; or oil and gas leases present within 1,000 feet of the Alternative. The impacts to geology and minerals from the construction of the Proposed Action would be negligible.

Impacts to geology, leasable, and saleable mineral resources for Alternative 2 would be the same as described in **Section 4.4.2.1**.

##### **Construction**

Impacts to geology and mineral resources during construction activities would be the same as described in **Section 4.4.2.1**.

##### **Operations, Maintenance, and Decommissioning**

Impacts to geology and mineral resources during operations, maintenance, and decommissioning activities would be the same as described in **Section 4.4.2.1**.

#### **4.4.2.5 Alternative 3: Carefree Highway Route**

Impacts to geology, leasable, and saleable mineral resources for Alternative 3 would be the same as described in **Section 4.4.2.1**.

##### **Construction**

Impacts to geology and mineral resources during construction activities would be the same as described in **Section 4.4.2.1**.

##### **Operations, Maintenance, and Decommissioning**

Impacts to geology and mineral resources during operations, maintenance, and decommissioning activities would be the same as described in **Section 4.4.2.1**.

#### **4.4.2.6 State Trust Land Route Variation Sub-alternative**

##### **Sub-alternative**

The Sub-alternative route would be located completely on Tertiary sedimentary rocks.

Impacts to geology, leasable, and saleable mineral resources for this Sub-alternative would be the same as described in **Section 4.4.2.1**.

##### *Construction*

Impacts to geology and mineral resources during construction activities would be the same as described in **Section 4.4.2.1**. Although cut and fill activities are highly unlikely because of the very flat terrain in this area.

### *Operations, Maintenance, and Decommissioning*

Impacts to geology and mineral resources during operations, maintenance, and decommissioning activities would be the same as described in **Section 4.4.2.1**.

### *Primary Segment Common to All Action Alternatives Construction*

Impacts to geology and mineral resources during construction activities would be the same as described in **Section 4.4.2.1**. Although cut and fill activities are highly unlikely because of the very flat terrain in this area.

### *Operations, Maintenance, and Decommissioning*

Impacts to geology and mineral resources during operations, maintenance, and decommissioning activities would be the same as described in **Section 4.4.2.1**.

#### **4.4.2.7 No Action Alternative**

Under the No Action Alternative the BLM would not issue a ROW, the Bradshaw-Harquahala RMP would not be amended to establish a single- or multiuse utility corridor, and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives. There would be no Project impacts on geology or mineral resources as described for the Proposed Action and Action Alternatives. However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed lands. Under this situation, impacts to geology and mineral resources located on lands that are crossed or in the vicinity of the Project could occur. The degree of potential for impacts to these resources and the magnitude of those impacts would depend on the route selected.

#### **4.4.3 Mitigation and Residual Effects**

Additional mitigation measures are not required, thus no residual effects are anticipated.

#### **4.4.4 Unavoidable Adverse Impacts**

Slight topographic modifications, if made, would cause minor unavoidable or residual impacts on geology. There would be no unavoidable adverse impacts to mineral resources.

## **4.5 HAZARDOUS MATERIALS AND HAZARDOUS AND SOLID WASTE**

### **4.5.1 Indicators and Methods**

The following indicators were considered when analyzing potential impacts to resources from hazardous materials and hazardous and solid waste:

- Types of hazardous materials transported and used for the Project,
- Potential for generating or encountering soil contamination during construction, and
- Existing risk assessments of effects of hazardous materials.

## 4.5.2 Direct and Indirect Effects by Alternative

The primary direct and indirect impacts from hazardous materials and hazardous and solid waste during construction and operation of the proposed facilities would be associated with:

- Exposure of workers to hazardous materials during transportation and use of these materials;
- Generation of solid and hazardous wastes from materials used and transportation and eventual treatment or disposal of these wastes;
- Releases of hazardous materials from potential leaks and spills and potential contamination of surrounding soils and surface waters; and
- Encountering potential existing soil contamination during construction.

Potential effects from the Project involving hazardous materials would be associated with the release of hazardous materials to the environment due to improper use, storage, or disposal of hazardous materials and/or generating contaminated soil from releases of hazardous materials. Direct effects of such releases could include contamination of vegetation, soil, and water, which could result in indirect effects to human and wildlife populations. These effects have the potential to occur during construction, operation, maintenance, and decommissioning of the Project.

With adherence to applicable laws and regulations as well as applicant-committed EPMs, hazardous materials would be properly handled and all wastes would be properly contained, transported, and disposed off site. In this case, there should be no impacts to workers, the general public, surrounding soils, surface water, or groundwater. A variety of safety-related plans and programs would be implemented to ensure safe handling, storage, and use of hazardous materials. Project personnel would be supplied with appropriate supplies and equipment for handling hazardous materials and would be properly trained in the use of this equipment. They would be trained in the handling, use, and clean-up of hazardous materials used in the Project, as well as procedures to be followed in the event of a leak or spill. Adequate supplies of appropriate clean-up materials would be available for use in the Project.

### 4.5.2.1 Impacts Common to All Action Alternatives

All Action Alternatives would involve the use of hazardous materials and generation of solid and hazardous waste during construction and operation of the Project. Certain chemicals and materials that would be used are characterized as hazardous materials. Improperly handled chemicals and other hazardous materials have the potential to cause health issues in humans and environmental impacts. A list of identified hazardous materials that may be used in the Project during construction activities and operation is provided in **Table 4.5-1**. In general, the types, quantities of materials, and management of these materials would not change under each alternative.

**Table 4.5-1 Possible Hazardous Materials Used in the Project**

Diesel Fuel	Paints and coatings
Gasoline	Dielectric fluids
Propane	Pesticides
Cleaning solvents	Explosives
Lubricating oils/grease	Glycol-based antifreeze
Hydraulic fluid/gear oils	Lead-acid storage batteries and electrolyte solution
Other batteries	Lubricating grease

Human exposure to hazardous materials above their recommended limit values may cause short-term or long-lasting health effects, ranging from temporary effects to permanent disability, or death. For example, toxic substances can cause eye or skin irritation, disorientation, headache, nausea, allergic reactions, acute poisoning, chronic illness, or other adverse health effects if human exposure exceeds certain levels (the level depends on the substance involved). Examples of toxic substances include most heavy metals, pesticides, and benzene (a carcinogenic component of gasoline). Ignitable substances are hazardous because of their flammable properties. Gasoline, hexane, and natural gas are examples of ignitable substances. Corrosive substances are chemically active and can damage other materials or cause severe burns upon contact. Examples include strong acids and bases such as sulfuric (battery) acid or lye. Reactive substances may cause explosions or generate gases or fumes. Explosives and, pressurized canisters are examples of reactive materials.

Exposure of Project workers to hazardous materials during construction and operation of the Project would be limited by compliance with applicable EPA, DOT, and OSHA regulations on the transportation, storage, use, and disposal of hazardous materials.

During construction and operation of the facilities, certain waste materials would be produced that would need to be disposed. All wastes generated in the Project would be containerized on site and then transported off site to existing, permitted waste management facilities. Such waste would include those generated during the normal course of construction and operation and any wastes generated through spills of hazardous materials or cleanups of existing contamination that may be encountered during construction. Potential impacts from hazardous materials, wastes, and regulated, nonhazardous solid wastes would be reduced by adherence to the state and federal statutes and regulations listed in **Section 3.5** as well as the applicant-committed EPMs.

The principal environmental impact involving hazardous materials associated with the Project would be related to the potential mobilization of contaminants resulting in exposure of workers and the general public (i.e., excavation and handling of contaminated soil). Hazardous materials in the construction area may require special handling as toxic substances and hazardous waste can create an exposure risk to workers and the general public due to spills or upset or from excavation and transport.

#### 4.5.2.2 Proposed Action

##### Construction

Waste streams generated during construction of the Proposed Action would include: municipal solid waste (MSW), sewage, construction debris, non-hazardous regulated wastes, and small quantities of hazardous wastes. MSW from the workforce would be collected, contained, and trucked to an off-site permitted landfill. Sewage would be collected in portable sanitary facilities and removed by a licensed contractor for off-site treatment and disposal in an existing permitted treatment facility. Non-hazardous construction debris would be generated during construction consisting of concrete, wood, scrap metal, and waste packaging materials. These materials would be recycled or disposed of off-site in a permitted landfill. Hydrocarbon or hazardous wastes may be generated from maintenance of heavy equipment in the field. These wastes would include: used oil and grease, antifreeze, solvents, rags, and wipers. These wastes would be properly contained, labeled, and recycled or disposed of off-site in existing permitted facilities. All wastes produced during construction would be managed in compliance with state and federal regulations and recycled or disposed of in existing, permitted off-site facilities. These waste management practices would therefore produce minor and short-term adverse environmental impacts.

During construction operations, hazardous materials such as vehicle fuels, oils, and other vehicle maintenance fluids would be used and stored in construction staging yards. Although these materials would be stored within secondary containment, there is potential for incidents involving releases of gasoline, diesel fuel, oil, hydraulic fluid, and lubricants from vehicles or other equipment or the release of paints, solvents, adhesives, or cleaning chemicals from construction activities. Improperly maintained equipment could leak fluids during construction operation and while parked. Spills and leaks of hazardous materials during construction activities could potentially result in soil or surface water contamination. APS plans to minimize, avoid, and/or clean up unforeseen spills of hazardous materials by ensuring construction would be performed in accordance with APS' Construction Storm Water Pollution Prevention Plan (SWPPP). Despite implementation of the Construction SWPPP, there is a low likelihood that accidental spills of hazardous materials could still occur outside of containment where they could contaminate the soil. If surface runoff contacted these spills before they were cleaned up it could become contaminated. This is considered to be a minor and short-term adverse impact.

Helicopters may be used in areas without adequate access roads or where access is limited for construction and installation of structures, and support trips to transport material and workers to structure sites and material and equipment staging areas. Helicopters could be used during wire installation for pulling and support trips. The operations area of the helicopter would be limited to helicopter staging areas and positions along the ROW which have previously been disturbed for other purposes. Helicopter fueling would occur at staging areas or at a local airport using the helicopter contractor's fuel truck, and would be supervised by the helicopter fuel service provider. The helicopter and fuel truck would stay overnight at a local airport or at a staging area if adequate security is in place. Spills and leaks of hazardous materials during helicopter construction activities due to handling and storage of helicopter fuel in staging areas could potentially result in localized soil or surface water contamination. This is considered to be a minor, short-term impact.

Earth excavation would be limited to areas at and near transmission structures. As described in **Section 3.5**, no known existing environmentally contaminated sites are located along the Project alignments. Soil that is excavated from a site during construction containing hazardous materials could be a hazardous waste if it was contaminated and exceeded specific regulatory criteria caused by the contamination. Such contaminated soil could result from a spill of hazardous materials being used in construction, or encountering an area of existing contamination caused by a previous use within the proposed ROW. Remediation (cleanup and safe removal/disposal) of hazardous wastes found at a site would be required if excavation of these materials is performed. Contaminated soil exceeding regulatory limits for construction backfill would be transported to offsite, permitted disposal facilities. This is considered to be a minor, short-term impact. Contaminated soil removed from the construction area would be transported according to state and federal regulations and be replaced by import soil approved for backfill. Even if soil at a contaminated site does not have the characteristics required to be defined as hazardous wastes, remediation of the site may be required by state and local regulatory agencies subject to jurisdictional authority. Cleanup requirements would be determined on a case-by-case basis by the agency taking lead jurisdiction. Online government environmental databases, were reviewed to identify sites with known contamination or having a potential to contaminate the Project construction areas and these were discussed in **Section 3.5**. Based on existing information, the likelihood that existing contamination would be encountered during construction is considered to be minimal. Distance from the alignment and physical barriers, such as roads and other facilities should provide buffers that limit surface migration of contaminants from the existing known sources of potential contamination.

### **Operations, Maintenance, and Decommissioning**

Operation of the transmission line facilities would utilize little in the way of hazardous materials and would generate only minor amounts of MSW, which would be brought back to the service center for disposal. Transformer oils, associated with substation equipment, would be used in closed transformers and certain other electrical devices. These are highly refined petroleum oils with low vapor pressure, high flash point, and low toxicity. In normal use, they are fully contained within the electrical apparatus which themselves would be located in secure, fenced facilities. These management practices would therefore produce negligible environmental impacts in the long term.

Sulfur hexafluoride (SF<sub>6</sub>) would be used as a gaseous dielectric medium in system circuit breakers. It is a stable chemical and poses no fire safety problems (Nailen 2009). SF<sub>6</sub> is not a toxic gas and the small releases during equipment maintenance and servicing do not pose public or wildlife health risks.

#### **4.5.2.3 Alternative 1: Proposed Action with Additional Corridor**

The types of wastes managed and the applicable management practices applied during construction, operation, maintenance, and decommissioning of the Action Alternatives would be practiced in essentially the same manner as the Proposed Action. The environmental impacts of these practices for the Action Alternatives would therefore be the same as the Proposed Action.

#### **4.5.2.4 Alternative 2: ROW South of SR 74**

The environmental impacts related to waste management for construction and operation of this Action Alternative would essentially be the same as the Proposed Action.

#### **4.5.2.5 Alternative 3: Carefree Highway Route**

The environmental impacts related to waste management for construction and operation of this Action Alternative would essentially be the same as the Proposed Action.

#### **4.5.2.6 State Trust Land Route Variation Sub-alternative**

##### **Sub-alternative**

The environmental impacts related to waste management for construction and operation of this Sub-alternative would essentially be the same as the Proposed Action. There is a closed LUST site indicated by the online database search near the alignment of this alternative along 211<sup>th</sup> Avenue. There is a livestock corral northwest of the intersection of 211<sup>th</sup> Avenue and Cloud Road. Without more detailed studies that would be conducted if this Sub-alternative was selected as the preferred alternative, it is unknown if either of these two sites would result in a potential to encounter pre-existing contamination in the Sub-alternative alignment in this area.

##### **Primary Segment Common to All Action Alternatives**

The environmental impacts related to waste management for construction and operation of this Primary Segment would essentially be the same as the Proposed Action.

#### **4.5.2.7 No Action Alternative**

Under the No Action Alternative the BLM would not issue a ROW, the Bradshaw-Harquahala RMP would not be amended to establish a single- or multiuse utility corridor, and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives. There would be no Project impacts hazardous materials or solid or hazardous waste as described for the Proposed Action and Action Alternatives. However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed lands. Under this situation, hazardous materials would be utilized and solid or hazardous wastes would be generated. The degree of potential for impacts to hazardous waste sites, and the amount of those solid or hazardous waste generated would depend on the route selected.

#### **4.5.3 Mitigation and Residual Effects**

If the Sub-alternative were selected as the preferred alternative, site-specific inquiries into the presence, if any, of pre-existing contamination from a LUST site and a corral in the vicinity of the Sub-alternative alignment should be conducted in advance of locating structures for the power line.

Implementation of this mitigation measure would reduce and/or eliminate any potential residual effects.

#### 4.5.4 Unavoidable Adverse Impacts

Wastes produced by the Proposed Action would be managed according to all applicable regulations in permitted waste management facilities to minimize environmental impacts. These wastes would contribute to the environmental impacts allowed by the waste management facility permits and thus constitute a negligible unavoidable adverse impact.

### 4.6 LAND USE AND RANGE RESOURCES

#### 4.6.1 Indicators and Methods

The following indicators would demonstrate the effect of the Project on land use and range resources within the Study Area:

- Conflict with existing or future land uses
- Compliance with land management plans and zoning
- Conflict with authorized uses
- Number of acres in each grazing allotment that would be affected during the short- and long-term under each alternative

**Table 4.6-1** describes the range of aspects of quality, magnitude, and duration of any effects resulting from the Project to land use and range resources.

The miles and/or acreage of effects to various land uses were calculated using GIS and temporary and permanent disturbance estimates (**Chapter 2**). Where a range of disturbance estimates is possible (e.g. pulling/tensioning sites would occur between 2 and 3 miles apart) the more conservative value is used to compare the maximum disturbance that would occur.

**Table 4.6-1 Description of Land Use and Range Resources Effects Levels**

ATTRIBUTE OF EFFECT		DESCRIPTION RELATIVE TO LAND USE AND RANGE RESOURCES
Quality	Beneficial	An improvement to current land uses or range resources.
	Adverse	A degradation to current land uses or range resources.
Magnitude	Negligible	Very little effect on land uses such that the effect would not be perceptible to a human observer or user. Action would be in compliance with land management plans and zoning and would not conflict with existing ROWs or other authorized uses. Less than 5 percent of the total land use or grazing allotment would be affected.
	Minor	An effect that changes less than 10 percent of a land use. Action would be in compliance with land management plans and zoning and would not conflict with existing ROWs or other authorized uses. More than 5 percent but less than 10 percent of the total land use or grazing allotment would be affected.
Magnitude	Moderate	An effect that changes 10 to 25 percent of a land use. Action may or may not be in compliance with land management plans and zoning and may or may not conflict with existing ROWs or other authorized uses. More than 10 percent but less than 25 percent of the total land use or grazing allotment would be affected.
	Major	An effect that changes more than 25 percent of a land use. Action would not be in compliance with land management plans and zoning and would not conflict with existing ROWs or other authorized uses. More than 25 percent of the total land use or grazing allotment would be affected.
Duration	Short-term	10 years or less.
	Long-term	More than 10 years.

**4.6.2 Direct and Indirect Effects by Alternative**

Tables 4.6-2 through 4.6-9 provide a summary of the surface management and land management plans; jurisdiction, planning and zoning; future land uses; ROWs; and grazing allotments that would be directly affected by the Proposed Action and Action Alternatives. A discussion of effects common to all alternatives follows. A comparison of land use and range resource effects that are specific to each alternative is provided in Sections 4.6.2.2 through 4.6.2.6.

## Surface Management and Land Management Plans

The ROWs of the Proposed Action and Action Alternatives cross private lands and lands managed by the BLM, USBR, and State Trust land (**Table 4.6-2**).

**Table 4.6-2 Surface Management Crossed by the Action Alternatives (miles)**

SURFACE MANAGEMENT	PROPOSED ACTION/ALT. 1	ALT. 2	ALT. 3	SUB-ALTERNATIVE	PRIMARY SEGMENT
BLM	9.0	4.0	1.9	0.0	0.0
USBR	0.1	0.1	0.6	0.0	0.0
State Trust	24.7	25.8	26.6	4.0	4.0
Private	4.4	7.6	9.3	0.0	0.0

## Jurisdiction

**Table 4.6-3** details the jurisdictions crossed by the ROW under the Proposed Action and Action Alternatives.

**Table 4.6-3 Jurisdiction Crossed by the Action Alternatives (miles)**

JURISDICTION	PROPOSED ACTION/ALT. 1	ALT. 2	ALT. 3	SUB-ALTERNATIVE	PRIMARY SEGMENT
Buckeye	5.4	5.4	5.4	0.0	0.0
Surprise	0.12	0.12	0.12	0.0	0.0
Peoria	10.6	12.0	11.4	0.0	0.0
Maricopa County	22.2	20.0	21.7	4.0	4.0

## Impacts to Land Use

The ROW of the Proposed Action and Action Alternatives crosses a variety of existing and future land uses as summarized in **Table 4.6-4**.

**Table 4.6-4 Existing and Future Land Use Crossed by the Action Alternatives  
(miles)**

FUTURE LAND USE	PROPOSED ACTION/ALT. 1	ALT. 2	ALT. 3	SUB-ALTERNATIVE	PRIMARY SEGMENT
Canal <sup>1</sup>	0.6	0.6	0.5	0.0	0.0
Commercial	0.4	0.8	0.6	0.0	0.0
Golf Course	0.0	0.0	0.4	0.0	0.0
Industrial	0.3	0.3	0.3	0.1	0.1
Lake/Water	0.2	0.2	0.2	0.0	0.0
Light Industrial	0.5	0.5	0.0	0.0	0.0
Mixed Use	0.2	0.1	0.2	0.0	0.0
Open Space/ Greenbelt	1.0	1.0	1.0	0.0	0.0
Recreation	7.2	3.1	3.4	0.0	0.0
Regional Park	0.3	0.3	0.2	0.0	0.0
Residential Low Density (0-2 du <sup>2</sup> /acre)	25.4	28.4	28.8	3.8	3.8
Residential Medium Density (2.1-15 du <sup>2</sup> /acre)	2.1	2.1	2.7	0.0	0.0

<sup>1</sup>Central Arizona Project

<sup>2</sup>dwelling units

### Rights-of-Way

Existing ROWs on BLM-managed public land that would be crossed by the Proposed Action and Action Alternatives are listed in **Table 4-6.5**. The ROWs consist of various transmission, distribution, and communication lines; roads, and easements. The Sub-alternative (State Trust Land Route Variation) does not cross any existing ROWs on BLM-managed public land because it would occur entirely on State Trust land.

### Grazing

The ROW for the Proposed Action and Action Alternatives would cross grazing allotments on BLM-managed public land and State Trust land located within the Study Area (**Tables 4.6-6 through 4.6-9**).

**Table 4.6-5 BLM Rights-of-Way Crossed by the Action Alternatives**

ROW SERIAL #	ROW HOLDER	DESCRIPTION	PROPOSED ACTION/ALT. 1	ALT. 2	ALT. 3
AZA 000390	Arizona State Highway	Road	X	X	0
AZA 000624	Arizona State Highway	Road	X	X	0
AZA 006105	Arizona State Highway	Road	X	X	0
AZA 010224	City of Peoria	Road	X	0	0
AZA 023254FD	Seven West Prop.	Patent	X	X	0
AZA 027843	Larry W. White	Section 302 FLPMA	X	0	0
AZA 033383	Accipiter Communications	Fiber Optic Facilities	X	0	0
AZA 03338301	Accipiter Communications	Fiber Optic Facilities	X	0	0
AZA 035079	APS	Other Energy Facilities	X	X	0
AZA 013875	BLM Lake Havasu F.O.	Other Energy Facilities	X	X	X
AZA 017813	BLM Lake Havasu F.O.	Road	X	X	X
AZA 021410FD	Arizona White Tank Assoc.	Patent	X	X	X
AZA 022075	BLM Lake Havasu F.O.	Water Facility	X	X	X
AZA 030349	West Maricopa Combine, Inc.	Water Facility	X	X	X
AZA 033224	Town of Buckeye	Road	X	X	X
AZA 033449	Town of Buckeye	Recreation	X	X	X
AZA 033510	APS	Other Energy Facilities	X	X	X
AZA 033551	Southwest Gas Corp.	Oil and Gas Facilities	X	X	X
AZA 033552	Accipiter Communications	Fiber Optic Facilities	X	X	X
AZA 033554	Lyle Anderson Dev. Co.	Other Energy Facilities	X	X	X
AZA 033569	APS	Other Energy Facilities	X	X	X
AZA 035079	APS	Other Energy Facilities	X	X	X

Source: BLM 2012e

X = crossed by alternative

**Table 4.6-6 Grazing Allotments Crossed by the Action Alternatives (miles)**

<b>SURFACE MANAGEMENT</b>	<b>ALLOTMENT NAME</b>	<b>PROPOSED ACTION/ ALTERNATIVE 1</b>	<b>ALTERNATIVE 2</b>	<b>ALTERNATIVE 3</b>	<b>SUB- ALTERNATIVE</b>	<b>PRIMARY SEGMENT</b>
BLM	Douglas	1.5	1.5	1.5	0.0	0.0
	Lower Bo Nine	1.5	5.4	5.0	0.0	0.0
	Bo Nine	5.8	0.0	0.0	0.0	0.0
	West Wing Mountain	0.1	0.1	0.1	0.0	0.0
State	Douglas 5-355	7.9	7.9	7.9	0.0	0.0
	Maughan 5-104568	5.4	0.0	0.0	0.0	0.0
	Durbano 5-1227	7.0	7.0	8.8	4.0	4.0
	Durbano 5-95000	3.9	3.9	3.9	0.0	0.0
	McGuire 5-2119	7.7	12.3	11.8	0.0	0.0
	Sheep Springs 5-94574.01	0.9	0.9	0.5	0.0	0.0
	Unnamed 5-308	5.1	5.1	5.1	0.0	0.0

**Table 4.6-7 AUMs on Grazing Allotments Crossed by the Action Alternatives**

<b>SURFACE MANAGEMENT</b>	<b>ALLOTMENT NAME</b>	<b>PERCENTAGE OF ALLOTMENT LOCATED WITHIN STUDY AREA</b>	<b>TOTAL AUMS BY ALLOTMENT</b>	<b>AUMS WITHIN THE STUDY AREA</b>	<b>ACRES PER AUM</b>
BLM	Douglas	18	144	26	497
	Lower Bo Nine	65	60	39	338
	Bo Nine	60	948	569	22
	West Wing Mountain	18	N/A	0*	0*
State	Douglas 5-355	23	1,753	403	29
	Maughan 5-104568	58	222	129	11
	Durbano 5-1227	71	948	673	29
	Durbano 5-95000	55	104	57	89
	McGuire 5-2119	60	1,170	702	20
	Sheep Springs 5-94574.01	46	1,524	701	5
	Unnamed 5-308	48	972	467	8

\*Because only 0.1-mile of the ROW would cross West Wing Mountain, only a small fraction of an AUM would be affected; therefore a calculation of the AUMs impacted was not included.

**Table 4.6-8 AUMs Removed from Production in the Short Term by the Action Alternatives**

SURFACE MGMT	ALLOTMENT NAME	PROPOSED ACTION/ ALTERNATIVE 1		ALTERNATIVE 2		ALTERNATIVE 3		SUB-ALTERNATIVE		PRIMARY SEGMENT	
		ACRES IMPACTED	REDUCTION IN AUMS	ACRES IMPACTED	REDUCTION IN AUMS	ACRES IMPACTED	REDUCTION IN AUMS	ACRES IMPACTED	REDUCTION IN AUMS	ACRES IMPACTED	REDUCTION IN AUMS
BLM	Douglas	3.3	<1	3.3	<1	3.3	<1	0.0	0	0.0	0
	Lower Bo Nine	5.2	<1	20.1	<1	20.0	<1	0.0	0	0.0	0
	Bo Nine	22.1	1	0.0	0	0.0	0	0.0	0	0.0	0
State	Douglas 5-355	17.5	<1	17.2	<1	17.5	<1	0.0	0	0.0	0
	Maughan 5-104568	17.0	1.5	0.0	0	0.0	0	0.0	0	0.0	0
	Durbano 5-1227	15.6	<1	15.7	<1	19.1	<1	9.2	<1	9.2	<1
	Durbano 5-95000	8.7	<1	8.7	<1	8.7	<1	0.0	0	0.0	0
	McGuire 5-2119	26.4	1.3	40.1	2	40.1	2	0.0	0	0.0	0
	Sheep Springs 5-94574.01	1.8	<1	1.8	<1	1.0	<1	0.0	0	0.0	0
	Unnamed 5-308	12.0	1.5	12.3	1.5	12.2	1.5	0.0	0	0.0	0

**Table 4.6-9 AUMs Removed from Production in the Long Term by the Action Alternatives**

SURFACE MGMT	ALLOTMENT NAME	PROPOSED ACTION/ ALTERNATIVE 1		ALTERNATIVE 2		ALTERNATIVE 3		SUB-ALTERNATIVE		PRIMARY SEGMENT	
		ACRES IMPACTED	REDUCTION IN AUMS	ACRES IMPACTED	REDUCTION IN AUMS	ACRES IMPACTED	REDUCTION IN AUMS	ACRES IMPACTED	REDUCTION IN AUMS	ACRES IMPACTED	REDUCTION IN AUMS
BLM	Douglas	3.9	<1	3.9	<1	3.9	<1	0.0	0	0.0	0
	Lower Bo Nine	4.0	<1	14.2	<1	13.3	<1	0.0	0	0.0	0
	Bo Nine	15.4	<1	0.0	0	0.0	0	0.0	0	0.0	0
State	Douglas	21.0	<1	20.9	<1	21.0	<1	0.0	0	0.0	0
	Maughan 5-104568	14.3	1.3	0.0	0	0.0	0	0.0	0	0.0	0
	Durbano 5-1227	18.5	<1	23.1	<1	23.1	<1	10.7	<1	10.7	<1
	Durbano 5-95000	10.5	<1	10.5	<1	10.5	<1	0.0	0	0.0	0
	McGuire 5-2119	20.5	1	32.6	1.6	31.8	1.6	0.0	0	0.0	0
	Sheep Springs 5-94574.01	2.3	<1	2.3	<1	1.3	<1	0.0	0	0.0	0
	Unnamed 5-308	13.5	1.7	13.6	1.7	13.6	1.7	0.0	0	0.0	0

Access roads constructed outside of the ROW would generally be temporary, and therefore would only have a temporary effect on grazing. However, a permanent 14-foot wide centerline access road would be constructed within the ROW. Temporary effects to grazing allotments include the temporary loss of allotment acreage due to construction sites and the improvement or construction of temporary access roads outside of the ROW on grazing allotments (**Table 4.6-10**). Construction sites that would be constructed on grazing allotments include transmission structure pad construction areas (0.5 acre disturbance x 4.8 sites per route mile) and transmission conductor pulling/tensioning sites (1.8 acre disturbance x 0.5 sites per route mile). Permanent effects to grazing allotments include the permanent loss of allotment acreage due to the presence of transmission line structures (0.2 acre disturbance x 4.8 sites per route mile) and the permanent centerline access road within the ROW on grazing allotments (**Table 4.6-11**). Although it is unknown how many temporary and permanent sites would be on grazing allotments, the general disturbance and spacing estimates (**Chapter 2**) are used to capture approximate disturbance.

The acres of production that would be temporarily and permanently removed from production due to transmission line structures and access roads are summarized in **Tables 4.6-10** and **4.6-11**, respectively.

#### **4.6.2.1 Impacts Common to All Alternatives**

##### **Construction**

###### *Land Ownership, Planning, and Management*

Under the Proposed Action and all Action Alternatives there would be no change of ownership of federal lands. A ROW grant for BLM-managed public lands would be issued as described in **Section 2.3.2**.

While the Proposed Action would cross approximately 0.1-mile of USBR-managed lands containing the CAP, those lands are managed by the CAWCD, as described in **Section 3.6.2**. It is the policy of the USBR and CAWCD to disallow lateral encroachment (i.e., other ROW uses along the CAP ROW) unless USBR determines a benefit for the CAP (CAP 2011b). However, CAWCD and USBR are supportive of the transmission line laterally encroaching on the CAP ROW finding appropriate CAP benefit for so doing (CAP 2011b).

Construction of the Project would complete a project that is on the ACC Biennial Transmission Assessment and part of APS' 10-year plan filings, thus benefitting the reliability of the electrical infrastructure of the Project Area.

The EIS process addresses the policies in the City of Surprise General Plan calling for coordination between entities and identification of existing corridors (**Chapter 1** and **Section 2.7**).

The Proposed Action and all Action Alternatives would not conflict with the Maricopa County Regional Trail Plan or the City of Peoria's PROST.

The portion of the route common to the Proposed Action and all Action Alternatives within the Town of Buckeye would be within a BLM-designated utility corridor and would parallel other existing or approved transmission lines, thus keeping with compatible surrounding land uses.

### *Existing Land Use and Range Resources*

Under the Proposed Action and all Action Alternatives, the ROW would be within a BLM-designated utility corridor in the southern portion of the Project Area near the Sun Valley Substation. The Proposed Action and all Action Alternative routes would cross BLM-managed public land that is currently used for recreation. Impacts to recreation resources are analyzed in **Section 4.9**. The amount of BLM-managed public lands crossed varies by alternative; however, in all cases the amount would be proportionally small compared to the total amount of BLM-managed public lands in the Study Area. Because the portion of BLM-managed public lands where the land use would be affected by the Proposed Action or any of the Action Alternative routes would be relatively small, overall impacts to BLM-managed public land use would be minor, regardless of alternative.

Private and State Trust lands crossed by the ROW under all Action Alternatives are undeveloped, with much of the State Trust land used as grazing allotments. Addition of the transmission line and associated disturbance (such as a centerline access road) would reduce the acreage available for grazing. Impacts to range resources are addressed under a separate heading below. Similar to the BLM-managed public lands discussed above, the amount of private and State Trust lands crossed varies by alternative; however, in all cases the amount would be proportionally small compared to the total amount of private and State Trust lands in the Study Area. Because the portion of private and State Trust lands where the land use would be affected by the Proposed Action or any of the Action Alternative routes would be relatively small, overall impacts to land use would be minor, regardless of alternative, although a more detailed discussion of potential impacts are discussed below by alternative.

Potential effects to private lands could include a decrease in property values due to the presence of a transmission line and perceived potential health effects to residents related to EMF. Further discussion related to State Trust land revenue and private land values is provided in **Section 4.10**. Analysis of impacts to public health and safety from EMF is contained in **Section 4.7**.

State Trust lands are managed to bring revenue to the state; therefore, the removal of acreage of State Trust lands used for grazing would directly affect the revenues the state could receive through grazing leases or other authorized uses. Further discussion related to State Trust land revenue effects is provided in **Section 4.10**.

The crossing of existing BLM ROWs by the proposed ROW under the Proposed Action or any of the Action Alternatives should not affect the management or administration of the existing ROWs. There would be no land use impacts to existing commercial or industrial areas, or utilities under the Proposed Action or any of the Action Alternatives. Impacts to air transportation are analyzed in **Section 4.12**.

**Table 4.6-10 Acres of Grazing Allotments Removed from Production in the Short Term**

SURFACE MGMT	ALLOTMENT NAME	PROPOSED ACTION/ ALTERNATIVE 1		ALTERNATIVE 2		ALTERNATIVE 3		SUB-ALTERNATIVE		PRIMARY SEGMENT	
		ACRES	% OF ALLOTMENT IN STUDY AREA AFFECTED	ACRES	% OF ALLOTMENT IN STUDY AREA AFFECTED	ACRES	% OF ALLOTMENT IN STUDY AREA AFFECTED	ACRES	% OF ALLOTMENT IN STUDY AREA AFFECTED	ACRES	% OF ALLOTMENT IN STUDY AREA AFFECTED
BLM	Douglas	3.3	<1	3.3	<1	3.3	<1	0.0	0	0.0	0
	Lower Bo Nine	5.2	<1	20.1	<1	20.0	<1	0.0	0	0.0	0
	Bo Nine	22.1	<1	0.0	<1	0.0	0	0.0	0	0.0	0
State	Douglas 5-355	17.5	<1	17.2	<1	17.5	<1	0.0	0	0.0	0
	Maughan 5-104568	17.0	1	0.0	0	0.0	0	0.0	0	0.0	0
	Durbano 5-1227	15.6	<1	15.7	<1	19.1	<1	9.2	<1	9.2	<1
	Durbano 5-95000	8.7	<1	8.7	<1	8.7	<1	0.0	0	0.0	0
	McGuire 5-2119	26.4	<1	40.1	<1	40.1	<1	0.0	0	0.0	0
	Sheep Springs 5-94574.01	1.8	<1	1.8	<1	1.0	<1	0.0	0	0.0	0
	Unnamed 5-308	12.0	1	12.3	1	12.2	1	0.0	0	0.0	0

**Table 4.6-11 Acres of Grazing Allotments Removed from Production in the Long Term**

SURFACE MGMT	ALLOTMENT NAME	PROPOSED ACTION/ ALTERNATIVE 1		ALTERNATIVE 2		ALTERNATIVE 3		SUB-ALTERNATIVE		PRIMARY SEGMENT	
		ACRES	% OF ALLOTMENT IN STUDY AREA AFFECTED	ACRES	% OF ALLOTMENT IN STUDY AREA AFFECTED	ACRES	% OF ALLOTMENT IN STUDY AREA AFFECTED	ACRES	% OF ALLOTMENT IN STUDY AREA AFFECTED	ACRES	% OF ALLOTMENT IN STUDY AREA AFFECTED
BLM	Douglas	3.9	<1	3.9	<1	3.9	<1	0.0	0	0.0	0
	Lower Bo Nine	4.0	<1	14.2	<1	13.3	<1	0.0	0	0.0	0
	Bo Nine	15.4	<1	0.0	0	0.0	0	0.0	0	0.0	0
State	Douglas	21.0	<1	20.9	<1	21.0	<1	0.0	0	0.0	0
	Maughan 5-104568	14.3	1	0.0	0	0.0	0	0.0	0	0.0	0
	Durbano 5-1227	18.5	<1	23.1	<1	23.1	<1	10.7	<1	10.7	<1
	Durbano 5-95000	10.5	<1	10.5	<1	10.5	<1	0.0	0	0.0	0
	McGuire 5-2119	20.5	<1	32.6	<1	31.8	<1	0.0	0	0.0	0
	Sheep Springs 5-94574.01	2.3	<1	2.3	<1	1.3	<1	0.0	0	0.0	0
	Unnamed 5-308	13.5	1	13.6	1	13.6	1	0.0	0	0.0	0

## Range Resources

Under the Proposed Action and all Action Alternatives one percent or less of the portion of each grazing allotment in the Study Area would be impacted in the short and long term. In most cases less than one AUM would be impacted, and in all cases less than two AUMs. In all allotments less than one percent of the AUMs would be affected. Therefore, the Proposed Action would have a negligible effect on grazing allotments. However, during construction activities, animals using the various allotments where activities are occurring would likely be temporarily displaced from the immediate area until construction activities are completed. Available forage from the disturbed areas would either be temporarily lost until revegetation activities are successful or permanently lost. Overall, impacts to range resources would be negligible and range from short-term to long-term.

## Operations, Maintenance, and Decommissioning

Operations and maintenance activities under the Proposed Action and Action Alternatives would be conducted within the authorized ROW and in accordance with any agreements with the issuing agencies and land owners. No additional effects regarding land use (ownership, administration and management of lands, as analyzed in this section) would be anticipated as a result of the operations and maintenance of the Project. There would not be any additive effects to land use and range resources related to the operations and maintenance of the 230kV line in the future.

Removal of the 500kV transmission line upon completion of the Project under the Proposed Action and Action Alternatives would result in relinquishing the ROW. Land previously occupied by the ROW and associated transmission line structures would be available for other land uses. Long-term beneficial impacts to land use would be negligible to minor depending on the effects caused by the presence of the line. There would not be any additive effects to land use and range resources related to the decommissioning of the 230kV line in the future.

### 4.6.2.2 Proposed Action

#### Amendment of the RMP

The BLM Bradshaw-Harquahala RMP (BLM 2010a) requires that all ROWs, for transmission lines greater than 115kV, be within a designated utility corridor and the RMP does not provide for such a utility corridor along SR 74 where a portion of the Proposed Action would be located. The portion of BLM-managed public lands required to create a single-use utility corridor and where an RMPA would be required (needed for the establishment of the utility corridor and to change the existing VRM class designations described in **Section 4.14**) under the Proposed Action totals approximately 173 acres. The total acreage of BLM-managed public lands within the Study Area is approximately 13,234 acres. The acreage where land use would change with the Proposed RMPA designating the utility corridor would represent less than one percent of the BLM-managed public lands in the Study Area. The land use that the RMP prescribes for the area containing the proposed utility corridor is part of the Castle Hot Springs SRMA and is also designated a transportation corridor. Impacts to recreation and transportation that would result from the

Proposed Action are discussed in **Sections 4.9** and **4.12**, respectively. The impact of the Proposed RMPA on land use would be negligible.

However, the change in land use management that would result in designation of a single-use utility corridor through the Proposed RMPA would allow this transmission line development on BLM-managed public lands north and south of SR 74. Under the RMP, the BLM-managed public lands are presently managed for recreational uses and a transportation corridor. Amending the RMP to allow establishment of a single-use utility corridor and construction of a transmission line would fundamentally change the planned use of these lands, changing the course of management prescribed by the RMP. RMP Decision LR-30 would be eliminated under the Proposed Action. This would be a long-term impact to land use management for this specific area and the lands immediately adjacent to the single-use corridor.

The process of developing the Bradshaw-Harquahala RMP was holistic and inclusive; local communities, governments, and interest groups actively engaged in the planning process. The RMP planning process engaged in proactive and visionary planning, and sought to determine lands needed for recreation and open space. The BLM-managed public lands north of SR 74 have historically been heavily used for recreation. Prior to development of the current RMP, the lands in the vicinity of SR 74 were heavily used for recreation. The lands in the vicinity of SR 74 are designated by the RMP as part of the Castle Hot Springs SRMA; SRMAs are areas of intensive recreation use that will be managed to retain the recreation opportunities while protecting other resources and reducing user conflicts (BLM 2010b). In the RMP the BLM created a corridor specific to transportation development north of SR 74, to coincide with planned future widening of the highway. The RMP decisions focused the management of BLM-managed public lands in the vicinity of SR 74 on recreation uses and open space, while allowing for other uses, such as potential expansion of SR 74 and rangeland uses.

Amending the Bradshaw-Harquahala RMP under the Proposed Action to establish a single-use utility corridor north of SR 74 and change the VRM classes that would allow for construction of a transmission line would change and could adversely impact the recreational experience that was envisioned in the RMP and would be a fundamental shift for the land use management of the area.

## **Construction**

### *Land Ownership, Planning, and Management*

The ROW of the Proposed Action would cross nine miles of BLM-managed public land, 0.1-mile of USBR land, 24.7 miles of State Trust land, and 4.4 miles of private lands.

Federal - Amendment of the Bradshaw-Harquahala RMP would enable the Proposed Action to meet Decisions LR-2 and LR-15. The Proposed Action would include a 230kV transmission line within the same ROW as the 500kV transmission line, meeting Decision LR-16 to co-locate smaller utility lines within corridors. The impact of the Proposed Action on visual resources is analyzed in **Section 4.14**, meeting the requirements of Decision LR-18.

The proposed ROW would be within the area of BLM-managed public lands that are currently designated within the Bradshaw-Harquahala RMP as a transportation corridor and SRMA, which would effectively reduce the area available for transportation and recreation

within the corridor. The addition of the utility corridor and transmission line would reduce the size of the transportation corridor; however, based on the proposed location of the transmission line and the conceptual plans envisioned for the expansion of SR 74 (MAG Interstate 10 – Hassayampa Valley Transportation Framework Study 2007), there would be negligible impacts to the transportation corridor.

State - The Proposed Action would be entirely contained within the ACC-certificated route and would not require any further action on the part of the ACC. Present ownership and management of State Trust lands would not change under the Proposed Action. State Trust lands south of SR 74 and just west of the Morgan Substation would be directly impacted by visual effects and ground disturbing activities (pers. comm. ASLD May 23, 2013).

Maricopa County - The Proposed Action would encourage appropriate buffers to mitigate conflicting land uses (Maricopa County Comprehensive Plan Policy L.4.1) by routing the transmission line across BLM and State Trust lands, avoiding private lands where practicable, avoiding conflicts between the transmission line and uses on private lands, such as residential development. However, placement of the transmission line on BLM-managed public lands would create potential for conflicts between recreational use and the utility infrastructure. Regarding Policy L11.1, under the Proposed Action, the ROW would occupy space that is currently open space on BLM-managed public lands, albeit a relatively small portion. Impacts to recreation resources are analyzed in **Section 4.9**. Regarding Policy L11.3, micro-siting of monopoles, or potential small realignments within the ACC-certificated route on BLM-managed public land as discussed in **Section 4.14.4** would protect ridgelines, foothills, and other visually sensitive areas to the extent possible.

City of Peoria - The Proposed Action route would place the transmission line within an existing BLM transportation corridor, meeting Policy 3.B.4 of the city's General Plan and also would be situated within a utility corridor defined on the city's General Land Use map.

Planned Future Land Uses - The low/medium density residential and recreation land uses form the majority of the future land uses that would be crossed by the Proposed Action. The presence of the transmission line ROW would limit the development of these land uses. Approximately 660 acres of land designated for residential low/medium density development within the Study Area would permanently be removed from development potential. This represents approximately one percent of the overall land designated as future low/medium density residential land use within the Study Area which is a negligible effect on this land use. Approximately 180 acres of land designated for recreation would permanently be removed from development potential. This represents approximately seven percent of land designated for recreation which is a minor, permanent adverse effect on this land use.

Under the Proposed Action, the transmission line and associated ROW would be located within the northern boundary of the BLM-designated transportation corridor north of SR 74. Where the transmission line would be south of SR 74 it would be outside of the proposed SR 74 expansion areas. Analysis of land needs for the envisioned SR 74 expansion indicate that the presence of the transmission line and ROW within the transportation corridor would not impact this future land use.

The transmission line would be visible to future development in the northernmost State Trust land section inside of the Lake Pleasant Heights Planned Community District; however, the

planned development in this area has been designated for either open space or low density residential development, which may minimize the impact on future development. The Proposed Action route would bisect a large block of State Trust land west of the 211<sup>th</sup> Avenue alignment north of Cloud Road and east of US 50, impacting the ASLD's ability to master plan it for future development as a single project (pers. comm. ASLD May 23, 2013).

The Proposed Action route would cross much smaller amounts of other future land uses, including open space. The presence of a transmission line may affect the values of future open space and recreation development, depending on the amount of acreage lost and what kind of recreation would be developed in the vicinity of the transmission line.

### **Existing Land Use**

The Proposed Action would cross approximately 1.5 miles of a parcel identified as an active lode mining claim. The presence of the transmission line structures could inhibit development of aboveground mining facilities and potentially underground mining activities in this specific area. This would be a moderate, long-term adverse effect on this active lode mining claim.

During construction activities, the Proposed Action may cause temporary delays in access to a gravel pit operation (ID 5220) just south of Patton Road and west of the Proposed Action route. The operation would be outside of the ROW; therefore the effect on this operation would be limited to construction activities. This would be a minor, short-term effect.

#### **4.6.2.3 Alternative 1: Proposed Action with Additional Corridor**

Similar to the Proposed Action, the construction and presence of a transmission line under Alternative 1 would conflict with the existing BLM Bradshaw-Harquahala RMP (BLM 2010a). In addition, under Alternative 1 a multiuse utility corridor would also be established on BLM-managed public lands that would begin at the centerline of SR 74 and extend 0.5-mile north, and also include the entire key-shaped block of BLM-managed public lands south of SR 74. Therefore, an RMPA would be required to establish a multiuse utility corridor for the ROW under Alternative 1 as well (the current VRM class designations would also need to be changed under the RMPA as described in **Section 4.14**). The multiuse utility corridor would be approximately 2,362 acres immediately north of SR 74 and 1,013 acres immediately south of SR 74, for a total of approximately 3,375 acres. The total acreage of BLM-managed public lands within the Study Area is approximately 13,234 acres. The acreage where land use would change with the Proposed RMPA designating the multiuse utility corridor would represent approximately 26 percent of the BLM-managed public lands in the Study Area. The land use that the RMP prescribes for the area containing the proposed multiuse utility corridor is part of the Castle Hot Springs SRMA and the lands north of SR 74 are also designated a transportation corridor. The change in land use that would result in designation of the multiuse utility corridor through the Proposed RMPA represents a major long-term impact to land use management. RMP Decision LR-30 would be eliminated under Alternative 1. The adverse impact under Alternative 1 would be of greater intensity than the Proposed Action because the area potentially affected by multiuse utility corridors under Alternative 1 is greater than the Proposed Action, and allows for more future development on BLM-managed public lands.

Otherwise, the effects to land use and range resources under Alternative 1 would be the same as described in **Sections 4.6.2.1** and **4.6.2.2**.

#### **4.6.2.4 Alternative 2: ROW South of SR 74**

##### **Amendment of the RMP**

Similar to the Proposed Action, the construction and presence of a transmission line under Alternative 2 with the prescriptions of the BLM would conflict with the BLM Bradshaw-Harquahala RMP (BLM 2010a). In addition, under Alternative 2 a multiuse utility corridor would also be established on BLM-managed public lands that would begin at the centerline of SR 74 and include the entire key-shaped block of BLM-managed public lands south of SR 74. Therefore, an RMPA would be required to establish a multiuse utility corridor for the ROW under Alternative 2, south of SR 74 as well (a change to the existing VRM class designations would also require an RMPA as described in **Section 4.14**). The multiuse utility corridor would be approximately 1,013 acres immediately south of SR 74. The total acreage of BLM-managed public lands within the Study Area is approximately 13,234 acres. The acreage where land use would change with the Proposed RMPA designating the multiuse utility corridor would represent approximately eight percent of the BLM-managed public lands in the Study Area. The land use that the RMP prescribes for the area containing the proposed multiuse utility corridor is part of the Castle Hot Springs SRMA. The change in land use that would result in designation of the multiuse utility corridor through the Proposed RMPA represents a minor long-term impact.

The change in land use management that would result in designation of a multiuse utility corridor through the Proposed RMPA would allow development on BLM-managed public lands south of SR 74. This would be a long-term impact to land use management. Under the Bradshaw-Harquahala RMP, the BLM-managed public lands are presently managed for recreational uses. Amending the RMP to allow establishment of a multiuse utility corridor and construction of a transmission line would fundamentally change the planned use of these lands, changing the course of management prescribed by the RMP that was recently completed through a thorough and inclusive process.

Under Alternative 2, the Bradshaw-Harquahala RMP would be amended, but no utility corridors would be created north of SR 74, and development would be allowed for on BLM-managed public lands south of SR 74. While the RMP would be amended under Alternative 2, the amendment effects to planned recreation would all occur south of SR 74, where recreational use is less than that north of SR 74. Thus, under this alternative, amending the RMP would have minimal effects on recreational planning.

##### **Construction**

###### *Land Ownership, Planning, and Management*

The ROW of Alternative 2 would cross 4.0 miles of BLM-managed public land, 0.1 mile of USBR land, 25.8 miles of State Trust land, and 7.6 miles of private lands. The effects to these lands under Alternative 2 would be the same as under the Proposed Action.

Federal - Under the Proposed Action there would be no change of ownership of federal lands. A ROW grant for BLM-managed public lands would be issued as described in **Section 2.3.2**.

Amendment of the Bradshaw-Harquahala RMP would enable Alternative 2 to meet Decisions LR-2 and LR-15. Alternative 2 would include a 230kV transmission line within the same ROW as the 500kV transmission line, meeting Decision LR-16 to co-locate smaller utility lines within corridors. The impact of Alternative 2 on visual resources is analyzed in **Section 4.14**, meeting the requirements of Decision LR-18.

The ROW under Alternative 2 would be within the area of BLM-managed public lands that are currently designated within the RMP as an SRMA, which would effectively reduce the area available for recreation within the corridor. Impacts to recreation are analyzed in **Sections 4.9**.

State - A portion of the Alternative 2 route would be located outside the ACC-certificated route and would require an amendment of the ACC-certificated route. State Trust lands south of SR 74 and just west of the Morgan Substation would be directly impacted by visual effects and ground disturbing activities (pers. comm. ASLD May 23, 2013).

Maricopa County -The Alternative 2 route would encourage appropriate buffers to mitigate conflicting land uses (Maricopa County Comprehensive Plan Policy L.4.1) by routing the transmission line across State Trust land and private land south of SR 74 reducing potential for conflicts between recreational use and the utility infrastructure within the SRMA. Impacts to recreation resources are analyzed in **Section 4.9**. However, conflicts between the transmission line and uses on private lands, such as residential development would arise under Alternative 2. Regarding Policy L11.1, impacts to open space on BLM-managed public lands would be minimal. Regarding Policy L11.3, micrositing of monopoles or potential small realignments within the ACC-certificated route, on BLM-managed public land as discussed in **Section 4.14.4** would protect ridgelines, foothills, and other visually sensitive areas to the extent possible.

City of Peoria - Alternative 2 would not meet Policy 3.B.4 of the city's General Plan because unlike the Proposed Action or Alternatives 1, the transmission line would not be within or immediately adjacent to a transportation/utility corridor.

Planned Future Land Use - Similar to the Proposed Action, the low/medium density residential and recreation land uses form the majority of the future land uses that would be crossed by Alternative 2. Approximately 732 acres of land designated for residential low/medium density development would permanently be removed from development potential, which is slightly more acreage than under the Proposed Action. However, similar to the Proposed Action this represents approximately one percent of land designated as future low/medium density residential land use within the Study Area which is a negligible effect on the overall land use. Approximately 74 acres of land designated for recreation would permanently be removed from development potential. This represents approximately three percent of land designated for recreation which is a negligible effect on this land use and less than that under the Proposed Action.

Under Alternative 2, the transmission line would be visible to future development in the northernmost State Trust land section inside of the Lake Pleasant Heights Planned Community District; however, the planned development in this area has been designated for either open space or low density residential development, which may minimize the impact on future development. The Alternative 2 route would bisect a large block of State Trust land

west of the 211<sup>th</sup> Avenue alignment north of Cloud Road and east of US 50, impacting the ASLD's ability to master plan it for future development as a single project (pers. comm. ASLD May 23, 2013).

The Alternative 2 route would cross similar amounts of other future land uses, including open space. The presence of a transmission line may affect the values of future open space and recreation development, depending on the amount of acreage lost and what kind of recreation would be developed in the vicinity of the transmission line.

### **Existing Land Use**

The effects to mining under Alternative 2 would be similar to that under the Proposed Action, but slightly less of the active lode mining claim (1 mile versus 1.5 mile) would be crossed by Alternative 2.

#### **4.6.2.5 Alternative 3: Carefree Highway Route**

### **Amendment of the RMP**

The Alternative 3 route would not require a newly established utility corridor on BLM-managed public lands that currently are without a designated utility corridor, therefore an RMPA would not be required under Alternative 3.

### **Construction**

#### *Land Ownership, Planning, and Management*

The Alternative 3 route would cross 1.9 miles of BLM-managed public land, 0.6 mile of USBR land, 26.6 miles of State Trust land, and 9.3 miles of private lands. This alternative crosses the most private land of any of the alternatives.

Federal - Because the only BLM-managed public lands crossed by Alternative 3 would be within a BLM designated utility corridor, Decision LR-2 would be met. Alternative 3 would include a 230kV transmission line within the same ROW as the 500kV transmission line, meeting Decision LR-16 to co-locate smaller utility lines within corridors. The impact of Alternative 3 on visual resources is analyzed in **Section 4.14**, meeting the requirements of Decision LR-18.

State - A portion of the Alternative 3 route would be located outside the ACC-certificated route and would require an amendment of the ACC-certificated route. The Alternative 3 route would bisect a large block of State Trust land west of the 211<sup>th</sup> Avenue alignment north of Cloud Road and east of US 50, impacting the ASLD's ability to master plan it for future development as a single project (pers. comm. ASLD May 23, 2013).

Maricopa County - The Alternative 3 route would encourage appropriate buffers to mitigate conflicting land uses (Maricopa County Comprehensive Plan Policy L.4.1) by routing the transmission line across State Trust land and private land south of SR 74 eliminating potential for conflicts between recreational use and the utility infrastructure within the SRMA. Impacts to recreation resources are analyzed in **Section 4.9**. However, conflicts between the transmission line and uses on private lands, such as residential development would be greater under Alternative 3 than the Proposed Action or Alternatives 1 or 2. Regarding Policy L11.1, impacts to open space on BLM-managed public lands would be

minimal. Regarding Policy L11.3, micro-siting of monopoles on BLM-managed public land as discussed in **Section 4.14.4** would protect ridgelines, foothills, and other visually sensitive areas to the extent possible, although this would be unlikely as the Alternative 3 route on BLM-managed public lands would occur within a designated utility corridor near the Sun Valley Substation.

City of Peoria - Alternative 3 would not meet Policy 3.B.4 of the city's General Plan because unlike the Proposed Action or Alternatives 1, the transmission line would not be within or immediately adjacent to a transportation/utility corridor. Alternative 3 would not conflict with the City of Peoria's PROST.

Planned Future Land Use - Similar to the Proposed Action, the low/medium density residential and parks/recreation land uses form the majority of the future land uses that would be crossed by Alternative 3. Approximately 756 acres of land designated for residential low/medium density development would permanently be removed from development potential, which is slightly more acreage than under the Proposed Action and Alternative 2. However, this represents approximately one percent of the overall land designated as future low/medium density residential land use which is a negligible effect on this land use within the Study Area. Approximately 74 acres of land designated for recreation would permanently be removed from development potential. This represents approximately three percent of land designated for recreation which is a negligible effect on this land use and less than that under the Proposed Action. The Alternative 3 route would bisect the future master planned communities of Saddleback Heights, Vistancia, and Lake Pleasant Heights, which are currently in various stages of planning for future development.

Alternative 3 would cross similar amounts of other future land uses, including open space. The presence of a transmission line may affect the values of future open space and recreation development, depending on the amount of acreage lost and what kind of recreation would be developed in the vicinity of the transmission line.

### **Existing Land Use**

Alternative 3 does not cross any active lode mining claims. Alternative 3 would have the same effect to the gravel mining operation south of Patton Road as the Proposed Action.

#### **4.6.2.6 State Trust Land Route Variation Sub-alternative**

This Sub-alternative involves four miles of State Trust land. There would be no effect to BLM, USBR, or private lands. There would be no difference in impacts to range resources on the State Trust land affected by the Sub-alternative between the Sub-alternative route and the Primary Segment.

### **Sub-alternative**

Regarding the Maricopa County Comprehensive Plan, the Sub-alternative route would not encourage appropriate buffers to mitigate conflicting land uses (Maricopa County Comprehensive Plan Policy L.4.1) by routing the transmission line across State Trust land adjoining private property containing residences. Conflicts between the transmission line and uses on private lands, such as residential development would be greater under the Sub-alternative than the Proposed Action or Alternatives 1, 2, or 3.

The Sub-alternative route would leave the block of State Trust land largely intact, preserving its future land use value for master planning. It would also create a boundary with land that has been identified for future employment uses associated with the projected expansion of the BNSF Railroad along the east side of US 60 between the Carefree Highway and Cloud Road alignments (pers. comm. ASLD May 23, 2013). The Sub-alternative route could have a negligible to moderate long-term beneficial impact to land use on this parcel of State Trust land depending upon future development actions in this area. If this route was selected, since it would be located outside the ACC-certificated route, it would require an amendment of the ACC-certificated route. When combined with the remainder of the ACC-certificated route, the Sub-alternative would have the least negative impact on State Trust lands in terms of number of acres affected and the configuration of potential development parcels (pers. comm. ASLD May 23, 2013).

However, the Sub-alternative route along Cloud Road and 211<sup>th</sup> Avenue would bring the transmission line in close proximity to existing residences. This would have no direct or indirect impact on land use, but would affect visual resources and socioeconomics, which are analyzed in **Sections 4.10** and **4.14**, respectively.

### **Primary Segment Common to All Action Alternatives**

Regarding the Maricopa County Comprehensive Plan, impacts would be the same as those described under the Proposed Action.

The Primary Segment would follow the Proposed Action route. Bisecting the land along the Joy Ranch Road alignment under the Proposed Action route could compromise the future ability to utilize the lands for a master planned community, resulting in a long-term impact to land use on this parcel of State Trust land.

There would be no effect to mining.

#### **4.6.2.7 No Action Alternative**

Under the No Action Alternative the BLM would not issue a ROW, the Bradshaw-Harquahala RMP would not be amended to establish a single- or multiuse utility corridor, and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives. There would be no Project impacts on land use and range resources as described for the Proposed Action and Action Alternatives. However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed public lands. Under this situation, impacts to land use and range resources located on lands that are crossed or in the vicinity of the Project could occur. The degree of potential for impacts to these resources and the magnitude of those impacts would depend on the route selected.

#### **4.6.3 Mitigation and Residual Effects**

There is no mitigation proposed for land use and range resources, thus no residual effects are anticipated.

#### **4.6.4 Unavoidable Adverse Impacts**

Under the Proposed Action and all Action Alternatives the acreage of State Trust land available for grazing, allotment acreages, and AUMs would be reduced; and some private lands would no longer be available for residential development. Under the Proposed Action, and Alternatives 1 and 2, the Bradshaw-Harquahala RMP would be amended, planned land uses would change, and the potential would exist for user conflicts between recreationists and the transmission line development(s).

### **4.7 PUBLIC HEALTH AND SAFETY (NOISE, ELECTROMAGNETIC FIELDS, AND FIRE)**

#### **4.7.1 Indicators and Methods**

Indicators described separately below for noise, EMF, and fire would demonstrate the effect of the Project on these issues/resources.

##### **4.7.1.1 Noise**

Noise levels are usually measured by units of dB, as discussed in **Section 3.7**. The primary indicator for noise levels for this assessment is the A-weighted average day-night sound level, defined as the  $L_{eq}$ , (in dBA, or the A-weighted decibel level). The “A-weighting” reflects the typical frequency-dependent sensitivity of average healthy human hearing. The term  $L_{eq}$  may also be expressed as the CNEL. The CNEL is calculated by adding a 5 dB penalty to sound levels in the evening (7:00 p.m. to 10:00 p.m.) and a 10 dB penalty to sound levels at night (10:00 p.m. to 7:00 a.m.), which provides for increased sensitivity during time periods when a quiet environment is expected.

The method for assessing the effects from noise is comparison of the projected baseline ambient noise levels with projected noise levels associated with the Project.

##### **4.7.1.2 Electromagnetic Fields**

The primary indicator for EMFs for this assessment is the magnetic flux density, **B**, expressed in units of G, or mG (where  $1\text{ G} = 1 \times 10^3\text{ mG}$ ). Projected flux densities for each of the Action Alternatives are used.

The method for assessing the effects from EMFs is comparison of projected EMFs for the Project with respect to ICNIRP recommendations for voluntary public exposure limits.

##### **4.7.1.3 Fire**

The primary indicator for fire for this assessment is the Fire Regime Condition Class, which is a classification of the amount of departure from the historic fire regime. Descriptions of the two condition classes present within the Study Area that may be crossed by the Action Alternatives are provided in **Section 3.7.3.5**.

The method for assessing the effects from fire is comparison of the Project with respect to the relative amounts (linear distances) of Condition Class 2 fire regimes crossed by the Action Alternative routes.

## 4.7.2 Direct and Indirect Effects by Alternative

### 4.7.2.1 Impacts Common to All Action Alternatives

#### Construction

##### *Noise*

As described previously, the method for assessing the effects from noise is comparison of the projected baseline ambient noise levels with projected noise levels associated with the Project. Ambient sound level in terms of  $L_{dn}$  could be expected to range from 45 to 60 dBA, where  $L_{dn}$  (Day-night sound level) is defined as the  $L_{eq}$  (in dBA) for a 24-hour day with a penalty added to compensate for increased sensitivity to noise during usually quieter hours. The term  $L_{eq}$  may also be expressed as the CNEL. The CNEL is calculated by adding a 5 dB penalty to sound levels in the evening (7:00 p.m. to 10:00 p.m.) and a 10 dB penalty to sound levels at night (10:00 p.m. to 7:00 a.m.), which provides for increased sensitivity during time periods when a quiet environment is expected.

Noise during construction would be associated with the equipment used for the installation activities. The closest residential area, common to all the Action Alternatives, would be residences on West Myers Street, near N. 235<sup>th</sup> Avenue, which are less than 0.25 miles from the ROW (see **Table 3.7-2**). Maximum construction noise levels are expected from use of helicopters during conductor stringing and from heavy equipment used during construction activities on the ROW. It is expected that maximum noise levels at 50 feet from the helicopter would be 105 dBA and from heavy equipment at 50 feet to be in the range of 83 to 85 dBA (FHA 2006, in BLM 2009a). Sound levels are expected to diverge in open air resulting in a 6-dBA decrease for each doubling of distance from the source (EPA 1974; Barnes 1976 in BLM 2011c). At a distance of 0.25 mile (1,320 feet), this would result in a maximum noise level from helicopter use of 77 dBA, and from the other heavy equipment use ranging from 55 to 58 dBA. The maximum noise levels would be intermittent and temporary, as construction activities proceeded along the ROW, and would be incurred only during daylight (normal working hours would be 5:00 am to 4:00 pm in the summer, and 6:00 am to 5:00 pm in the winter).

Other residential areas, which could be receptors of noise from construction activities, are a minimum of 0.5 miles distant from any of Action Alternatives ROW (see **Table 3.7-2**) and are not expected to be affected by any discernible increase in noise during construction. Using a similar sound dissipation relationship as above, the maximum helicopter noise at 0.5 mile would be expected to be 71 dBA and the other heavy equipment noise maximums ranging from 51 to 49 dBA. The maximum noise levels would be intermittent and temporary, as construction activities proceeded along the ROW, and would be incurred only during daylight (normal working hours).

### *EMFs*

During initial 500kV line construction and construction of the subsequent 230kV line, which would add conductors to existing structures at some point in the future, EMFs would not be of concern as the conductors would not be in service/operational during the construction period, thus no EMFs would be generated and no impacts from EMFs would occur.

### *Fire*

Fire danger during construction activities associated with the Project under all Action Alternatives would be associated with equipment operations, personnel actions, and materials handling along the ROW during the construction activities. Construction activity could result in increased potential for fire in the ROW due to such occurrences as equipment or material sparks, workers smoking, or disturbances which cause non-native fire prone vegetation to establish itself. As the construction activities progress along the ROW, that particular section would be exposed to somewhat increased fire risk due to those activities and machinery presence. The increased risk would then subside as the construction activity progresses further down the ROW. This pulsed sequence of increased risk would occur both during initial construction of the 500kV line and again during the later construction of the 230kV line.

## **Operations, Maintenance, and Decommissioning**

### *Noise*

Noise from the ROW during operations and maintenance would be expected from heavy equipment and/or OHVs and pickup trucks used along the ROW, and would be expected to result in maximum noise levels in the 55 to 58 dBA range at a distance of 0.25 mile from the centerline of the ROW. Thus, the expected maximum noise levels should not exceed the expected ambient sound range from 45 to 60 dBA, where  $L_{dn}$  is defined as the  $L_{eq}$  (in dBA) for a 24-hour day at the closest residences on West Myers Street, near N. 235<sup>th</sup> Avenue, which are less than 0.25 miles from the ROW centerline.

During decommissioning activities, intermittent maximum sound levels would be expected to be similar to or less than those incurred during construction of the Project.

### *EMFs*

EMFs and their effects are essentially equivalent among all Action Alternatives, when compared to levels defined by ICNIRP as recommendations for voluntary public exposure limits for EMFs. The ICNIRP recommended voluntary public exposure limit is 2,000 mG.

During normal operation and maintenance of any of the Action Alternatives, the expected range of EMFs is between 8 and 20 mG at the edge of the ROW, as discussed in **Section 3.7.2**, which also accounts for additive effects of paralleling other 500kV and 230kV lines which may be crossed. Other, smaller (69kV) lines may also be crossed, but would result in EMFs less than or similar to the projected range. The expected range of EMFs is at least 2 orders of magnitude less than the ICNIRP recommended exposure limit of 2,000 mG. The EMFs would thus be measureable but small, resulting in a minor but long-term impact, similar among all of the Action Alternatives.

During and after decommissioning, EMFs would not be of concern as the lines would not be in service during those periods, thus no EMFs would be generated.

### *Fire*

Fire danger during operation of the transmission line would be associated with increased risk due to the physical presence of the transmission line and the conveyance of electrical energy over the electrical conductors. Physical presence of the transmission line may increase the likelihood of lightning strikes in the vicinity of the transmission line and structures, which would lead to a small increased risk of lightning caused fires along the entire route of the Project. Shield wires would be installed near the top of the structures and above the conductors, which would minimize the chance of lightning strikes. Additionally, mechanical malfunction or failure of transmission line components would have an associated risk of increased fire danger in the vicinity of the transmission line ROW. This increased risk would be present during the operational lifetime of the Project.

Fire danger during maintenance activities associated with the Project would be associated with equipment operations, personnel actions, and materials handling along the ROW affected during the maintenance activities, which could at times be similar to construction, although likely much less intense. The maintenance activities would occur from time to time and may either progress along the ROW or be confined to a particular section of the line undergoing maintenance. The portion of ROW undergoing maintenance would be exposed to somewhat increased fire risk due to those activities and machinery presence. The increased risk would then subside upon completion of each specific maintenance activity. It is expected that any changes to fire condition class would have already occurred during construction, and therefore additional changes to fire condition class are not expected due to maintenance activities.

Fire danger during decommissioning of the transmission lines would be associated with equipment operations, personnel actions, and materials handling along the ROW affected during the maintenance activities, which may be quite similar to those occurring during construction. The decommissioning activities would occur and would progress along the ROW as that particular section of the line undergoes de-construction during the decommissioning activities. The portion of ROW undergoing decommissioning would be exposed to somewhat increased fire risk due to those activities and machinery presence. The increased risk would then subside upon completion of decommissioning of that section of the transmission lines. It is expected that any changes to fire condition class would have already occurred during construction, and therefore additional changes to fire condition class are not expected due to decommissioning activities.

## **4.7.2.2 Proposed Action**

### **Construction**

Impacts to noise and EMFs under the Proposed Action would be the same as described in **Section 4.7.2.1**.

### *Fire*

The Proposed Action route would cross 2.4 miles (or about 6 percent of the overall length) with vegetation presently in Fire Condition Class 2, with the remaining 35.8 miles (or about 94 percent of line length) crossing areas with vegetation in Fire Condition Class 1.

Increased fire danger during construction due to equipment operations, personnel actions, and materials handling along the ROW would be nearly equivalent for areas exhibiting vegetation in either Fire Condition Class 1 or Class 2. As the construction activities progress along the ROW, sections under construction would be exposed to somewhat increased fire risk due to those activities and machinery presence. The pulse of increased risk would subside as the construction activity progresses further down the ROW (both during initial construction of the 500kV line and later again during construction of the 230kV line).

Due to site disturbances from equipment and personnel during construction, there is a potential for vegetation in Fire Condition Class 1 to be disturbed to the extent that it would be altered to Fire Condition Class 2. Thus, for the Proposed Action, 35.8 miles (or 94 percent of line length) would be exposed to the potential for disturbance-caused change from Fire Condition Class 1 to Fire Condition Class 2.

### **Operations, Maintenance, and Decommissioning**

Impacts to noise and EMFs under the Proposed Action would be the same as described in **Section 4.7.2.1**.

### *Fire*

Fire danger after transmission line decommissioning may subside to levels near those prior to pre-construction, although disturbed areas may be subject to an increase in Fire Condition Class 1 to Fire Condition Class 2 if sufficient disturbance remains after decommissioning. Disturbed areas which increase from Fire Condition Class 1 to Fire Condition Class 2 as a result of any combination of transmission lines construction, operation and maintenance, and closure activities are expected to remain in Fire Condition Class 2 after transmission line decommissioning. Under the Proposed Action, 35.8 miles (or 94 percent of line length) would be exposed to the potential for vegetation-disturbance-caused changes from Fire Condition Class 1 to Fire Condition Class 2.

### **4.7.2.3 Alternative 1: Proposed Action with Additional Corridor**

#### **Construction**

Impacts to noise, EMFs, and fire under Alternative 1 would be the same as described in **Section 4.7.2.1**.

#### **Operations, Maintenance, and Decommissioning**

Impacts to noise, EMFs, and fire under Alternative 1 would be the same as described in **Section 4.7.2.1**.

#### **4.7.2.4 Alternative 2: ROW South of SR 74**

##### **Construction**

Impacts to noise and EMFs under Alternative 2 would be the same as described in **Section 4.7.2.1**.

##### *Fire*

Alternative 2 would cross approximately two miles (or about five percent of line length) with vegetation presently in Fire Condition Class 2, with the remaining 35.4 miles (or about 95 percent of line length) crossing areas with vegetation in Fire Condition Class 1.

Due to site disturbances from equipment and personnel during construction, there is a potential for vegetation in Fire Condition Class 1 to be disturbed to the extent that it would be altered to Fire Condition Class 2. Thus, for Alternative 2, 35.4 miles (or 95 percent of line length) would be exposed to the potential for change of Fire Condition Class 1 to Fire Condition Class 2.

##### **Operations, Maintenance, and Decommissioning**

Impacts to noise and EMFs under Alternative 2 would be the same as described in **Section 4.7.2.1**.

##### *Fire*

Under Alternative 2, 35.4 miles (or 95 percent of line length) of the ROW would be exposed to the potential for vegetation-disturbance-caused change from Fire Condition Class 1 to Fire Condition Class 2.

#### **4.7.2.5 Alternative 3: Carefree Highway Route**

##### **Construction**

Impacts to noise and EMFs under Alternative 3 would be the same as described in **Section 4.7.2.1**.

##### *Fire*

Alternative 3 would cross approximately 2.9 miles (or about eight percent of line length) with vegetation presently in Fire Condition Class 2, with the remaining 35.5 miles (or about 92 percent of line length) crossing areas with vegetation in Fire Condition Class 1.

Due to site disturbances from equipment and personnel during construction, there is a potential for vegetation in Fire Condition Class 1 to be disturbed to the extent that it would be altered to Fire Condition Class 2. Thus, for Alternative 3, the Carefree Highway route, 35.5 miles (or 92 percent of line length) would be exposed to the potential for vegetation-disturbance-caused change from Fire Condition Class 1 to Fire Condition Class 2.

##### **Operations, Maintenance, and Decommissioning**

Impacts to noise and EMFs under Alternative 3 would be the same as described in **Section 4.7.2.1**.

### *Fire*

For Alternative 3, 35.5 miles (or 92 percent of line length) would be exposed to the potential for vegetation-disturbance-caused change from Fire Condition Class 1 to Fire Condition Class 2.

## **4.7.2.6 State Trust Land Route Variation Sub-alternative**

### **Sub-alternative**

#### *Construction*

Impacts to noise and EMFs under the Sub-alternative would be the same as described in **Section 4.7.2.1**.

#### Fire

Of the total distance traversed by the Sub-alternative route, 0.1 mile (or about 2 percent) traverses areas with vegetation presently in Fire Condition Class 2, with the remaining 3.9 miles (or about 98 percent) crossing areas with vegetation in Fire Condition Class 1.

Due to site disturbances from equipment and personnel during construction, there is a potential for vegetation in Fire Condition Class 1 to be disturbed to the extent that it would be altered to Fire Condition Class 2. Thus, for the State Trust Land Route Variation Sub-alternative, 3.9 miles (or about 98 percent) would be exposed to the potential for vegetation-disturbance-caused change from Fire Condition Class 1 to Fire Condition Class 2.

#### *Operations, Maintenance, and Decommissioning*

Impacts to noise and EMFs under the Sub-alternative would be the same as described in **Section 4.7.2.1**.

#### Fire

For the State Trust Land Route Variation Sub-alternative, 3.9 miles (or about 98 percent) would be exposed to the potential for vegetation-disturbance-caused change from Fire Condition Class 1 to Fire Condition Class 2.

## **Primary Segment Common to All Action Alternatives**

#### *Construction*

Impacts to noise and EMFs for the Primary Segment would be the same as described in **Section 4.7.2.1**.

#### Fire

The Primary Segment crosses 0.6 miles (or about 15 percent) with vegetation presently in Fire Condition Class 2, with the remaining 3.4 miles (or about 85 percent) crossing areas with vegetation in Fire Condition Class 1.

Due to site disturbances from equipment and personnel during construction, there is a potential for vegetation in Fire Condition Class 1 to be disturbed to the extent that it would be altered to Fire Condition Class 2. Thus, by not constructing the Primary Segment (common to any of the Action Alternatives), 3.4 miles (or 85 percent) would avoid the

potential for vegetation-disturbance-caused change from Fire Condition Class 1 to Fire Condition Class 2.

#### *Operations, Maintenance, and Decommissioning*

Impacts to noise and EMFs under the Primary Segment would be the same as described in **Section 4.7.2.1**.

#### *Fire*

For the Primary Segment, 3.4 miles (or about 85 percent) would be exposed to the potential for vegetation-disturbance-caused change from Fire Condition Class 1 to Fire Condition Class 2.

#### **4.7.2.7 No Action Alternative**

Under the No Action Alternative the BLM would not issue a ROW, the Bradshaw-Harquahala RMP would not be amended to establish a single- or multiuse utility corridor, and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives. There would be no Project impacts to noise, EMF, and fire as described for the Proposed Action and Action Alternatives. However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed public lands. Under this situation, impacts to noise, EMF, and fire could be similar to those described for the Proposed Action and Action Alternatives. The degree of potential for impacts to these resources and the magnitude of those impacts would depend on the route selected.

#### **4.7.3 Mitigation and Residual Effects**

A number of mitigation actions related to public health and safety would be undertaken to reduce potential impacts from the Project during periods of construction and operations, maintenance, and decommissioning activities as described in the following sections. EPMS and BMPs established (**Appendix 2A**) would also be followed for the Project.

##### **4.7.3.1 General**

Following construction and after the transmission line were to be placed into service, APS would respond to complaints of line-generated radio interference (RI) or television interference (TI) by investigating the complaints and implementing appropriate mitigation measures. The transmission line would be patrolled on a regular basis so that damaged insulators or other line materials that could cause interference are repaired or replaced.

As required by the ACC, through the conditions of a CEC, APS shall make every reasonable effort to identify and correct, on a case-specific basis, all complaints of interference with radio or television signals from operation of the transmission line and related facilities addressed in the CEC. APS shall maintain written records for a period of five years of all complaints of radio or television interference attributable to operation, together with the corrective action taken in response to each complaint. All complaints shall be recorded to include notations on the corrective action taken. Complaints not leading to a specific action or for which there was no resolution shall be noted and explained.

The transmission line configuration, hardware and conductor would limit the audible noise, RI, and TI due to corona. Tension would be maintained on all insulator assemblies to assure positive contact between insulators, thereby avoiding sparking. Caution would be exercised during construction to avoid scratching or nicking the conductor surface, which may provide points for corona to occur.

#### **4.7.3.2 Noise**

During construction, traditional large construction and ground moving equipment would be utilized, as outlined in **Table 2.4-3**, which would create noise during use. Noise-generating construction activities, such as the use of heavy equipment or helicopters, within 0.5-mile of residential areas, would be restricted to the hours of 7:00 am and 7:00 pm, thus avoiding generation of noise during the periods (7:00 pm to 7:00 am) when the CNEL measurements include a sound penalty for time periods when a quiet environment is expected.

During operation and maintenance of the Project, similar equipment to that described for construction may be used, which would generate noise. Generally, maintenance activities would be confined to typical workday hours, thus avoiding generation of noise during the periods (7:00 pm to 7:00 am) when the CNEL measurements include a sound penalty for time periods when a quiet environment is expected. Occasionally there may be emergency maintenance required, which may occur in the evening or nighttime hours, but that would take place very infrequently.

#### **4.7.3.3 Fire**

Fire prevention requirements would be included in the Project H&S plan and included in the POD; during construction, and construction contractors would need to comply with those requirements as a minimum. Additionally, APS would prepare an ERP for the Project which would include requirements for all onsite employees (both construction and operation) to receive annual fire prevention and response training, and would include requests to appropriate fire departments to participate in the training. Employees would be prohibited from smoking outside of company vehicles during dry summer months.

Fiber optic/static neutral cables would be installed at the top of the structures supporting the transmission lines, to serve as static wires. These static wires (sometimes referred to as shield wires) are grounded and installed at the very top of the structures to protect lower conductors from lightning.

Vegetation management would be undertaken by APS in accordance with their TVMP (**Appendix 2B**), as well as their IVM, which would include removal of all tall-growing vegetation within the wire zone, and preservation of low-growing herbaceous and woody plant communities that do not interfere with overhead transmission lines, or pose a fire hazard or hamper access.

APS would comply with industry standard codes governing the design and operation of high-voltage electric utility systems. Equipment would be designed such that if, for some reason, an energized phase conductor were to fall to the ground and create a line-ground fault, high-speed relay equipment would sense that condition and activate circuit breakers to quickly de-

energize the line. This would reduce the risk of fire from the high voltage transmission lines to a low level.

Implementation of mitigation measures would eliminate most of the potential residual effects, although at times, noise from the routine operations and future maintenance and eventual decommissioning activities would occur. Residual effects to fire may include the fact that disturbed areas may be subject to an increase in Fire Condition Class 1 to Fire Condition Class 2 if sufficient disturbance remains after any of those activities.

#### **4.7.4 Unavoidable Adverse Impacts**

##### **4.7.4.1 Noise**

Construction of the Project would require the use of traditional construction and earth moving equipment, which would generate noise. Other louder equipment may occasionally be required as well (i.e., helicopters) as noted in **Section 2.4**. Project noise from construction would be an unavoidable, temporary adverse impact, which would be mitigated as discussed in **Section 4.7.3.1**.

Noise disturbances during operation and maintenance, as well as during future decommissioning activities, should be less than, but no greater than those associated with construction. Project noise from those activities would also be an unavoidable, temporary adverse impact, which would also be mitigated in the manner discussed in **Section 4.7.3.1**.

##### **4.7.4.2 Fire**

Construction, operation and maintenance, as well as future decommissioning of the Project facilities within the selected ROW, would involve land disturbance to the ROW, which would affect the vegetation in the ROW. Fire danger after transmission line construction, operation and maintenance, and future decommissioning may subside to levels near those prior to pre-construction, although disturbed areas may be subject to an increase in Fire Condition Class 1 to Fire Condition Class 2 if sufficient disturbance remains after any of those activities. Vegetation-disturbance-caused changes from Fire Condition Class 1 to Fire Condition Class 2 would be an unavoidable adverse impact.

## **4.8 PALEONTOLOGY**

### **4.8.1 Indicators and Methods**

The analysis of impacts to paleontological resources is based on a Project-specific paleontological resources assessment that included a literature review of known resources within and near the Study Area, and an assessment of the Project using the Society of Vertebrate Paleontology Assessment of the Paleontological Potential of Rock Units, and the PFYC system. The following indicators were considered when analyzing potential impacts to paleontological resources:

- Known paleontological resources
- Proximity to formations with potential to contain paleontological resources

## **4.8.2 Direct and Indirect Effects by Alternative**

### **4.8.2.1 Impacts Common to All Action Alternatives**

The paleontological records search report indicates that there are no known vertebrate fossil localities within one mile of the Project Area and the potential for significant paleontological resources ranges from very low to unknown. The PFYC assessment along with the Paleontological Potential of Rock Units assessment and the literature review suggests potential for significant vertebrate fossils is unlikely for the Project Area.

### **4.8.2.2 Proposed Action**

#### **Construction**

Construction within the ROW would include clearing and grading and the excavation for the structure foundations. Grading or shallow excavations in the uppermost layers of soil and younger Quaternary and Tertiary deposits in the Project Area are unlikely to discover significant vertebrate fossils. Following the Bradshaw-Harquahala approved RMP, if vertebrate or noteworthy occurrences of invertebrate or plant fossils are discovered, the user/operator shall suspend all operations that further disturb such materials and immediately contact the authorized officer. Work in the area shall not resume until written authorization to proceed is issued by the authorized officer. Within five working days, the authorized officer shall evaluate the discovery and inform the operator of actions that would be necessary to prevent loss of significant scientific values. Upon verification from the authorized officer that the required mitigation has been completed, the operator shall be allowed to resume operations.

If EPMs and BMPs (**Section 2.4.5**) are implemented, impacts to paleontological resources would be negligible to minor and long-term.

#### **Operations, Maintenance, and Decommissioning**

No additional direct impacts to paleontological resources would occur during operations, maintenance, and decommissioning.

### **4.8.2.3 Alternative 1: Proposed Action with Additional Corridor**

#### **Construction**

Impacts to paleontological resources would be the same as described for the Proposed Action.

#### **Operations, Maintenance, and Decommissioning**

No additional direct impacts to paleontological resources would occur during operations, maintenance, and decommissioning.

#### **4.8.2.4 Alternative 2: ROW South of SR 74**

##### **Construction**

Impacts to paleontological resources would be the same as described for the Proposed Action.

##### **Operations, Maintenance, and Decommissioning**

No additional direct impacts to paleontological resources would occur during operations, maintenance, and decommissioning.

#### **4.8.2.5 Alternative 3: Carefree Highway Route**

##### **Construction**

Impacts to paleontological resources would be the same as described for the Proposed Action.

##### **Operations, Maintenance, and Decommissioning**

No additional direct impacts to paleontological resources would occur during operations, maintenance, and decommissioning.

#### **4.8.2.6 State Trust Land Route Variation Sub-alternative**

##### **Sub-alternative**

###### *Construction*

Under this Sub-alternative, impacts to paleontological resources would be the same as described for the Proposed Action.

###### *Operations, Maintenance, and Decommissioning*

No additional direct impacts to paleontological resources would occur during operations, maintenance, and decommissioning.

##### **Primary Segment Common to All Action Alternatives**

###### *Construction*

Under the Primary Segment, impacts to paleontological resources would be the same as described for the Proposed Action.

###### *Operations, Maintenance, and Decommissioning*

No additional direct impacts to paleontological resources would occur during operations, maintenance, and decommissioning.

#### **4.8.2.7 No Action Alternative**

Under the No Action Alternative the BLM would not issue a ROW, the Bradshaw-Harquahala RMP would not be amended to establish a single- or multiuse utility corridor, and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives. There would be no Project impacts on paleontological resources as

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described for the Proposed Action and Action Alternatives. However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed public lands. Under this situation, impacts to paleontological resources located on lands that are crossed or in the vicinity of the Project could occur. The degree of potential for impacts to these resources and the magnitude of those impacts would depend on the route selected.

#### **4.8.3 Mitigation and Residual Effects**

Awareness during subsurface excavations in the Project Area is recommended, but monitoring should not be required. Any fossils so discovered should be professionally recovered without impeding development. Any fossils recovered during mitigation should be deposited in a permanent scientific institution (e.g., AZMNH) for the benefit of current and future generations.

No residual effects are anticipated to occur.

#### **4.8.4 Unavoidable Adverse Impacts**

No unavoidable adverse impacts would occur.

### **4.9 RECREATION AND SPECIAL DESIGNATIONS**

#### **4.9.1 Indicators and Methods**

The following indicators would demonstrate the effect of the Project on recreation and special designations within the Study Area:

- Changes in or limitations to access to recreation or lands with special designations during and after construction
- Changes in recreation use that would not conform to designated ROS settings
- Changes in OHV recreation resources such as miles and types of trails available
- Changes in the quality of recreational experiences

**Table 4.9-1** describes the range of aspects of quality, magnitude, and duration of any effects resulting from the Project specific to recreation and special designations.

#### **4.9.2 Direct and Indirect Effects by Alternative**

##### **4.9.2.1 Impacts Common to All Action Alternatives**

There would not be any effect to lands with special designations under the Proposed Action, any of the Action Alternatives, or the Sub-alternative, thus special designations will not be discussed further in this section. The centerline access route would be an Administrative route, which is intended to prohibit unauthorized recreational use of the ROW and provide BLM the authority to enforce the recreational use decisions.

**Table 4.9-1 Description of Recreation and Special Designations Effects Levels**

ATTRIBUTE OF EFFECT		DESCRIPTION RELATIVE TO RECREATION AND SPECIAL DESIGNATIONS
Quality	Beneficial	An improvement to recreation or special designations.
	Adverse	A degradation to recreation or special designations.
Magnitude	Negligible	Very little effect on recreation such that although there may be slight modifications to access or a change in the quality of the recreation experience, most users would not be aware of these changes. Lands with special designations may be slightly affected but these effects would not noticeably change the inherent value or management of the special designation. Less than <u>5 percent</u> of open space/recreation land uses or BLM-designated routes would be affected.
	Minor	Some effect on recreation such that although there may be modifications to access or a change in the quality of the recreation experience, users that notice it would not change how they use the recreation resource. Lands with special designations may be affected and these effects may or may not cause an effect on the inherent value or management of the special designation. Greater than <u>5 percent</u> but less than <u>10 percent</u> of open space/recreation land uses or BLM-designated routes would be affected.
	Moderate	An effect on recreation such that modifications to access or a change in the quality of the recreation experience would be noticeable to most users and a user may change how they use the recreation resource. Lands with special designations may be affected and these effects would cause an effect on the inherent value or management of the special designation. Greater than <u>10 percent</u> but less than <u>20 percent</u> of open space/recreation land uses or BLM-designated routes would be affected.
	Major	An effect on recreation such that modifications to access or a change in the quality of the recreation experience would be noticeable to all users and would result in the loss of the recreation resource. Lands with special designations would be affected and these effects would cause an effect on the inherent value or management of the special designation. Greater than <u>20 percent</u> of open space/recreation land uses or BLM-designated routes would be affected.
Duration	Short-term	10 years or less.
	Long-term	More than 10 years.

## **Construction**

Construction-related effects to existing roads within the Project Area would affect the recreational experience of visitors to public lands. While the specific roads affected vary by alternative, relative effects to recreation would be similar for all alternatives. Recreationists traveling within the Project Area on US 60, SR 74, or other primary roads may experience traffic stops and delays during construction in locations where the transmission line would need to be erected across the road. Should heavy equipment associated with construction activities need to be transported during times of heavier traffic, slow-moving vehicles could back up traffic on roadways, resulting in increased travel times. Routes used for construction access that are also used for recreation, such as BLM-designated OHV routes, would temporarily be closed and therefore would temporarily reduce the amount of recreational access in certain areas. These effects would be duplicated to some extent once the 230kV line was installed on the transmission line structures, but the effect would be shorter-term because a large part of the construction - the installation of structures - would already have been completed for the 500kV line.

The portion of the Proposed Action and Action Alternatives east of the Sun Valley Substation with a Rural ROS setting would be within a BLM-designated utility corridor where current recreational use is minimal, compared to the other BLM-managed public lands in the Project Area. Impacts to recreation in this portion of the Project Area would be negligible.

Of the 18 SRPs identified within the Study Area, 10 could be affected by the construction and/or presence of a transmission line under the Proposed Action and Action Alternatives (M. Skordinsky, BLM personal communication, 2012). The SRPs that typically occur within the Study Area include commercial and competitive uses such as organized group events and activities, or vending operations conducted on public lands. The permits can be for one-time events, such as an OHV race or horse ride, or for on-going commercial uses such as jeep tours. Depending on timing of the event and stage of construction, the effects to these uses could include delays in access to an event or on-going commercial use due to construction activities. If the delay during construction activities caused individuals to miss the event or activity, this effect would be major and adverse. Coordination by APS with the land managing agency during construction activities would minimize and/or potentially eliminate these possible impacts.

## **Operation, Maintenance, and Decommissioning**

The presence of a transmission line after construction would not be likely to eliminate the use under a SRP but the quality of, or experience associated with, the event may be compromised. Depending on the extent of the decreased quality to an individual this impact would be negligible to major and adverse. Maintenance activities could result in disturbance to recreationists and would be limited to vehicular traffic associated with routine inspections of the line and traffic and noise resulting from scheduled or unscheduled maintenance as well as periodic trimming and removal of vegetation. Maintenance or repair activities would occur intermittently over the life of the Project; however, the impacts would be short-term as the effects would cease upon completion of the maintenance or repair activity.

Removal of the transmission line upon completion of the Project under the Proposed Action and Action Alternatives would result in relinquishing the ROW. Land previously occupied by the ROW and associated transmission line structures would be available for other land uses and the effect to the recreation experience due to the infrastructure would be removed.

#### **4.9.2.2 Proposed Action**

##### **Construction**

###### *Recreation Access*

The Proposed Action may result in construction-related delays in recreationist access to public lands along SR 74. Castle Hot Springs Road and Christian Church Camp (Church) Road would be crossed by the ROW, and may be closed for short periods of time or experience traffic stops and delays due to construction. The Proposed Action would also result in the temporary decrease in access to some of the dispersed recreation in the area north of SR 74 due to the closure of trails and roads used for construction, including routes designated for OHV use (two-track and single track) by the BLM. Access to the Castle Hot Springs SRMA and the Hieroglyphic Mountains RMZ, Sheep Mountain RMZ, and the Baldy Mountain RMZ within this SRMA on two-track and single track routes would be temporarily restricted during construction (analyzed in detail below).

There would be a short-term major impact on dispersed recreation access, especially for OHV use. However, once the construction activities were completed on this portion of the route the access would be restored. Recreation access that does not depend on these access routes, such as hiking, would not be affected. Further detail related to effects to OHV use is provided below.

###### *Recreation Opportunity Spectrum*

The Proposed Action would cross BLM-managed public lands classified as Rural on the BLM's ROS south of SR 74. This setting is characterized by a substantially modified natural environment where resource modification, development, and use are obvious. While the BLM-managed public land south of SR 74 with a Rural ROS setting are within the Castle Hot Springs SRMA and are open to recreation, the recreational use of this area is less than that portion of the SRMA north of SR 74; there are fewer designated OHV routes. The presence of people, equipment, and related noise and activity during construction of the Project would result in a moderate, short-term impact to lands adjacent to the Project in this ROS classification and comply with the Rural ROS setting.

The Proposed Action route would cross lands north of SR 74 identified as Roaded Natural. The Roaded Natural setting buffers 0.5-mile either side of maintained roads. While these areas are mostly natural in appearance, some human modifications are evident. The Proposed Action route would cross Castle Hot Springs Road and Christian Church Camp (Church) Road approximately 0.75-mile west of Castle Hot Springs Road, both of which are buffered by the Roaded Natural setting. The entire Proposed Action ROW on BLM-managed public lands north of SR 74 would be within the Roaded Natural setting. The primary recreational use within this setting is OHV operation.

The presence of people, equipment, and related noise and activity during construction activities of the Project would result in a moderate short-term impact to lands within and adjacent in each of the ROS settings crossed by the Project. Visitors to these areas may experience higher than normal levels of activity, noise, and interaction with others, potentially to an extent that the assigned ROS settings are exceeded temporarily.

#### *SRMAs*

The Proposed Action would cross the southernmost end of the Castle Hot Springs SRMA, both north and south of SR 74, but would not cross the Hieroglyphic Mountains RMZ, Sheep Mountain RMZ, or the Baldy Mountain RMZ located within this SRMA. Construction of the Project would temporarily decrease dispersed recreation access (both motorized and non-motorized) into and within this portion of the SRMA on trails proposed to be used for construction access roads. This effect is discussed further under Recreation Access, above.

#### *Parks and Community Open Space*

Lake Pleasant Regional Park is the closest regional park to the Project. The park's southernmost boundary would be adjacent to the transmission line under the Proposed Action. During construction activities, visitors to this park could observe workers and hear noise impacts. As the construction activities got farther away from the park, impacts would be reduced and eventually eliminated. These impacts are expected to be short-term and negligible to minor.

#### *OHV Recreation*

As described in **Chapter 3**, The Boulders Staging Area and the Hieroglyphic Mountains are very popular and heavily used recreation resources; an important part of the OHV recreation resources of Maricopa County. Given the limited number of areas for OHV recreation in Maricopa County, impacts to OHV recreation at The Boulders Staging Area and the Hieroglyphic Mountains would impact a sizeable portion of the recreating public from Maricopa County.

The main short-term impact related to OHV recreational use would be decreased OHV trail availability during construction. Approximately 1.4 miles of two-track BLM OHV routes may be used as temporary access roads and would be closed during construction. **Figure 4.9-1** shows the potential routes that may be used for construction access; actual routes approved for use by the BLM would be determined through the development of a Construction Access Plan. OHV users would temporarily have decreased access into the Castle Rock Springs SRMA and the RMZs within it. The potentially impacted routes (should they all be used for construction access) would represent disturbance to approximately three percent of two-track trail in the Study Area.

Impacted routes would be opened again after construction. The overall impact of construction on OHV recreation within the Castle Hot Springs SRMA and RMZs would be minor to moderate. The centerline access route would be an Administrative route, which is intended to prohibit unauthorized recreational use of the ROW and provide BLM the authority to enforce the recreational use decisions.

### Other Recreation

The presence of construction equipment, noise, and increased activity would have a short-term minor impact on non-motorized recreation, such as hiking, hunting, and horseback riding, as the affected area already experiences impacts from noise and activity associated with OHV recreation. While wildlife may be acclimated to the routine operation of OHVs in the SRMA, the introduction of construction equipment and activity may disrupt wildlife and have a slightly greater impact on any potential for hunting.

## **Operation, Maintenance, and Decommissioning**

### *Recreation Opportunity Spectrum*

The presence of a transmission line would be an obvious modification to the natural environment; it would be a modification that would affect the recreation experience on lands located immediately adjacent to the Project. Users who consistently recreate in this area may become accustomed to the presence of a transmission line, but the recreation experience would be permanently altered. There would be a minor long-term impact after the transmission line was constructed.

Recreationists would be accessing OHV trails in the Roded Natural areas. The addition of the transmission line and centerline access within the ROW would make human modifications evident. Because centerline access along the ROW for recreation would not be allowed, contact between recreationists would be expected to remain low to moderate. When recreationists are not in the immediate vicinity of the transmission line in areas where the transmission line would dominate the view (see the visual resources impacts analysis in **Section 4.14**), they would continue to experience a high degree of interaction with the natural environment. The effect to the Roded Natural lands would be long-term and minor. Both the Rural and Roded Natural settings would continue to be appropriate with the addition of the Proposed Action.

### *SRMAs*

The Bradshaw-Harquahala RMP (BLM 2010a) includes Desired Future Conditions for the Castle Hot Springs SRMA that include preserving open space and scenic and visual qualities. The Project would occupy a very small portion of the SRMA adjacent to SR74 that is heavily used for OHV recreation (see analysis below), but is also used for non-motorized recreation such as hiking, hunting, and horseback riding. The presence of a transmission line would conflict with this management goal and have a major long-term impact on recreation in portions of the SRMA where the transmission line would dominate the view (see the visual resources impacts analysis in **Section 4.14**) and the ROW cleared of certain vegetation species would be distinctly different from its surroundings; however, the impact would diminish with distance from and reduced visibility of the line and ROW.

### *Parks and Community Open Space*

Visitors that are entering Lake Pleasant Regional Park on Castle Hot Springs Road from westbound SR74 would see the transmission line paralleling the south side of SR 74, potentially resulting in a brief dominating effect on the visual quality at certain points (see **Section 4.14**). With the exception of brief intermittent views of the transmission line in the

distance from the park, there would not be an impact to recreation or to this regional park from the Proposed Action.

Under the Proposed Action, approximately three acres of land proposed to be maintained for open space in general plans for the area (Maricopa County 2002; City of Peoria 2010; City of Surprise 2008a; Town of Buckeye 2008) (see **Section 4.6**) would be instead utilized for transmission line structures and centerline access. This represents less than one percent of designated future open space within the Study Area and would be a negligible impact.

#### *OHV Recreation*

As discussed in **Section 3.9.3.2**, the SCORP is Arizona's outdoor recreation policy plan, and the BLM participated in developing the plan. The plan establishes outdoor recreation priorities that help resource managers at all levels of government make decisions about the state's outdoor recreation through issue identification and by establishing goals and action strategies. The SCORP sought to plan for recreation to meet future demand of rapidly expanding communities and a need to plan for desired amenities such as recreation and open space. Part of the attraction of the area north of SR 74 for future residential development is its proximity to open space and recreation resources that the BLM-managed public lands offer. The Bradshaw-Harquahala RMP planning process likewise prescribed for this area containing the proposed utility corridor as part of the Castle Hot Springs SRMA, which are areas of intensive recreational use. Amending the RMP to establish a single-use utility corridor north of SR 74 and changing the VRM classes could adversely impact the recreation experience for some OHV recreational users as described below.

West-bound travelers on SR 74 in route to The Boulders Staging Area would see the transmission line paralleling first the south and then the north side of SR 74, passing under the two crossings. The visible presence of the transmission line along SR 74 to The Boulders Staging Area could impact recreationists' impression of the area.

Following the construction activities, the presence of centerline access along the ROW could also permanently change the OHV use patterns in the area. Public recreational use of the centerline access route would not be authorized. The centerline access would be gated at points intersecting roads providing access for four-wheel OHV, and fencing would be installed between the gate and the nearest natural barrier to deter access; however, four-wheel OHV use may not be entirely preventable on the centerline access. Should four-wheel OHVs gain access to the centerline route, this would result in an increased chance for user-defined (unauthorized) trails in the surrounding area, air quality effects due to increased dust, damage to soils, vegetation, and wildlife habitat; and user conflicts. An increase in user-defined trails would conflict with the BLM's management strategy for the area and would create challenges for managing the natural resources and increase user-conflicts. Unabated, this could represent a long-term moderate to major impact to recreation resources within the Project Area. However, the centerline access route would be designated and signed as an Administrative road that would not be open for recreational use, and as such, any unauthorized use of the road would be enforceable by the BLM. Increased BLM patrols and APS monitoring of the centerline route during routine operations would enable regular enforcement. Together these measures would reduce the overall impact of the centerline access on OHV recreation to minor.

Single-track OHV use of the area north of SR 74 would continue. Single-track trails would intersect the centerline access (Figure 4.9-1), and single-track recreationists would be permitted to cross the centerline access route and continue along the single-track trails. Single-track trail users would not be permitted to use the centerline access route for recreation; however, gating and fencing the centerline access route at each intersection with the single-track trails to prohibit single-track users from recreationally using the centerline access route would not be feasible. The centerline access would not provide an attractive recreation experience for motorcycles using the single-tracks, and they would not be anticipated to routinely use it. BLM studies of OHV recreation found that motorcycles produce approximately 10 percent of the dust that four-wheel OHVs produce (pers. comm. T. Bickauskas August 3, 2012). Adverse impacts from motorcycles intersecting the centerline access would be negligible to minor. Because single-track recreationists would be permitted to cross the centerline access and continue on the single-track trails, there would be no loss of single-track trail recreation.

Despite the fact that many OHV trails are in relatively close proximity to SR 74, in many cases, the highway is not visible and the area surrounding the trails feels very natural. The cleared ROW and the transmission line would be visible in certain areas and would affect the natural feel of the area, and have a major adverse impact on the recreation experience for the OHV recreationists in relatively close proximity to the ROW. However, effect on the recreational experience would diminish with distance from the ROW, and the recreation experience in large portions of the area where OHV recreation occurs would be minimally affected by distant views of the transmission line.

The southern portion of the SRMA in closer proximity to The Boulders Staging Area and SR 74 are more attractive for casual riders. Modifications to this area from the Project would disproportionately adversely impact the casual riding group, as those seeking a more challenging experience could avoid this area and concentrate use further north.

As described in **Section 3.9.5.1**, not all OHV routes used for recreation were identified in the route evaluation process. Routes currently being used for recreation may be impacted in ways that cannot be evaluated with the information available. The presence of the centerline access and associated plan to prohibit recreational use of the centerline access may require more extensive management of other existing routes by the BLM, which could be a substantial undertaking by BLM management.

#### *Other Recreation*

The Project would not affect existing target shooting opportunities on BLM-managed public lands because the area that would be contained within the proposed ROW is not an existing target shooting area. While the centerline access would be closed to recreational use, it would be an attractive area for target shooting due to removal of vegetation within the ROW, and may lead to unauthorized access into the area if techniques used to prevent access are not thorough. Prohibition of recreational use of the centerline access route would be enforced by the BLM as the centerline access route would be designated an Administrative route. The presence of the transmission line would affect the non-motorized recreation experience such as hiking, hunting, and horseback riding mainly visually, but also by noise created by the transmission line, reducing the sense of naturalness and solitude when recreationists would

be near the ROW. However, this effect would be offset by the routine noise created by OHV recreationists in the area. Overall long-term impacts to other recreation would be minor.

Approximately 7.5 miles of the Proposed Action route would cross lands identified for future recreation in general plans for the area (Maricopa County 2002; City of Peoria 2010; City of Surprise 2008a; Town of Buckeye 2008) (see **Section 4.6**). Because the nature of future recreational development is unknown, this is a negligible effect. Approximately 20 acres of land that would be used for recreation would be permanently used by transmission line structures and an access road. This represents less than one percent of designated future parks/recreation land within the Study Area and is a negligible effect.

#### **4.9.2.3 Alternative 1: Proposed Action with Additional Corridor**

Alternative 1 would establish a multiuse utility corridor on BLM-managed public land north and south of SR 74. Identifying effects to recreation and special designations that would result from future linear ROWs is beyond the scope of this analysis and are considered under Cumulative Impacts in **Section 4.19.10**. Therefore, the impacts to recreation under Alternative 1 would be the same as those under the Proposed Action.

#### **4.9.2.4 Alternative 2: ROW South of SR 74**

##### **Construction**

###### *Recreation Access*

Impacts to recreation access under Alternative 2 would be similar to those described for the Proposed Action. However, the amount of BLM-managed public lands used for recreation that would be affected under Alternative 2 would be significantly less than the Proposed Action. Also, the affected lands south of SR 74, while still part of the SRMA, are less heavily used than those north of SR 74. The impact to recreation access under Alternative 2 would be minor.

###### *Recreation Opportunity Spectrum*

Similar to the Proposed Action, Alternative 2 would impact BLM-managed public lands within lands south of SR 74, which have a ROS setting of Rural. There would be no impact to Semi-Primitive Motorized or Roaded Natural ROS settings under Alternative 2. While more acres of land with this ROS setting south of SR 74 would be impacted under Alternative 2, the type and intensity of impacts to these areas under Alternative 2 would be the same as described under the Proposed Action. Lands in the Rural ROS setting are characterized by a substantially modified natural environment. The presence of people, equipment, and related noise and activity during construction activities of the Project would result in a negligible to minor short-term impact. Visitors to these areas may experience higher than normal levels of activity, noise, and interaction with others, at a level that could be expected within the assigned Rural ROS setting.

###### *SRMAs*

The Proposed Action would cross the southernmost end of the Castle Hot Springs SRMA, south of SR 74. Construction of the Project would temporarily decrease dispersed recreation

access into and within the portion of the SRMA south of SR 74, on trails proposed to be used for construction access roads. This effect is discussed further under Recreation Access, above. Impacts to non-motorized recreation would be similar to those described under the Proposed Action.

#### *Parks and Community Open Space*

The transmission line would have the same or similar temporary construction impacts and long-term visual impacts to Lake Pleasant Regional Park under Alternative 2 as the Proposed Action.

### **OHV Recreation**

The kinds of impacts to OHV recreation under Alternative 2 would be similar in nature to those described for the Proposed Action. However, there are no single-track routes south of SR 74. Under Alternative 2, OHV recreation resources north of SR 74 and The Boulders Staging Area would not be affected. Approximately 0.3 mile of two-track BLM OHV routes would be used as temporary access roads and would be closed during construction activities under Alternative 2. OHV users would temporarily have decreased access into the portion of Castle Rock Springs SRMA south of SR 74, resulting in a negligible short-term impact.

### **Operations, Maintenance, and Decommissioning**

#### *Recreation Opportunity Spectrum*

The presence of a transmission line would be an obvious modification to the natural environment; it would be a modification that would affect the recreation experience on lands located immediately adjacent to the Project. Users who consistently recreate in this area may become accustomed to the presence of a transmission line, but the recreation experience would be permanently altered. There would be a minor long-term impact after the transmission line was constructed.

Recreationists would be accessing OHV trails in the Rural areas. The addition of the transmission line and centerline access within the ROW would make human modifications evident. Because centerline access along the ROW for recreation would not be allowed, contact between recreationists would be expected to remain fairly low, mainly due to the limited use the area receives. When recreationists are not in the immediate vicinity of the transmission line in areas where the transmission line would dominate the view (see the visual resources impacts analysis in **Section 4.14**), they would continue to experience a high degree of interaction with the natural environment. The effect to the Rural lands would be long-term and negligible. The Rural setting would continue to be appropriate with the addition of the transmission line. There would be no impact to Semi-Primitive Motorized or Roaded Natural ROS settings under Alternative 2.

#### *SRMAs*

The Bradshaw-Harquahala RMP (BLM 2010a) includes Desired Future Conditions for the Castle Hot Springs SRMA that include preserving open space and scenic and visual qualities. Under Alternative 2, the Project would occupy a very small portion of the SRMA on the south side of SR74 that is lightly used for OHV recreation (see analysis below). The presence of a transmission line would somewhat conflict with this management goal and have a major

long-term impact on recreation in portions of the SRMA where the transmission line would dominate the view (see the visual resources impacts analysis in **Section 4.14**); however, the impact would diminish with distance from and reduced visibility of the line. Impacts to non-motorized recreation would be similar to those described under the Proposed Action.

#### *Parks and Community Open Space*

The transmission line would have the same or similar long-term visual impacts to Lake Pleasant Regional Park under Alternative 2 as the Proposed Action.

Under Alternative 2, approximately three acres of land proposed to be maintained for open space in general plans for the area (Maricopa County 2002; City of Peoria 2010; City of Surprise 2008a; Town of Buckeye 2008) (see **Section 4.6**) would be instead utilized for transmission line structures and a permanent access road. This represents less than one percent of designated future open space within the Study Area and is a negligible effect.

#### *OHV Recreation*

The kinds of impacts to OHV recreation under Alternative 2 would be similar in nature to those described for the Proposed Action. However, there are no single-track routes south of SR 74. Under Alternative 2, OHV recreation resources north of SR 74 and The Boulders Staging Area would not be affected. Similar to the Proposed Action, recreation on the centerline access would not be allowed. Gates would be installed in locations where existing OHV routes intersect the centerline access to prevent recreational access and still allow for OHV recreational use south of the Alternative 2 ROW. The impacted routes represent less than one percent of the inventoried two-track trails in the Study Area. Impacts to trails that are used, but are not managed as a part of the trails inventory are possible, but the extent and intensity of these impacts are unknown. The overall impact to OHV recreation under Alternative 2 would be negligible.

#### *Other Recreation*

No impacts to or from target shooting on BLM-managed public lands would be expected under Alternative 2.

Approximately 3.4 miles of the Alternative 2 route would cross lands identified for future recreation development in general plans for the area (Maricopa County 2002; City of Peoria 2010; City of Surprise 2008b; Town of Buckeye 2008) (see **Section 4.6**). Approximately 9 acres of land that would be used for parks or recreation would be permanently used by transmission line structures and an access road. This represents less than 1 percent of designated future parks/recreation land within the Study Area and is a negligible effect. A portion of these lands are planned for future use as a golf course or open space. Presence of the transmission line may limit the ability of the area for future golf course development and, depending on the relationship of the ROW to the overall golf course development, impacts could range from minor to major.

### **4.9.2.5 Alternative 3: Carefree Highway Route**

Alternative 3 would not include impacts to recreation access, as the access issues discussed under the Proposed Action and Alternative 2 relate to BLM-managed public lands within the SRMA north and south of SR 74. Alternative 3 also would not include impacts to the Castle

Hot Spring SRMA or related OHV use or management because the SRMA containing areas heavily used for OHV recreation would not be crossed by the Alternative 3 route, and OHV recreation is not authorized on State Trust lands south of SR 74.

## **Construction**

### *Recreation Opportunity Spectrum*

The only BLM-managed public lands affected by Alternative 3 would be within the BLM-designated utility corridor near the Sun Valley Substation; impacts are discussed under **Section 4.9.2.1**. There would be no impact to Semi-Primitive Motorized or Roded Natural ROS settings under Alternative 3.

### *Parks and Community Open Space*

Because of the distance between the Project and Lake Pleasant Regional Park, there would be no construction impacts to Lake Pleasant Regional Park under Alternative 3 (see **Section 4.14**).

## **Operations, Maintenance, and Decommissioning**

### *Recreation Opportunity Spectrum*

The only BLM-managed public lands affected by Alternative 3 would be within the BLM-designated utility corridor near the Sun Valley Substation; impacts are discussed under **Section 4.9.2.1**. There would be no impact to Semi-Primitive Motorized or Roded Natural ROS settings under Alternative 3.

### *Parks and Community Open Space*

There would be minimal visual impacts to Lake Pleasant Regional Park under Alternative 3 (see **Section 4.14**). The number of structures visible within the park would be similar to the Proposed Action and Alternative 2; however, they would be further way and likely less noticeable. Impacts to recreation would be negligible.

Under Alternative 3, approximately three acres of land proposed to be maintained for open space in general plans for the area (Maricopa County 2002; City of Peoria 2010; City of Surprise 2008a; Town of Buckeye 2008) (see **Section 4.6**) would be instead utilized for transmission line structures and a permanent access road. This represents less than one percent of designated future open space within the Study Area and is a negligible effect.

### *Other Recreation*

No impacts to or from target shooting on BLM-managed public lands would be expected under Alternative 3.

Approximately 3.4 miles of the alternative would cross lands identified for future recreation development in general plans for the area (Maricopa County 2002; City of Peoria 2010; City of Surprise 2008; Town of Buckeye 2008) (see **Section 4.6**). Approximately 10 acres of land that would be used for recreation would be permanently used by transmission line structures and an access road. This represents less than one percent of designated future parks/recreation land within the Study Area and is a negligible effect.

Alternative 3 would also cross 0.4-mile of land identified for future golf course development within the jurisdiction of the City of Peoria (City of Peoria 2010). The presence of a transmission line could potentially conflict with this recreational future land use; depending on the relationship of the ROW to the overall golf course development, impacts could range from minor to major.

#### **4.9.2.6 Sub-alternative: State Trust Land Route Variation**

The four-mile long Sub-alternative route would replace the Primary Segment, a four-mile section of the Proposed Action route that would also be common to all Action Alternatives. The route would cross State Trust land used for grazing. While the State Trust lands are undeveloped and may be used for recreation at some unknown level, they are not managed for recreation uses; therefore, construction, operations, maintenance, and decommissioning under the Sub-alternative would not result in any impacts to recreation.

#### **4.9.2.7 No Action Alternative**

Under the No Action Alternative the BLM would not issue a ROW, the Bradshaw-Harquahala RMP would not be amended to establish a single- or multiuse utility corridor, and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives. There would be no Project impacts on recreation and special designations as described for the Proposed Action and Action Alternatives. However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed public lands. Under this situation, impacts to recreation resources and special designations located on lands that are crossed or in the vicinity of the Project could occur. The degree of potential for impacts to these resources and the magnitude of those impacts would depend on the route selected.

#### **4.9.3 Mitigation and Residual Effects**

The following mitigation measures would apply to BLM-managed public lands only:

- The BLM would not approve the use of any single-track routes for construction access. The BLM would work with APS to develop a Construction Access Plan that would strictly limit construction access and operation of construction equipment to specific routes.
- The BLM would designate the centerline access route as an Administrative Access Route under the authority of 43 CFR 8342, limiting use to BLM authorized use only. Prohibition of recreational use of the centerline access route (except for single-track trail crossing of the centerline access) and speed limits would be enforced by BLM. Appropriate signs would be installed.
- The BLM would require that all four-wheel OHV roads/trails accessed from SR 74, intersecting the ROW (for example, at Christian Church Camp (Church) Road), be gated along the ROW with associated fencing to a natural barrier, to prevent unauthorized four-wheel OHV use along the centerline access.

- APS' ROW authorization would require monitoring the centerline access route for unauthorized recreational use. APS would monitor the condition of the centerline access route and all gated ROW access points in conjunction with other Project monitoring, and provide reports of the conditions to BLM. During the course of routine field work in this area, BLM resource and law enforcement staff would monitor conditions within the ROW for unauthorized access and use. Should gates/fencing be breached or determined to be ineffective, APS would work with the BLM to undertake additional reasonable and practicable steps to prohibit access and mitigate for adverse impacts resulting from unauthorized access.
- APS would fund additional long-term monitoring of the ROW (three to five years) by the BLM or other cooperating entities for unauthorized recreation and associated impacts.
- APS would work with the BLM to collect necessary data (such as cultural surveys) to facilitate transportation planning, including future OHV recreation planning and management, on specific trails in the area north of SR 74.
- As a result, after mitigation there would be no residual effects to single-track OHV users.

Following the implementation of mitigation measures, the permanent centerline access road and the presence of the transmission line within the ROW could change the OHV use patterns in the area, resulting in the potential for residual effects to occur to a variety of resources within the immediate area as a result of a potential increase in unauthorized user-defined trails not already accounted or planned for.

#### **4.9.4 Unavoidable Adverse Impacts**

The permanent centerline access along the ROW would change the OHV use patterns in the area, resulting in an increased chance for user-defined (unauthorized) trails in the surrounding area, air quality effects due to increased dust, damage to soils, vegetation, and wildlife habitat. An increase in user-defined trails would conflict with the BLM's management strategy for the area and would create challenges for managing the natural resources and increase user-conflicts. This represents a long-term moderate impact to recreation in the area that would be unavoidable and adverse.

Alternative 3 would cross 0.4-mile of land identified for future golf course development within the jurisdiction of the City of Peoria (City of Peoria 2010). The presence of a transmission line could conflict with this recreational use and if so, would be unavoidable and adverse.

## **4.10 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE**

### **4.10.1 Indicators and Methods**

This section contains an analysis of the potential socioeconomic impacts associated with the construction and maintenance of the Project within the Study Area. When possible, these impacts are quantified. Where quantification of impacts is not possible, the analysis provides

a qualitative discussion of the potential effects. The analysis considers impacts to Maricopa County and, to the extent possible, specific communities within the Study Area.

#### **4.10.1.1 Indicators**

##### **Socioeconomics**

The following indicators demonstrate the social and economic effects of the Project within the Study Area:

##### Social Values

- Effects to employment
- Effects to population and housing

##### Market Values

- Economic impacts of construction spending on local employment and incomes
- Economic effects of operating and maintaining the transmission line
- Effects on developed property values and undeveloped land property values. For purposes of this analysis, the term “developed property” is defined to mean property that has been developed for residential, commercial, recreation, or other uses and contains the required infrastructures for those uses. This definition also includes all the required infrastructure needed for lots to be home sites and are marketed as such, including things such as roads and utilities. The term “undeveloped land” is defined to mean land that does not have existing residential or commercial buildings, facilities, or uses. Undeveloped land generally refers to private lands that are part of a master planned community that is not yet fully developed to include residential or commercial facilities or uses, and may be in varying stages of planning or preparation for development. Lands that are not developed property or undeveloped land would be part of the natural landscape and are not presently planned for development.
- Effects on property taxes
- Effects on State Trust land values and revenues
- Effects on recreation

##### Nonmarket Values

- Effects on recreation values
- Effects to natural amenities and quality of life
- Health and safety concerns

##### **Environmental Justice**

The criteria used to determine whether the Project may potentially result in impacts related to EJ is the assessment of whether the potential environmental impacts attributable to the Project would fall disproportionately on the low-income or minority populations. For the Sun Valley to Morgan transmission line Project, indicators would be those conditions indicating a

disproportionate impact to the EJ community (defined in Section 3.10.9.3, and shown on Figure 3.10-1).

- Proximity of private property to the ROW
- Proximity of residences to the ROW

Effects to Natural Amenities and Quality of Life includes impacts to visual resources. KOP 3 is located along US 60 looking northwest, and is near the boundary of the EJ community. However, the views from KOP 3 would be those experienced by north bound travelers on US 60, and would not represent the views of residents or property owners within the EJ community. There are no other KOPs within the EJ community; therefore, a determination of disproportionate impacts to natural amenities, such as visual resources, cannot be made.

#### 4.10.1.2 Methods

##### Socioeconomics

###### *Market Values*

###### Construction Spending Impact Analysis

The economic impacts of the construction phase of the Project were estimated using an input-output model, specifically the IMPLAN modeling software and databases (Minnesota IMPLAN Group 2009). These types of regional economic models are standard approaches to measuring linkages between businesses, households, and institutions and providing an estimate of the multiplier effects that are associated with a direct stimulus or investment.

Maricopa County was selected as the economic Study Area because construction employees and supporting industries are most likely to reside within Maricopa County given the concentration of available workforce and suppliers. IMPLAN multipliers are the sum of direct, indirect, and induced effects divided by the direct impacts. These impact types are defined below:

**Direct Impacts:** The initial investment or spending within a geographic region is defined as the direct effect. During the construction phase, the direct effects include construction employment and local spending for construction-related services, supplies, and materials.

**Indirect Impacts:** The inter-industry impacts that measure the economic effects associated with the directly impacted industries selling and purchasing goods and services to and from other industries are the indirect impacts or effects. The indirect impacts associated with construction include industries located in Maricopa County that support the construction activity such as engineering design and architectural services, wholesale, and retail trade purchases.

**Induced Impacts:** The effects of increased consumer and household spending that result from the direct and indirect income changes are the induced impacts.

This analysis estimated the total economic impacts (direct, indirect, and induced) associated with the construction employment, as well as construction purchases for supplies and materials made from businesses in Maricopa County. The effects that were measured include

employment (full-time and part-time jobs), labor income (wages, salaries, and bonuses) paid to these workers, and economic output, also defined as gross sales or revenues of all industries located in Maricopa County.

#### Effects on Developed Property Values and Undeveloped Land Values

Impacts to property values were estimated based on empirical studies (Appendix 3A) that were available at the time of analysis; actual impacts would be situational and would be influenced by local conditions.

Research about property value impacts and transmission lines shows that distance or proximity, and whether or not a property adjoins the ROW or easement is the primary factor that affects values (see Section 3.10 and Appendix 3A). Ultimately, it is those properties in close proximity (within 200 feet) of a transmission line, and those that adjoin the ROW or easement of a transmission line, that results in the most significant negative effect on property value. This is because the health and safety concerns and visual impacts are amplified at a close proximity. Residential properties within 50 feet of a transmission line experience the most negative effect on price, while those 50 to 200 feet from a transmission line experience small negative price effects. Properties that are beyond 200 feet or do not adjoin the ROW or easement do not experience any negative price effects.

Impacts to residential properties located within 200 feet of a transmission line vary considerably depending on location, amenities, housing markets, etc. Generally, single family properties have shown 2.8 percent to 29.0 percent lower values when they are located within 200 feet of a transmission line (Section 3.10 and Appendix 3A). Information distinguishing the effects of proximity to transmission lines between residential and commercial properties is unavailable.

Therefore, the assumptions about the effects of the transmission line on the value of residential property would also apply to commercial property. However, the impacts to property values described here apply to properties with structures such as buildings and homes, not to undeveloped land regardless of the zoning or planned use of that land.

Property value impacts for undeveloped and agricultural land located within 200 feet of a transmission line also vary considerably. Studies on this type of land show value impacts ranging from zero to 34 percent (Section 3.10 and Appendix 3A).

Properties and land located within 200 feet of the proposed transmission line or adjoining the potential ROW were identified by using GIS mapping. This information, in conjunction with the property value and land effect data described here, was used to analyze the potential effects on developed property and undeveloped land values

#### Effects on State Trust Land Values and Revenues

The acreages of State Trust land that would be affected under the Proposed Action and Action Alternatives were calculated by assigning a 200-foot width to the length of the ROW needed on State Trust lands. The value of State Trust land was estimated based on payments for APS transmission line leases on State Trust lands in close proximity to the Project.

## Grazing Revenue

The long-term effects to grazing were estimated based on a calculation provided by the ASLD which uses AUM and the current rate charged for a lease. The AUM is determined by animals per section (640 acres) multiplied by the number of months. The average number of animals per section for grazing lands in the Study Area is three. The current lease rate charged is \$2.30 per section (as of December 2011). The lease rate was applied to the number of AUMS affected in the Proposed Action and Action Alternatives as estimated in **Section 4.7**.

## Effects on Recreation

Insufficient information exists to estimate the actual level of change in recreation use that may result following implementation of the Proposed Action or Action Alternatives. Predictions of changes in use would be highly speculative. While changes to the availability of recreation opportunity or the perceived quality of the recreation experience may increase use on other public and private land, there is not enough information to estimate the nature or magnitude of such shifts. Consequently, the analysis of recreation impacts for the Proposed Action and Action Alternatives focuses on the change in opportunity and the potential direction of change from the No Action Alternative, but not the size of economic impacts relative to these changes.

## *Nonmarket Values*

While the value of BLM-managed public land in terms of natural amenities, recreational experiences, and scenic beauty exists, it is difficult to quantify. Direction provided in the Land Use Planning Handbook (BLM 2005; Appendix D; pages 6, 7 and 10) suggests the use of benefit transfer to evaluate the effects of these non-market values. In the absence of quantitative information specific to the context of this Final EIS, they are discussed qualitatively, where appropriate, in this section and throughout the Final EIS. These are important considerations alongside market values. Therefore, it is important to consider nonmarket values of BLM-managed public lands alongside potential job and income generation.

The analysis of potential effects on recreation use, natural amenities, and health and safety concerns is based on extensive literature reviews summarized in **Section 3.10**.

## **Environmental Justice**

### *Proximity of the ROW to Private Undeveloped/Unoccupied Property*

Portions of the ROW occurring on or adjoining private property were measured and compared between those areas inside and outside the EJ community.

### *Proximity of the ROW to Private Developed/Occupied Property*

The distance between existing private residences and the ROW was measured both inside and outside the EJ community, recognizing that the greatest impact to private property values occurs to those properties adjoining the ROW.

## 4.10.2 Direct and Indirect Effects by Alternative

### 4.10.2.1 Effects Common to All Action Alternatives

#### *Social Values*

Employment - Maricopa County is the fourth largest county in the U.S. as measured by population, and has a well-diversified, broad-based economy. Unemployment in the county is 9.1 percent which means there is a plentiful workforce available in the region to accommodate the construction needs of the Project. At the peak of construction in year three, the Project is expected to provide between 758 to 783 jobs. This is less than one tenth of one percent of the estimated 2 million person county-wide labor force. Thus, the workforce needed to design and construct the transmission line is expected to draw from the available labor supply in Maricopa County. The construction of the transmission line would increase employment in Maricopa County during the construction period. These effects on the Maricopa County economy would be beneficial, minor and short-term, ending when the transmission line is complete.

Population and Housing - It is not uncommon for construction workers to commute up to two hours from their homes, so construction workers may live outside the Study Area, but reside within Maricopa County and commute to the job site (Electric Power Research Institute 1982). Because the construction workforce would be drawn from the existing labor supply in the county and commute to the job site rather than relocate, there would likely be no effect on housing in the Study Area. Likewise, if workers commute to the job site from their residences, as anticipated, there would be no effect on housing in the Study Area.

Maintenance of the transmission line would have no impact on employment, population, or housing in the Study Area as the line would be maintained by current APS employees residing in Maricopa County.

#### *Market Value Effects*

Along the portion of the route common to all Action Alternatives, near the intersection of Lone Mountain Road and 235<sup>th</sup> Avenue, there appears to be two residences that would be beyond 200 feet from the transmission line, but the property containing these residences may adjoin the ROW, and the values may be impacted.

### 4.10.2.2 Socioeconomics

#### **Proposed Action**

#### *Market Value Effects*

Costs and Technical Information - The estimated construction expenditures associated with the Proposed Action and Action Alternatives are presented in **Table 4.10-1**. The ROW acquisition costs shown in **Table 4.10-1** include the cost of acquiring easements from private owners, and the estimated lease revenue paid to BLM and ASLD. Therefore, all costs of the Project are captured in this analysis.

**Table 4.10-1 Construction Cost Estimates**

	ROW ACQUISITION COST (MILLION \$)	CONSTRUCTION COST (MILLION \$)	LABOR/MATERIALS AND EQUIPMENT SPLIT (%) [ESTIMATED]
Proposed Action	23.0	104	35/50/15
Alternative 1	23.0	104	35/50/15
Alternative 2	25.8	101	35/50/15
Alternative 3	28.9	101	35/50/15
Sub-alternative	23.0	104.35	35/50/15

Source: APS 2011b

The Proposed Action would result in a total construction cost of \$104 million. ROW acquisition costs are estimated to be \$23 million. The construction costs and ROW acquisition costs for Alternatives 2 and 3 differ from the Proposed Action because they (1) require fewer turning structures and (2) involve more private land. The Sub-alternative would cost approximately \$350,000 more than the Proposed Action due to the addition of two turning structures.

The duration of the construction period, schedule, and distribution of construction costs as shown in **Table 4.10-1** are the same under all scenarios. An estimated 5 percent of construction costs occur in the first year, 20 percent in the second year, 50 percent in the third year, and 25 percent in the fourth year. On-the-ground construction activities (setting infrastructure and running wire) would be completed over 18 to 22 months. Design, materials ordering, and ROW acquisitions would commence prior to construction, thus extending the Project period to four years.

Economic Impacts of Construction - Under the Proposed Action, a total of \$104 million would be spent to build the transmission line, most of which would be spent in Maricopa County. The resultant economic impacts on Maricopa County for each year are shown in **Table 4.10-2**.

The economic impacts of construction spending would occur over a four-year period, peaking in year 3. Approximately \$5.2 million would be spent during the first year of the Project. The impacts of these expenditures include 36.5 direct jobs and 41.6 indirect and induced jobs in other businesses located in Maricopa County. Labor income (primarily wages and salaries) associated with these jobs is projected to total \$4.2 million. Economic output for Maricopa County businesses would be \$10.7 million during the first year.

**Table 4.10-2 Economic Impacts of Construction: 2013-2016**

	<b>Employment</b>	<b>Labor Income*</b>	<b>Output*</b>
<i>Total Project Spending: \$5,200,000</i>			
Direct Effects	36.5	\$2,162,257	\$5,423,315
Indirect Effects	14.9	\$883,229	\$2,030,651
Induced Effects	26.7	\$1,175,150	\$3,280,230
<b>Total 2013 Effects</b>	<b>78.1</b>	<b>\$4,220,636</b>	<b>\$10,734,196</b>
	<b>Employment</b>	<b>Labor Income*</b>	<b>Output*</b>
<i>Total Project Spending: \$20,800,000</i>			
Direct Effects	145.9	\$8,649,028	\$21,693,2529
Indirect Effects	59.6	\$3,532,914	\$8,122,602
Induced Effects	106.9	\$4,700,601	\$13,120,921
<b>Total 2014 Effects</b>	<b>312.3</b>	<b>\$16,882,544</b>	<b>\$42,936,783</b>
	<b>Employment</b>	<b>Labor Income*</b>	<b>Output*</b>
<i>Total Project Spending: \$52,000,000</i>			
Direct Effects	364.7	\$21,622,571	\$54,233,148
Indirect Effects	148.9	\$8,832,286	\$20,306,508
Induced Effects	264.2	\$11,751,503	\$32,802,303
<b>Total 2015 Effects</b>	<b>780.9</b>	<b>\$42,206,360</b>	<b>\$107,341,958</b>
	<b>Employment</b>	<b>Labor Income*</b>	<b>Output*</b>
<i>Total Project Spending: \$26,000,000</i>			
Direct Effects	182.4	\$10,811,286	\$27,116,574
Indirect Effects	74.5	\$4,416,143	\$10,153,254
Induced Effects	133.6	\$5,875,752	\$16,401,151
<b>Total 2016 Effects</b>	<b>390.4</b>	<b>\$21,103,108</b>	<b>\$53,670,979</b>

\* Dollar estimates based upon 2011 values.

The construction-related effects of the Proposed Action peak in 2015, when Project spending totals \$52 million and supports nearly 781 workers in Maricopa County. This includes about 365 workers directly affiliated with the Project and 416 jobs created through multiplier effects of Project spending. Labor income would total \$42.2 million in 2015 and economic output would increase by \$107.3 million. The economic impacts begin to taper in 2016 and would end when the transmission line is completed.

Given the size of the Maricopa County economy, the economic effects of construction would be beneficial, short-term, and minor. Although this analysis is a county-wide assessment of impacts, it is reasonable to assume that some of these temporary benefits could flow to communities within the Study Area.

Economic Effects of Operations, Maintenance, and Decommissioning - After construction, a public safety patrol would be conducted for the Project each year. This annual patrol may be conducted from the air or ground depending on conditions and the existence of residential properties along the utility corridor. If completed by ground, it would take one patrolman

approximately 8 to 16 hours to drive along the transmission line inspecting for hazards to the public. This patrolman is categorized as a Hotstick Lineman at \$42 per hour (as of 2011). If patrolled by air, it would take one patrolman plus helicopter fees approximately two hours. This would require the same Hotstick Lineman wage plus \$1,200 per hour for helicopter use.

In addition to the annual patrol, there would be an extensive climbing inspection performed every seven years. This inspection would require one Hotstick Crew Foreman (\$45 per hour), two Hotstick Lineman (\$42 per hour, each person), and one apprentice (\$36 per hour). This inspection consists of climbing or setting up with aerial equipment on every structure along the transmission line. All hardware is tightened and an extensive visual inspection would be performed. The crew is able to inspect approximately one mile of line per day. If repairs are needed, they would be addressed during this inspection.

It is anticipated that the transmission line would be maintained by the current number of APS employees in Maricopa County. No additional personnel are anticipated to be needed for this Project at this time. Over time, the centerline access road may deteriorate due to weather conditions and to development of the area and there may be a need to perform minor dirt work (grading, filling) to enable the large equipment to move through the utility corridor. Frequency and cost to maintain access is variable depending on the condition of the access roads and frequency of repairs. No access maintenance cost estimates are included in the impact analysis.

The economic effects of operating and maintaining the transmission line would be beneficial, negligible, and long-term.

Effects on Developed Property Values and Undeveloped Land Values - The ROW for the Proposed Action would cross 4.4 miles of private property that is presently predominantly undeveloped (**Section 4.6**). **Table 4.10-3** provides acreages of private property that would be affected by the Proposed Action.

**Table 4.10-3 Private Property that would be Affected by the Proposed Action**

<b><u>PRIVATE PROPERTY AFFECTED</u></b>	<b><u>ACREAGE WITHIN THE ROW</u></b>	<b><u>ACREAGE WITHIN 200 FEET OF THE TRANSMISSION LINE BUT OUTSIDE THE ROW</u></b>
<u>Private Property within Planned Developments</u>	<u>86.0</u>	<u>109.5</u>
<u>Private Property outside Planned Developments</u>	<u>21.8</u>	<u>66.0</u>

Portions of this private property are within master planned communities that are in various stages of development, and would eventually contain residential and commercial development (see cumulative impacts analysis in Section 4.19.11). There are six planned developments within the Study Area that some portion of the ROW would cross. These include BSNF Commercial, Broadstone Ranch, Festival by Lyle Anderson, Saddleback

Heights, Spurlock Ranch, and Warrick Properties. The acreages and proposed land use type of the acreages in each development that are within the ROW and within 200 feet of the transmission line but outside the ROW are shown in **Table 4.10-4**. A total of 86 acres of planned developments would be within the ROW, and a total of 109.5 acres of planned developments would be within 200 feet of the transmission line but outside the ROW under the Proposed Action.

Presently there are no residential structures within 200 feet of the transmission line along the Proposed Action route; therefore, the proximity and price effects on private residential structures which are discussed in **4.10.1.2** do not apply under current conditions. However, as indicated in **Appendix 3A**, the value of developed properties adjoining transmission line ROWs may be affected; therefore, if a residence is not within 200 feet of the transmission line but is on property adjoining the ROW, the value of that residence may still be affected. There are four residences on the east side of the Thunder Ridge Airpark runway that would be more than 200 feet from the transmission line; should the private property containing these residences adjoin the ROW, there could be adverse impacts to these private property values.

APS would acquire an easement across the private property for the acreage contained within the ROW, and would compensate the land owners for this easement.

It is possible that the value of the undeveloped lands within 200 feet of the transmission line but outside the ROW could be negatively affected by the presence of the transmission line under the Proposed Action. Approximately 101 acres of undeveloped lands within 200 feet of the transmission line but outside the ROW would be within six developments. The potential effects on undeveloped land values range from 0 to -34.0 percent (see **Section 4.10.1.2**) depending on location, available amenities, and current market conditions. The overall effects to land owners from a change in private property valuation resulting from the presence of the transmission line would be situational, and would occur at the time of sale. For a large tract of land within a master planned community where a relatively small proportion of property adjoins the ROW, the adverse impact would be buffered by the value of the overall tract (the impact of the transmission line on the value of the undeveloped adjoining private property would dissipate with distance from the transmission line); however, the reduced value of the overall development due to the impact to the private property value could delay or inhibit the extent of the planned full build-out (i.e., completion of construction of all planned development). For the individual private property owner, who has a lot of existing equity and is trying to sell that property, the adverse impact could be major.

In addition to potential impacts to private property values, the presence of the transmission line would also affect the marketing and sales of the property. For property owners, this delay of sale would affect the owners' ability to liquidate their asset. The effects of delayed sales would be situational, but would be adverse regardless. The impacts to marketing and sales of property would be long-term, with the presence of the transmission line affecting the marketability of the property any time it would be available for sale.

**Table 4.10-4 Planned Development Acreages Potentially Affected by the Proposed Action by Land Use Type**

<b>NUMBER AND TYPE OF ACRES</b>		<b>BNSF COMMERCIAL</b>	<b>BROADSTONE RANCH</b>	<b>FESTIVAL BY LYLE ANDERSON</b>	<b>SADDLEBACK HEIGHTS</b>	<b>SPURLOCK RANCH</b>	<b>WARRICK PROPERTIES</b>
Park/Open Space	<u>Within ROW</u>	<u>0</u>	<u>0</u>	<u>3.3</u>	<u>0.8</u>	<u>0</u>	<u>0</u>
	<u>Outside ROW</u>	<u>0</u>	<u>0</u>	<u>3.0</u>	<u>0.9</u>	<u>0</u>	<u>0</u>
Golf Course	<u>Within ROW</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
	<u>Outside ROW</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Primary Roads	<u>Within ROW</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>.6</u>	<u>0</u>
	<u>Outside ROW</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>.6</u>	<u>0</u>
Industrial	<u>Within ROW</u>	<u>3.7</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
	<u>Outside ROW</u>	<u>4.3</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Commercial	<u>Within ROW</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>2.4</u>	<u>0</u>
	<u>Outside ROW</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>2.4</u>	<u>0</u>
Mixed Use	<u>Within ROW</u>	<u>0</u>	<u>0.2</u>	<u>0</u>	<u>0.5</u>	<u>0</u>	<u>0</u>
	<u>Outside ROW</u>	<u>0</u>	<u>&lt;0.1</u>	<u>0</u>	<u>1.5</u>	<u>0</u>	<u>0</u>
Residential	<u>Within ROW</u>	<u>0</u>	<u>1.3</u>	<u>25.3</u>	<u>0</u>	<u>47.8</u>	<u>0</u>
	<u>Outside ROW</u>	<u>0</u>	<u>&lt;0.1</u>	<u>35.6</u>	<u>0</u>	<u>47.8</u>	<u>4.4</u>
Total	<u>Within ROW</u>	<u>3.7</u>	<u>1.5</u>	<u>28.6</u>	<u>1.3</u>	<u>50.8</u>	<u>0</u>
	<u>Outside ROW</u>	<u>4.3</u>	<u>&lt;0.1</u>	<u>38.6</u>	<u>2.4</u>	<u>50.8</u>	<u>4.4</u>

Effects on Property Taxes - Private land acquired for the Project would change land use patterns and could potentially affect the property taxes paid on this land. Under the Proposed Action and Action Alternatives 1, 2, and 3, APS would obtain easements for ROW on private land. For the lands acquired by the Project, the underlying land owner is responsible for paying any assessed property taxes for Project lands.

The Proposed Action crosses 106.67 acres of private land with an estimated assessed valuation of \$3.5 million. The estimated annual property tax revenue generated by these private properties is \$289,151 (based on 2011 tax rates). Under the Proposed Action, the presence of a transmission line could negatively affect the assessed value of these lands. A decrease in assessed valuation could result in a decrease in tax revenue.

Offsetting the potential loss of tax revenue would be property taxes paid by APS on the value of installed equipment on the land. According to APS, the tax revenue collected for infrastructure improvements is estimated to total \$1,873,700 (based on 2011 tax rates), with the majority of these funds (\$1,001,000) going to K-12 school districts. A breakdown of these totals by jurisdiction is provided in **Table 4.10-5**. The amount of tax revenue collected for infrastructure improvements is the same under all Action Alternatives.

The potential increase in tax revenue collected would represent a 648 percent increase over existing property taxes. However, this amount would only be approximately 0.40 percent of the Maricopa County property tax revenue. The change in property taxes collected by Maricopa County under the Proposed Action would be a major increase over the existing taxes collected for private properties that would be crossed by the route, but a minor overall beneficial impact for the taxing entities and the recipients of tax revenue.

These benefits would accrue to taxing entities and the beneficiaries of those taxes.

**Table 4.10-5 Estimated Annual Property Tax Revenues from Project Lands by Jurisdiction**

JURISDICTION	ESTIMATED REVENUES (IN DOLLARS)	
<b>Arizona</b>		85,000
<b>Maricopa Community College</b>		242,000
<b>Maricopa County</b>		249,000
<b>Maricopa Special Districts</b>		
Library	10,000	
Health Care	20,000	
Fire District Assistance	30,000	
West MEC	8,000	
Central Arizona Project	2,000	
<b>Special District Total</b>		<b>70,000</b>

**Table 4.10-5 Estimated Annual Property Tax Revenues from Project Lands by Jurisdiction (Continued)**

JURISDICTION	ESTIMATED REVENUES (IN DOLLARS)	
<b>K-12 School Districts</b>		
Deer Valley School District	219,000	
Peoria School District	379,000	
Morristown School District	135,000	
Wickenburg School District	268,000	
<b>K-12 School District Total</b>		1,001,000
<b>Cities</b>		
Peoria	101,000	
Surprise	6,700	
Buckeye	81,000	
<b>Cities Total</b>		188,700
<b>TOTAL PROPERTY TAXES</b>		<b>1,835,700</b>

Source: APS 2012

Effects on State Trust Land Values and Revenues - State Trust lands are required for the Proposed Action and Action Alternatives. Characteristics of the State Trust land required for the Proposed Action and Action Alternatives are shown in **Table 4.10-6**.

**Table 4.10-6 State Trust Land Characteristics**

	LENGTH <sup>1</sup> (MILES)	ACREAGE (ACRES)	VALUE (\$)
Proposed Action	22.88	554.6	16,636,363
Alternative 1	22.88	554.6	16,636,363
Alternative 2	23.88	578.8	17,363,636
Alternative 3	25.38	615.2	18,454,545
Sub-alternative	22.88	554.6	16,636,363

Source: APS 2011a

<sup>1</sup>This distance represents the number of Project miles crossing State Trust land.

Under the Proposed Action, a total of 554.6 acres of State Trust land, currently valued at \$16.6 million, would be required under the Proposed Action. These lands would be leased to APS and be unavailable for future development or sale. Offsetting the loss of future development would be the lease revenue that APS would pay on State Trust lands to the ASLD. That amount has been estimated by APS and is included in the ROW acquisition costs presented in **Table 4.10-1**. The beneficiaries of revenue generated through leasing of State Trust lands are typically the common schools in the state.

Effects on State Trust Land Grazing - The Proposed Action and Action Alternatives are located along an area with State Trust land sections that are leased for grazing activities and generate revenue for the State Land Trust. Under the Proposed Action, portions of seven allotments would be affected, with a permanent loss of four AUMS (**Section 4.6**). If grazing permit holders could not find alternative grazing options on State Trust land, the potential impact on grazing revenue for the State Land Trust would be an annual loss of \$110.40 (at 2011 lease rates). The beneficiaries of revenue generated by grazing activities are common schools in the state.

Effects on Utility Rates – Under the Proposed Action, the rates that APS customers pay for electricity would be increased to recover the cost of investment infrastructure through annual application of the transmission cost adjuster.

Effects on Recreation - The Proposed Action route is located within a region of Arizona with two state parks and abundant open space, providing opportunities for recreational activities such as hiking and wildlife viewing. OHV recreation in the affected area occurs on land managed by BLM and is especially high at the Boulders Staging Area, a developed facility located partly within the Hieroglyphics RMZ.

During construction, the Proposed Action may cause construction-related delays in access to public lands along SR 74 and temporarily limit access to some dispersed recreation for brief periods which could also limit access to OHV trails in the Hieroglyphics RMZ. Recreation access that does not depend on these access routes, such as hiking, would not be affected.

The primary impact related to OHV recreational use would be decreased OHV trail access during short periods when construction limits access to existing trails. Routes used for construction access that are also used for recreation, such as certain BLM-designated OHV routes, would be temporarily closed, temporarily reducing some recreational access in certain areas (**Section 4.9**). If OHV recreationists choose not to recreate at other existing areas available for OHV use in Maricopa County during these short periods when access is limited to specific trails, and reduce the number of times they recreate, the beneficial economic impacts generated by recreation spending that are described in **Section 3.10** could decline. The potential economic effects of recreation spending on the Maricopa County economy would be short-term, the magnitude of which cannot be determined.

The effects of the Proposed Action on OHV recreation during the construction period would also be short-term as access to routes and trails would only be limited during the time construction occurs at specific sites. Most trails and routes would be reopened after construction at that particular site was complete. There is insufficient data to determine the number of OHV users that would forego recreating in the affected area; therefore, the magnitude of these short-term effects cannot be estimated.

Once the transmission line is installed, it could change the overall feeling of the area to OHV users who might decide to recreate less often in this specific area. In this case, the economic impacts generated by recreation spending could decline (**Section 3.10**). This would be a long-term effect on the Maricopa County economy, the magnitude of which cannot be determined.

## *Nonmarket Values*

Effects on Recreation Values - Because the centerline access route along the ROW would be designated an Administrative route and would not be open to recreational use, there would be no beneficial effects on recreation values from the ROW.

Individuals seeking solitude and primitive recreation experiences would be adversely impacted by the views and noise during construction and by the change in landscape due to the presence of the transmission line.

For all recreationists, the presence of a transmission line would be an obvious modification to the natural environment, affecting the recreation experience on lands immediately adjacent to the Project. After construction, visitation may not change, but the value of the visit may be different. Users who consistently recreate in this area may become accustomed to the presence of a transmission line, but the recreation experience, and the surplus value associated with that experience would be permanently altered (**Section 4.9**). For instance, a pooled sample of all types of OHV users, including all-terrain vehicles, dirt bikes, and dune buggies, showed that the average Arizona net economic value per OHV trip was \$68 (Silberman and Andreck 2006). Economic values could be negatively affected by 1.4 to 2.25 percent per trip if access to public lands used for OHV is prohibited or limited for lengthy periods of time.

Although the centerline access route would not be authorized for public access, and it would be designated an Administrative route in order to enforce restrictions on recreational use, some level of unauthorized OHV use could occur on the centerline access road. This would result in an increased chance for user-defined (unauthorized) trails in the surrounding area, a decrease in air quality due to increased dust, and damage to soils, vegetation, and wildlife habitat. An increase in user-defined trails would conflict with the BLM's management strategy for the area and would create challenges for managing the natural resources and increase user-conflicts. This represents a long-term moderate impact to recreation resources of the area.

Potentially, the Proposed Action could affect the quality of the recreation experience on BLM-managed public land that is in close proximity to, and used by future residents of communities that are adjacent to the Project, such as Saddleback Heights.

Effects to Natural Amenities and Quality of Life - Natural amenities are goods and services provided by nature that bring value to human life, but typically lack market prices (e.g., wildlife habitat, scenic views). Natural amenities, such as access to public lands have been shown to influence regional population distribution, employment, and growth. The draw of natural amenities is especially powerful in rural communities where population change and relocation of employers have been strongly related to the attractiveness as a place to live.

The area north of SR 74 would qualify as an open space in a natural setting with very little development, and it is fairly highly valued by survey respondents from Maricopa County (**Section 3.10**). The Project would change that natural setting. Communities closest to the Project might feel that their current rural quality of life would be adversely affected with the presence of a transmission line.

The construction of the transmission line under the Proposed Action would require the removal of some habitat for wildlife and special status species (including Category II and Category III Sonoran desert tortoise habitat), increase noise, cause a decline in air quality, and damage soils and vegetation. Some of these effects would be short-term and temporary, such as soil and vegetation degradation, noise, and air quality and have minor to moderate impacts that end when construction is complete. Other effects, such as the loss of Sonoran desert tortoise habitat and visual obstruction are long-term and permanent.

Visual obstruction to scenic views caused by the transmission line would be permanent and could negatively affect the aesthetics of the surrounding area. Many residents of the developed portions of Vistancia, for example, were concerned that the transmission line would obscure their scenic views despite the fact that the transmission line would be located several miles from existing homes and barely visible.

While the visual effects of the transmission line are section specific and range from weak to moderate, the presence of the transmission line would be a very discordant element in sections where it dominates the view, negatively affecting the “rural scenic expectation” which is important to area residents, commuters, and recreationists (**Section 4.14**).

Current residents that would be closest to the Project might feel that their rural quality of life would be adversely affected with the presence of the transmission line and permanent loss of wildlife habitat. The changes in the natural amenities discussed above could permanently lessen the quality of life experience for some residents living in the Study Area.

Health and Safety Concerns - Scientific studies exploring the connection between exposure to electromagnetic radiation emitted by transmission lines and health hazards are mixed. The 1999 National Institute of Environmental Health Sciences expert group research assessed the health effects of exposure to the EMFs emitted from transmission lines and concluded that evidence is not sufficient to establish a definitive cause and effect relationship. The International Agency for Research on Cancer came to a similar conclusion (Kheifets 2001). However, for some residents in the Study Area, the potential health risks of exposure to EMFs, whether conclusive or not, remains a concern and affects their interest in properties near transmission lines.

Some area homeowners in the developed portion of Vistancia mistakenly believed the Proposed Action and the Action Alternatives would place the transmission line very near their existing dwellings and expressed their health and safety concerns to BLM. However, under the Proposed Action, and all Action Alternatives the transmission line would be several miles distant from the existing Vistancia development.

**Section 4.7.2.1** concludes that the impacts from EMF would be an adverse minor long-term impact under all alternatives as EMF levels at the edge of the ROW would be well below the ICNIRP public levels.

## **Alternative 1: Proposed Action with Additional Corridor**

### *Market Values*

Economic Impacts of Construction - The construction costs associated with Alternative 1 are estimated to be \$104 million, the same as the Proposed Action. The ROW acquisition cost of

Alternative 1 as well as the construction duration and schedule would be the same as for the Proposed Action.

The annual economic impacts on employment, labor income, and economic output in Maricopa County generated by construction spending in the county are the same as those shown in **Table 4.10-2**, and identified and discussed in the Proposed Action.

Economic Effects of Operations, Maintenance, and Decommissioning - The operation and maintenance of the transmission line under Alternative 1 would be the same as the Proposed Action.

Effects on Developed Property Values and Undeveloped Land Values - The ROW for Alternative 1 would be the same as described under the Proposed Action, crossing 4.4 miles of private land which is predominantly undeveloped (**Section 4.7**). The ROWs under Alternative 1 cross portions of the same planned developments identified under the Proposed Action; therefore, the effects on property values, and the marketing and sale of properties under Alternative 1 would be the same as those described for the Proposed Action.

Effects on Property Taxes - The effects on property taxes under Alternative 1 are the same as those for the Proposed Action because the acres of private land required in Alternative 1 are the same as those required in the Proposed Action.

Effects on State Trust Land Value - The land value effects under Alternative 1 are the same as the Proposed Action because the number acres of State Trust land required in Alternative 1 are the same as those required in the Proposed Action.

Effects on State Trust Land Grazing - Alternative 1 would affect six grazing allotments resulting in the permanent loss of 4 AUMS. If grazing permit holders could not find alternative grazing options on State Trust land, the potential impact on grazing revenue for the State Land Trust would be an annual loss of \$110.40 (at 2011 lease rates).

Effects on Utility Rates - The effects on utility rates under Alternative 1 would be the same as those for the Proposed Action because the infrastructure cost would be the same under Alternative 1 as the Proposed Action.

Effects on Recreation - Alternative 1 would establish a multiuse utility corridor on BLM-managed public land north and south of SR 74. BLM would be allowed to consider additional linear ROWs (such as utilities) within the corridor. Identifying effects to recreation and special designations that would result from future linear ROWs is beyond the scope of this analysis. Therefore, the impacts to recreation under Alternative 1 would be the same as those under the Proposed Action for the 200-foot ROW, but additional impacts could result from allowing other utilities to be developed within this 0.5-mile wide corridor. These effects are discussed in cumulative effects, **Section 4.19**.

#### *Nonmarket Values*

Effects on Recreation Values - The nonmarket value effects to recreation under Alternative 1 during construction and operation would be similar in nature to those under the Proposed Action.

Effects to Natural Amenities and Quality of Life - Changes to natural amenities and quality of life under Alternative 1 are similar to those of the Proposed Action.

Health and Safety Concerns - The health and safety concerns under Alternate 1 are the same as those identified under the Proposed Action.

### **Alternative 2: ROW South of SR 74**

Because the Alternative 2 route deviates from the ACC route, under Alternative 2 APS would be required to re-engage with the ACC and complete a process for the ACC to issue a new CEC. The processes to obtain a new CEC from the ACC would increase the overall Project cost and delay Project implementation. Delay of implementation could result in the following indirect effects:

- Increased reliability of electrical infrastructure that would be provided by the new 500kV transmission line would be delayed.
- Delay in construction of the 500kV transmission line would delay the capacity to facilitate delivery of electricity from projected renewable energy resources to the Phoenix area, which could in turn delay development of additional renewable energy resources.

Construction of the 230kV transmission line could be delayed, in which case the development of new residential, commercial, and recreational uses in the Town of Buckeye, City of Surprise, City of Peoria, and unincorporated Maricopa County could be delayed.

### *Market Values*

Economic Impacts of Construction - The construction costs associated with Alternative 2 are estimated to be \$101 million, approximately \$3 million less than the Proposed Action. Alternative 2 requires fewer turning structures which accounts for the difference in cost. The ROW acquisition costs under Alternative 2 are higher than the Proposed Action because more private land is required.

The construction duration and schedule under Alternative 2 would be the same as the Proposed Action. The annual economic impacts on employment, labor income, and output in Maricopa County that would be generated by construction spending in the county are shown in **Table 4.10-7**.

Similar to the Proposed Action, the economic effects of construction-related spending peak in 2015. A total of \$50.5 million in construction-related spending would flow into the Maricopa County economy, creating 758 jobs, and generating almost \$41 million in labor income and \$104.2 million economic output. The impacts would end when the transmission line is completed in 2016.

The economic impacts on Maricopa County resulting from the construction of the transmission line would be slightly less under Alternative 2 than under the Proposed Action because of lower construction costs. However, employment, labor income and economic output would still increase.

Given the size of the Maricopa County economy, the economic effects of construction would be beneficial, short-term, and minor. Although this analysis is a county-wide assessment of impacts, it is reasonable to assume that some of these temporary benefits could flow to communities within the Study Area.

Economic Effects of Operations, Maintenance, and Decommissioning - The operation and maintenance of the transmission line under Alternative 2 would be the same as the Proposed Action. Therefore, the economic effects would be the same as those identified in the Proposed Action.

**Table 4.10-7 Economic Impacts of Construction: 2013-2016**

	<b>Employment</b>	<b>Labor Income*</b>	<b>Output*</b>
<i>Total Project Spending: \$5,050,000</i>			
Direct Effects	35.4	\$2,099,884	\$5,266,873
Indirect Effects	14.5	\$857,751	\$1,972,074
Induced Effects	25.9	\$1,141,252	\$3,185,608
<b>Total 2013 Effects</b>	<b>75.8</b>	<b>\$4,098,887</b>	<b>\$10,424,556</b>
	<b>Employment</b>	<b>Labor Income*</b>	<b>Output*</b>
<i>Total Project Spending: \$20,200,000</i>			
Direct Effects	141.7	\$8,399,537	\$21,067,492
Indirect Effects	57.9	\$3,431,003	\$7,888,297
Induced Effects	103.8	\$4,565,007	\$12,742,433
<b>Total 2014 Effects</b>	<b>303.3</b>	<b>\$16,395,548</b>	<b>\$41,698,222</b>
	<b>Employment</b>	<b>Labor Income*</b>	<b>Output*</b>
<i>Total Project Spending: \$50,500,000</i>			
Direct Effects	354.2	\$20,998,843	\$52,668,730
Indirect Effects	144.6	\$8,577,508	\$19,720,743
Induced Effects	259.5	\$11,412,518	\$31,856,082
<b>Total 2015 Effects</b>	<b>758.3</b>	<b>\$40,988,869</b>	<b>\$104,245,555</b>
	<b>Employment</b>	<b>Labor Income*</b>	<b>Output*</b>
<i>Total Project Spending: \$25,250,000</i>			
Direct Effects	177.1	\$10,499,422	\$26,334,365
Indirect Effects	72.3	\$4,288,754	\$9,860,372
Induced Effects	129.7	\$5,706,259	\$15,928,041
<b>Total 2016 Effects</b>	<b>379.2</b>	<b>\$20,494,434</b>	<b>\$52,122,778</b>

\* Dollar estimates based upon 2011 values.

Effects on Developed Property Values and Undeveloped Land Values - The ROW for Alternative 2 would cross 7.6 miles of private property that is presently predominantly undeveloped (**Section 4.6**). **Table 4.10-8** provides acreages of private property that would be affected by Alternative 2.

**Table 4.10-8 Private Property that would be Affected by Alternative 2**

<u>PRIVATE PROPERTY AFFECTED</u>	<u>ACREAGE WITHIN THE ROW</u>	<u>ACREAGE WITHIN 200 FEET OF THE TRANSMISSION LINE BUT OUTSIDE THE ROW</u>
Private Property within Planned Developments	161.9	185.4
Private Property outside Planned Developments	21.7	65.9

A total of 161.9 acres of planned developments would be within the ROW, and a total of 185.4 acres of planned developments would be within 200 feet of the transmission line but outside the ROW under Alternative 2.

There are six planned developments within the Study Area that some portion of the 200-foot ROW would cross under Alternative 2. These developments are the same as those identified under the Proposed Action. The acreages and proposed land use types of those acreages are similar to the Proposed Action, with the exception of Saddleback Heights. The acreages and proposed land use type of the acreages in Saddleback Heights that are within the ROW and within 200 feet of the transmission line but outside the ROW are shown in Table 4.10-9.

**Table 4.10-9 Saddleback Heights Planned Development Acreages Potentially Affected by the Alternative 2 by Land Use Type**

<u>NUMBER AND TYPE OF ACRES</u>	<u>SADDLEBACK HEIGHTS</u>	
<u>Park/Open Space</u>	<u>Within ROW</u>	<u>12.7</u>
	<u>Outside ROW</u>	<u>13.0</u>
<u>Golf Course</u>	<u>Within ROW</u>	<u>0</u>
	<u>Outside ROW</u>	<u>0</u>
<u>Primary Roads</u>	<u>Within ROW</u>	<u>0</u>
	<u>Outside ROW</u>	<u>0</u>
<u>Industrial</u>	<u>Within ROW</u>	<u>0</u>
	<u>Outside ROW</u>	<u>0</u>
<u>Commercial</u>	<u>Within ROW</u>	<u>0</u>
	<u>Outside ROW</u>	<u>0</u>
<u>Mixed Use</u>	<u>Within ROW</u>	<u>0.2</u>
	<u>Outside ROW</u>	<u>1.2</u>
<u>Residential</u>	<u>Within ROW</u>	<u>64.2</u>
	<u>Outside ROW</u>	<u>64.1</u>
<u>Total</u>	<u>Within ROW</u>	<u>77.3</u>
	<u>Outside ROW</u>	<u>78.3</u>

Presently there are no residential structures within 200 feet of the transmission line along the Alternative 2 route; therefore, the proximity and price effects on private residential structures which are discussed in 4.10.1.2 do not apply under current conditions. However, as indicated in Appendix 3A, the value of developed properties adjoining transmission line ROWs may be affected; therefore, if a residence is not within 200 feet of the transmission line but is on property adjoining the ROW, the value of that residence may be affected. There are four residences on the east side of the Thunder Ridge Airpark runway that would be more than 200 feet from the transmission line; should the private property containing these residences adjoin the ROW, there could be impacts to these private property values.

APS would acquire an easement across the private property for the acreage contained within the ROW, and would compensate the land owners for this easement.

It is possible that the value of the lands within 200 feet of the transmission line but outside the ROW could be negatively affected under Alternative 2 by the presence of the transmission line. Approximately 176 acres of undeveloped lands within 200 feet of the transmission line, but outside the ROW would be within six developments. The potential effects on the undeveloped land values range from 0 to -34.0 percent (see Section 4.10.1.2) depending on location, available amenities, and current market conditions. Overall impacts to private property values would be situational as described for the Proposed Action. However, the Alternative 2 route would involve more private property than the Proposed Action; therefore the adverse impacts would be more extensive.

Impacts of the presence of the transmission line on the marketing and sales of private property would be the same as described for the Proposed Action.

Effects on Property Taxes - Alternative 2 crosses 184.2 acres of private land. This property has an estimated assessed valuation of \$7.57 million and generates an estimated \$624,799 in property tax revenue annually (based on 2011 tax rates).

The offsetting effects of these potential impacts are the same as those described under the Proposed Action. APS would pay a property tax on the value of installed equipment on the land totaling \$1,835,700. Most of this revenue would flow to common schools in the state.

The potential increase in tax revenue collected would represent a 294 percent increase over existing property taxes. However, this amount would only be approximately 0.40 percent of the Maricopa County property tax revenue. The change in property taxes collected by Maricopa County under the Proposed Action would be a major increase over the existing taxes collected for private properties that would be crossed by the route, but a minor overall beneficial impact for the taxing entities and the recipients of tax revenue.

Effects on State Trust Land Values and Revenues - A total of 578.8 acres of State Trust land would be required under Alternative 2. The value of this land is estimated to be almost \$17.4 million, slightly more than under than the Proposed Action. These lands would be leased to APS and removed from future development or sale.

Offsetting the loss of future development would be the lease revenue that APS would pay annually on State Trust lands to the ASLD. That amount has been estimated by APS and is included in the ROW acquisition costs for Alternative 2 shown in Table 4.10-1. The

beneficiaries of revenue generated through leasing of State Trust lands are typically the common schools in the state.

Effects on State Trust Land Grazing - Under Alternative 2, portions of six allotments would be affected, with a permanent loss of three AUMS (**Section 4.6**). If grazing permit holders could not find alternative options on State Trust land, the potential impact on grazing revenue for the State Land Trust would be a loss of \$82.80 (at 2011 lease rates). Under Alternative 2, the effects to State Trust land grazing revenue would be negligible and long-term.

Effects on Utility Rates – Under Alternative 2, the rates that APS customers pay for electricity would be increased to recover the cost of investment infrastructure through annual application of the transmission cost adjuster. Under Alternative 2, the estimated cost of construction would be approximately the same as the Proposed Action.

Effects on Recreation - Under Alternative 2, the portion of the Study Area that receives the most OHV recreation would not be affected during the construction or operation phases of the Project. Less than one mile of two-track routes would be closed for short periods during construction which would limit OHV access into the Castle Hot Springs SRMA (**Section 4.9**). The quality of the recreation experience on BLM-managed public land and access to trails from the Boulders Staging Area would remain unchanged. Likewise, there would be no impact on recreation spending, so the economic impacts generated by that spending would also remain unchanged. There would be no impact to Semi-Primitive Motorized or Roaded Natural ROS settings under Alternative 2. The impacts to OHV recreation under Alternative 2 would be negligible.

#### *Nonmarket Values*

Effects on Recreation Values - Alternative 2 involves less BLM-managed public land and the land that is affected is less heavily used than that under the Proposed Action. Under this alternative, the quality of the routes could change, but the OHV use levels of the affected lands are much lower than the OHV area north of SR 74. Therefore, the value of the recreation experience would remain less changed under Alternative 2 than under the Proposed Action.

Effects to Natural Amenities and Quality of Life - The impacts to Natural amenities and quality of life under Alternative 2 would be similar in nature to those under the Proposed Action, with the exception of impacts to Sonoran desert habitat. There would be no Category II Sonoran desert tortoise habitat impacted under Alternative 2, only Category III habitat. Keeping this habitat safe could be viewed by some residents as a positive outcome.

Health and Safety Concerns - The health and safety concerns under Alternative 2 are the same as those identified under the Proposed Action.

### **Alternative 3: Carefree Highway Route**

Because the Alternative 3 route deviates from the ACC route, under Alternative 3 APS would be required to re-engage with the ACC and complete a process for the ACC to issue a new CEC. The processes to obtain a new CEC from the ACC would increase the overall Project cost and delay Project implementation. Delay of implementation could result in the following indirect effects:

- Increased reliability of electrical infrastructure that would be provided by the new 500kV transmission line would be delayed.
- Delay in construction of the 500kV transmission line would delay the capacity to facilitate delivery of electricity from projected renewable energy resources to the Phoenix area, which could in turn delay in development of additional renewable energy resources.

Construction of the 230kV transmission line could be delayed, in which case the development of new residential, commercial, and recreational uses in the Town of Buckeye, City of Surprise, City of Peoria, and unincorporated Maricopa County could be delayed.

*Market Values*

Economic Impacts of Construction - The construction costs associated with Alternative 3 are estimated to be \$101 million, approximately \$3 million less than the Proposed Action. Alternative 3 requires fewer turning structures which accounts for the difference in cost. The ROW acquisition costs under Alternative 3 are \$28.9 million or \$5.9 million higher than Proposed Action because more private land is required. Alternative 3 also requires slightly more State Trust Land than the Proposed Action (25.4 acres), and significantly less BLM-managed public land (72.7 acres).

The construction duration and schedule under Alternative 3 would be the same as the Proposed Action. The annual economic impacts on employment, labor income, and economic output in Maricopa County generated by construction spending in the county are the same as those shown in **Table 4.10-5**.

Economic Effects of Operations, Maintenance, and Decommissioning - The operation and maintenance of the transmission line under Alternative 3 would be the same as the Proposed Action. Therefore, the economic effects would be the same as those identified in the Proposed Action.

Effects on Developed Property and Undeveloped Land Values - The ROW for Alternative 3 crosses 9.3 miles of private land that is presently predominantly undeveloped. **Table 4.10-10** provides acreages of private property that would be affected by Alternative 3.

**Table 4.10-10 Private Property that would be Affected by Alternative 3**

<u>PRIVATE PROPERTY AFFECTED</u>	<u>ACREAGE WITHIN THE ROW</u>	<u>ACREAGE WITHIN 200 FEET OF THE TRANSMISSION LINE BUT OUTSIDE THE ROW</u>
<u>Private Property within Planned Developments</u>	<u>213.4</u>	<u>237.0</u>
<u>Private Property outside Planned Developments</u>	<u>19.8</u>	<u>64.3</u>

Portions of this private property are part of master planned communities that are in various stages of development, and that would eventually contain residential and commercial development (see cumulative impacts analysis in **Section 4.19.11**). A total of 213.4 acres of planned developments would be within the ROW, and a total of 237 acres of planned developments would be within 200 feet of the transmission line but outside the ROW under Alternative 3. There are eight planned developments within the Study Area that some portion of the ROW would cross under Alternative 3. These include BSNF Commercial, Broadstone Ranch, Festival by Lyle Anderson, Lake Pleasant Heights, Saddleback Heights, Spurlock Ranch, Vistancia, and Warrick Properties, which are in various stages of planning for future development. The acreages and proposed land use types of those acreages that would be affected in each development are shown in **Table 4.10-11**.

Presently there are no residential structures within 200 feet of the transmission line along the Proposed Action route; therefore, the proximity and price effects on private residential structures which are discussed in **Section 4.10.1.2** do not apply under current conditions. However, as indicated in **Appendix 3A**, the value of developed properties adjoining transmission line ROWs may be affected; therefore, if a residence is not within 200 feet of the transmission line but is on property adjoining the ROW, the value of that residence may be affected. There are four residences on the east side of the Thunder Ridge Airpark runway that would be more than 200 feet from the transmission line; should the private property containing these residences adjoin the ROW, there could be impacts to these private property values.

APS would acquire an easement across the private property for the acreage contained within the ROW, and would compensate the land owners for this easement.

It is possible that the value of the lands within 200 feet of the transmission line but outside the ROW could be negatively affected by the presence of the transmission line under Alternative 3. Approximately 229 acres of undeveloped lands within 200 feet of the transmission line but outside the ROW would be within eight developments (**Table 4.10-11**). The potential effects on undeveloped land values range from 0 to -34.0 percent (see **Section 4.10.1.2**) depending on location, available amenities, and current market conditions. Overall impacts to private property values would be situational as described for the Proposed Action. However, the Alternative 3 route would involve more private property than the Proposed Action or Alternative 2; therefore the adverse impacts would be more extensive.

Impacts of the presence of the transmission line on the marketing and sales of private property would be the same as described for the Proposed Action.

**Table 4.10-11 Planned Development Acreages Potentially Affected by Alternative 3 by Land Use Type**

<u>NUMBER AND TYPE OF ACRES</u>		<u>BNSF COMMERCIAL</u>	<u>BROADSTONE RANCH</u>	<u>FESTIVAL BY LYLE ANDERSON</u>	<u>SADDLEBACK HEIGHTS</u>	<u>SPURLOCK RANCH</u>	<u>WARRICK PROPERTIES</u>
<u>Park/Open Space</u>	<u>Within ROW</u>	<u>0</u>	<u>0</u>	<u>3.3</u>	<u>35.6</u>	<u>0</u>	<u>0</u>
	<u>Outside ROW</u>	<u>0</u>	<u>0</u>	<u>3.0</u>	<u>32.0</u>	<u>0</u>	<u>0</u>
<u>Golf Course</u>	<u>Within ROW</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
	<u>Outside ROW</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
<u>Primary Roads</u>	<u>Within ROW</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0.6</u>	<u>0</u>
	<u>Outside ROW</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0.6</u>	<u>0</u>
<u>Industrial</u>	<u>Within ROW</u>	<u>3.7</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
	<u>Outside ROW</u>	<u>4.3</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
<u>Commercial</u>	<u>Within ROW</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>1.0</u>	<u>2.5</u>	<u>0</u>
	<u>Outside ROW</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>1.2</u>	<u>2.5</u>	<u>0</u>
<u>Mixed Use</u>	<u>Within ROW</u>	<u>0</u>	<u>0.2</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
	<u>Outside ROW</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
<u>Residential</u>	<u>Within ROW</u>	<u>0</u>	<u>1.3</u>	<u>25.3</u>	<u>28.3</u>	<u>47.8</u>	<u>0</u>
	<u>Outside ROW</u>	<u>0</u>	<u>0</u>	<u>35.6</u>	<u>25.0</u>	<u>47.8</u>	<u>4.4</u>
<u>Total</u>	<u>Within ROW</u>	<u>3.7</u>	<u>0.2</u>	<u>28.6</u>	<u>64.9</u>	<u>50.8</u>	<u>0</u>
	<u>Outside ROW</u>	<u>4.3</u>	<u>1.3</u>	<u>38.6</u>	<u>58.1</u>	<u>50.8</u>	<u>4.4</u>

**Table 4.10-11 Planned Development Acreages Potentially Affected by  
Alternative 3 by Land Use Type (Continued)**

<u>NUMBER AND TYPE OF ACRES</u>		<u>LAKE PLEASANT HEIGHTS</u>	<u>VISTANCIA</u>
<u>Park/Open Space</u>	<u>Within ROW</u>	19.3	7.4
	<u>Outside ROW</u>	13.7	12.7
<u>Golf Course</u>	<u>Within ROW</u>	0	0
	<u>Outside ROW</u>	0	0
<u>Primary Roads</u>	<u>Within ROW</u>	0	0
	<u>Outside ROW</u>	0	0
<u>Industrial</u>	<u>Within ROW</u>	0	0
	<u>Outside ROW</u>	0	0
<u>Commercial</u>	<u>Within ROW</u>	<0.1	3.8
	<u>Outside ROW</u>	0.1	4.1
<u>Mixed Use</u>	<u>Within ROW</u>	0	0
	<u>Outside ROW</u>	0	0
<u>Residential</u>	<u>Within ROW</u>	11.8	17.7
	<u>Outside ROW</u>	12.3	26.7
<u>Undefined</u>	<u>Within ROW</u>	0	1.5
	<u>Outside ROW</u>	0	0.7
<u>Water</u>	<u>Within ROW</u>	2.4	0
	<u>Outside ROW</u>	1.4	0
<u>Total</u>	<u>Within ROW</u>	33.5	30.4
	<u>Outside ROW</u>	27.5	44.3

Effects on Property Taxes - Alternative 3 crosses 225.5 acres of private land with an estimated assessed valuation of \$11.0 million. These lands generate \$909,151 in property tax revenue (based on 2011 tax rates). The presence of the transmission line could negatively affect the assessed value of these lands. A decrease in assessed valuation might result in decrease tax revenue.

The offsetting effects of these potential impacts are the same as those described under the Proposed Action. APS would pay a property tax on the value of installed equipment on the land totaling \$1,835,700. Most of this revenue would flow to common schools in the state.

The potential increase in tax revenue collected would represent a 202 percent increase over existing property taxes. However, this amount would only be approximately 0.40 percent of the Maricopa County property tax revenue. The change in property taxes collected by Maricopa County under the Proposed Action would be a major increase over the existing taxes collected for private properties that would be crossed by the route, but a minor overall beneficial long-term impact for the taxing entities and the recipients of tax revenue.

Effects on State Trust Land Values and Revenues - A total of 615.2 acres of State Trust land would be required under Alternative 3. The value of this land is estimated to be \$18.4 million, slightly more than Proposed Action. These lands would be leased to APS and removed from future development or sale. This effect is adverse, minor, and long-term.

Offsetting the loss of future development would be the lease revenue that APS would pay on State Trust lands to ASLD. That amount has been estimated by APS and is included in the ROW acquisition cost estimates shown in **Table 4.10-1**.

Effects on State Trust Land Grazing - Under Alternative 3, portions of six allotments would be affected, with a permanent loss of three AUMs (**Section 4.6**). If grazing permit holders could not find alternative options on State Trust land, the potential impact on grazing revenue for the State Land Trust would be a loss \$82.80 (at 2011 lease rates). Under Alternative 3, the effects to State Trust land grazing revenue would be negligible and long-term.

Effects on Utility Rates – Under Alternative 3, the rates that APS customers pay for electricity would be increased to recover the cost of investment infrastructure through annual application of the transmission cost adjuster. Under Alternative 3, the estimated cost of construction would be approximately 2.4 percent more than the Proposed Action, Alternative 1, or Alternative 2, which (if the rate calculation methodology is proportional to project cost) would result in a slightly higher increase in customer rates than the Proposed Action.

Effects on Recreation - Under Alternative 3, the impacts to recreation access would be lower than those described under the Proposed Action because the SRMA containing areas heavily used for OHV recreation would not be crossed. Fewer BLM-managed public lands would be affected under Alternative 3, so there would be no impact to some types of motorized and non-motorized recreation use.

#### *Nonmarket Values*

Effects on Recreation Values - Under Alternative 3, the transmission line would not cross any of the areas heavily used for recreation. The line would be so far removed from SR 74 that there would be little change in recreational access. Therefore, there would be few changes in recreational values under this alternative. Under Alternative 3, approximately 54 acres planned for open space on private future developments would be crossed by the ROW. These acres may not be available for future recreation and the quality of the recreation experience would be changed by the presence of the transmission line. The effects could be long-term and adverse. The magnitude of these long-term effects cannot be determined.

Effects to Natural Amenities and Quality of Life - The effects to natural amenities and quality of life under Alternative 3 would be similar to those described for the Proposed Action. However, Alternative 3 only crosses Category III Sonoran desert tortoise habitat. Under this alternative, there would no impact on Category II Sonoran desert tortoise habitat. Keeping this habitat safe could be viewed by some residents as a positive outcome.

Health and Safety Concerns - The health and safety concerns under Alternate 3 are the same as those identified under the Proposed Action. The nearest existing residence to the transmission line under Alternative 3 would be over a mile away, and the exposure to EMF at the edge of the ROW would be well below the ICNIRP public limits.

## State Trust Land Route Variation Sub-alternative

The State Trust lands Route Variation Sub-alternative differs from the Proposed Action only along a four mile route along West Cloud Road and North 211<sup>th</sup> Avenue east of Circle City.

### *Market Values*

Economic Impacts of Construction Spending - The construction costs associated with the Sub-alternative are estimated to be \$104.35 million; approximately \$350,000 more than the Proposed Action due to the addition of two turning structures. The ROW acquisition cost of the Sub-alternative as well as the construction duration and schedule would be the same as the Proposed Action. The annual economic impacts on employment, labor income, and economic output in Maricopa County generated by construction spending in the County are shown in **Table 4.10-12**.

Similar to the Proposed Action, the economic impacts generated by construction-related spending are the largest in 2015, when project expenditures total almost \$52.2 million. This level of spending would support almost 784 jobs in Maricopa County, provide \$42.3 million in labor income for Maricopa County workers and generate \$107.7 million in economic output for Maricopa County businesses.

The total economic impacts to the county under the Sub-alternative are higher than the Proposed Action because the level of spending is higher. The economic impacts shown in **Table 4.10-12** would end when the transmission line is complete.

Given the size of the Maricopa County economy, the economic effects of construction would be beneficial, short-term and minor for residents, workers, and businesses located in the county. Although this analysis is a county-wide assessment of impacts, it is reasonable to assume that some of these temporary benefits could flow to communities within the Study Area.

**Table 4.10-12 Economic Impacts of Construction, State Trust Lands Route Variation Sub-alternative: 2013-2016**

(Footnotes at end of table.)

	<b>Employment</b>	<b>Labor Income*</b>	<b>Output*</b>
<i>Total Project Spending: \$5,220,000</i>			
Direct Effects	36.6	\$2,169,534	\$5,441,566
Indirect Effects	14.9	\$886,201	\$2,037,485
Induced Effects	26.8	\$1,179,105	\$3,291,269
<b>Total 2013 Effects</b>	<b>78.3</b>	<b>\$4,234,840</b>	<b>\$10,770,320</b>
	<b>Employment</b>	<b>Labor Income*</b>	<b>Output*</b>
<i>Total Project Spending: \$20,870,000</i>			
Direct Effects	146.4	\$8,678,136	\$21,766,265
Indirect Effects	59.8	\$3,544,804	\$8,149,939
Induced Effects	107.2	\$4,716,421	\$13,165,078
<b>Total 2014 Effects</b>	<b>313.4</b>	<b>\$16,939,360</b>	<b>\$43,081,282</b>

**Table 4.10-12 Economic Impacts of Construction, State Trust Lands Route Variation  
Sub-alternative: 2013-2016 (Continued)**

(Footnotes at end of table.)

	<b>Employment</b>	<b>Labor Income*</b>	<b>Output*</b>
<i>Total Project Spending: \$52,180,000</i>			
Direct Effects	365.9	\$21,695,340	\$54,415,663
Indirect Effects	149.4	\$8,862,010	\$20,374,847
Induced Effects	268.1	\$11,791,052	\$32,912,695
<b>Total 2015 Effects</b>	<b>783.5</b>	<b>\$42,348,401</b>	<b>\$107,703,205</b>
	<b>Employment</b>	<b>Labor Income*</b>	<b>Output*</b>
<i>Total Project Spending: \$26,090,000</i>			
Direct Effects	183.0	\$10,847,670	\$27,207,832
Indirect Effects	74.7	\$4,431,005	\$10,187,423
Induced Effects	134.1	\$5,895,526	\$16,456,347
<b>Total 2016 Effects</b>	<b>391.7</b>	<b>\$21,174,200</b>	<b>\$53,851,602</b>

\* Dollar estimates based upon 2011 values.

Economic Effects of Operations, Maintenance and Decommissioning - The operation and maintenance of the transmission line under the Sub-alternative would be the same as the Proposed Action. Therefore, the economic effects would be the same as those identified in the Proposed Action.

Effects of Developed Property Values and Undeveloped Land Values - The Sub-alternative is located along an area comprised entirely of State Trust land sections that are leased for grazing activities.

Under the Sub-alternative, there are four residences south of Cloud Road that would be within 200 feet of the transmission line. The value effects on these properties could range from -2.8 to -29 percent as discussed in **Section 4.10.1.2**. In addition, there are 20 to 30 residences that would be more than 200 feet from the transmission line, but located on property that may adjoin the ROW, and would have impacts to the property values. For the individual property owner who has a lot of existing equity and is trying to sell that property, the adverse impact could be major.

In addition to the residential properties identified above, approximately 2.1 acres of the BNSF Commercial development would be located within 200 feet of the transmission line but outside the ROW under the Sub-alternative. It is possible that the value of these lands could be negatively impacted by the presence of the transmission line. The potential effects range from 0 to -34.0 percent depending on location, available amenities and current market conditions.

Impacts of the presence of the transmission line on the marketing and sales of the property would be the same as described for the Proposed Action.

Effects on Property Taxes - No private property would be crossed by the State Trust Lands Route Variation Sub-alternative; however, if there is a decrease in the assessed valuation of

property located within 200 feet of the ROW or property that would adjoin the ROW, property tax revenue could decline if the property values of houses located within 200 feet of the transmission also decline. The effects of a decline in assessed property valuation would be adverse, minor and short-term for the current property owners. The reduction in the amount of property taxes collected would be small but measurable; however, given the total amount of property tax revenue collected by the County, the adverse impact for the taxing entities and the recipients of tax revenue would be negligible.

Effects on State Trust Land Values and Revenues - A total of 554.6 acres of State Trust land would be required under the Sub-alternative. The value of this land is estimated to be \$16.6 million. Both the Sub-alternative and the Primary Segments of the Proposed Action route cross State Trust lands exclusively. While there would be no change in the overall acreage of disturbance under the Sub-alternative route compared with the Proposed Action, the Sub-alternative route leaves the subject block of State Trust land largely undivided and therefore potentially more valuable. The effect on State Trust land values and revenue under the Sub-alternative could be beneficial, major and long-term for ASLD.

Grazing Revenues - Under the Sub-alternative, one grazing allotment would be affected, resulting in the loss of less than one AUM. The annual loss of grazing revenue for the ASLD would be insignificant. The effects of the Sub-alternative to grazing revenue for ASLD would be negligible, and long-term.

Effects on Utility Rates - Under the Sub-alternative, the rates that APS customers pay for electricity would be increased to recover the cost of investment infrastructure through annual application of the transmission cost adjuster. Under the Sub-alternative, the estimated cost of construction would be more than that for the Primary Segment Common to all Action Alternatives, and would result in a larger increase in customer utility rates than under the Proposed Action.

Effects on Recreation - While the State Trust lands are undeveloped and may be used for recreation at some unknown level, they are not currently managed or authorized for recreation uses; therefore, the Sub-alternative would not result in any impacts to recreation.

#### *Nonmarket Values*

Effects to Recreation Values - Since the Sub-alternative would not result in any impacts to recreation, there would be no effects to recreation values.

Effects to Natural Amenities and Quality of Life - The effects to natural amenities and quality of life under the Sub-alternative are similar to those for the Proposed Action, but of a potentially higher intensity for the estimated 12 private residence owners along Cloud Road and 211<sup>th</sup> Avenue that would be closest to the transmission line. A decline in property values of existing structures located within 200 feet of, or on property adjoining the transmission line could have an adverse effect on the quality of life for these property owners (**See Effects on Developed Property Values and Undeveloped Land Values** above). Impacts to the residents' views are analyzed in **Section 4.14**. These effects to natural amenities and quality of life could be major and long-term for these property owners.

Under the Sub-alternative there would be no anticipated effects to Sonoran desert tortoise habitat; however, some marginally suitable habitat for tortoise exists within the common desert scrub habitats crossed by the Sub-alternative.

Health and Safety Concerns - The health and safety concerns under the Sub-alternative are the same as those identified under the Proposed Action. As described in Section 3.7.2.8, the EMF levels estimated to occur at the edge of the ROW would be well below the ICNIRP public limits. While the residences along Cloud Road and 211<sup>th</sup> Avenue would be in relatively close proximity to the transmission line, their exposure to EMF levels would be below that occurring at the edge of the ROW, and thus well below the ICNIRP public limits.

### **Primary Segment Common to All Action Alternatives**

Impacts to all aspects of socioeconomics would be the same under the Primary Segment as the Proposed Action.

#### **4.10.2.3 Environmental Justice**

##### **Impacts Common to All Action Alternatives**

Environmental justice impacts would be common to all Action Alternatives because the identified EJ community is located southwest of US 60, within and immediately adjacent to the portion of the route that is common to all Action Alternatives (See Section 3.10.8 and Figure 3.10-1). However, it should be noted that pockets of low-income groups could be located in the general area but outside of the EJ community, and impacted by the Project.

##### *Potential Environmental and Adverse Health Impacts*

The EJ concerns for this Project, as expressed during the Economic Strategies Workshop conducted on June 8, 2011 at the BLM National Training Center in Phoenix, include property values, health issues that may be associated with EMFs, visual impacts, and other quality of life issues. A literature review of impacts from similar (transmission line) projects gave conflicting results as to the level of impacts and the distances from transmission lines over which impacts occur (URS 2012g). These included lines through both rural and developed areas. In general, the greatest impacts were to properties within a few hundred feet of the lines or adjoining the ROW, and were reduced with distance from the line. The farthest distance from the lines at which the reviewed studies identified impacts was three miles (URS 2012g).

##### *Environmental Justice and NEPA*

“Goal 1” of the Department of Interior Environmental Justice Strategic Plan (DOI 1995b) is “The Department will involve minority and low-income communities as we make environmental decisions and assure public access to our environmental information.”

In its EJ guidance under NEPA, CEQ (1997) states that agencies have an obligation under NEPA “to ensure effective public participation and access to information,” even to the extent of translating critical documents if necessary to make them accessible to populations with limited English language skills. CEQ also notes that where EJ communities are present, agencies should address significant and adverse impacts on those communities, and identify mitigation measures for those impacts. “Each Federal agency must provide opportunities for

effective community participation in the NEPA process, including identifying potential effects and mitigation measures in consultation with affected communities and improving the accessibility of public meetings, crucial documents, and notices.” (CEQ 1997)

#### *Disproportionate Impact Analysis*

Proximity of the ROW to Private Undeveloped/Unoccupied Property - As previously discussed in Section 3.10.8, one EJ community was identified at the census tract block group scale within the Study Area. To determine whether disproportionate impacts would occur within the EJ community, the areas where the ROW would cross or adjoin private property were measured and the impacts were compared between the areas within versus outside the EJ community. Table 4.10-13 provides this comparison.

According to EPA’s Guidance, “it is important to understand where such communities are located and how the lives and livelihoods of the members of these communities may be impacted by the Project.” This is because “minority and low-income populations are likely to be dependent upon their surrounding environment (i.e., subsistence living), more susceptible to pollution and environmental degradation (e.g., reduced access to health care), and are often less mobile or transient than other populations.” (Totten et al. 1998)

The EJ issues of concern from the Project involve aesthetic and economic impacts that would affect the EJ community within the Study Area. Approximately 8.6 percent of the overall Project would cross through the EJ community. Within the EJ community, nine percent of the route would occupy private property (no portion of the route within the EJ community would adjoin and not occupy private property). This represents less than one percent of the total ROW. Approximately 3.6 acres of private property within the EJ community would be within 200 feet of the transmission line and outside the ROW, and could see reductions in property value ranging from zero to 36 percent.

Under the Proposed Action, 31 percent of the portion of the route outside the EJ community would adjoin or occupy private property. Approximately 52 acres outside the EJ community would be within 200 feet of the transmission line and outside the ROW, and could see reductions in property values ranging from zero to 36 percent. This represents approximately 28 percent of the total ROW. Because the Alternative 2 and 3 routes are longer and cross or adjoin more private property, the proportion would be higher under those alternatives. Over three times more private property in the portion of the route outside the EJ community would be crossed or would adjoin the ROW as that within the EJ community. As a proportion of the length of the ROW, the Proposed Action and Action Alternatives do not appear to have a disproportionate impact on the EJ community.

Proximity of the ROW to Private Developed/Occupied Property – While much of the private lands within the Study Area are in various stages of planning for residential and other development, there are very few existing residences in proximity to the transmission line under the Proposed Action or Alternatives 2 and 3.

**Table 4.10-13 Comparison of Mileage of ROW Crossing or Adjoining Private Property Within and Outside the Environmental Justice Community**

(Footnotes at end of table.)

	<b><u>PROPOSED ACTION/ PREFERRED ALTERNATIVE</u></b>	<b><u>ALT 1</u></b>	<b><u>ALT 2</u></b>	<b><u>ALT 3</u></b>	<b><u>SUB- ALTERNATIVE</u></b>
<b>Total ROW</b>					
<u>Total Route Length (miles)</u>	<u>38.2</u>	<u>38.2</u>	<u>37.4</u>	<u>38.4</u>	<u>4.0</u>
<b>Portion of the ROW Within EJ Community</b>					
<u>Route Portion Length (miles)</u>	<u>3.3</u>	<u>3.3</u>	<u>3.3</u>	<u>3.3</u>	<u>0</u>
<u>Percentage of Total Route that would be within the EJ Community</u>	<u>8.6%</u>	<u>8.6%</u>	<u>8.6%</u>	<u>8.6%</u>	<u>0%</u>
<u>Length of ROW that would Occupy Private Property within the EJ Community (miles)**</u>	<u>0.3</u>	<u>0.3</u>	<u>0.3</u>	<u>0.3</u>	<u>0</u>
<u>Percentage of the ROW that would Occupy Private Property in the EJ Community</u>	<u>9% of the portion of the route through the EJ community Less than 1% of the total ROW</u>	<u>9%</u>	<u>9%</u>	<u>9%</u>	<u>0%</u>
<b>Portion of the ROW Outside the EJ Community</b>					
<u>Route Portion Length (miles)</u>	<u>34.9</u>	<u>34.9</u>	<u>34.1</u>	<u>35.1</u>	<u>4.0</u>
<u>Length of Route that would Adjoin* Private Property (miles)</u>	<u>6.5</u>	<u>6.5</u>	<u>6.5</u>	<u>6.5</u>	<u>2.5</u>
<u>Percentage of the Route Portion that would adjoin* Private Property</u>	<u>19%</u>	<u>19%</u>	<u>19%</u>	<u>19%</u>	<u>62.5%</u>

**Table 4.10-13 Comparison of Mileage of ROW Crossing or Adjoining Private Property Within and Outside the Environmental Justice Community (Continued)**

(Footnotes at end of table.)

	<b>PROPOSED ACTION/ PREFERRED ALTERNATIV</b>	<b>ALT 1</b>	<b>ALT 2</b>	<b>ALT 3</b>	<b>SUB- ALTERNATIVE</b>
<u>Route Portion that would occupy private property (miles)</u>	<u>4.3</u>	<u>4.3</u>	<u>7.7</u>	<u>10.3</u>	<u>0</u>
<u>Percentage of the Route Portion that would occupy private property</u>	<u>12%</u>	<u>12%</u>	<u>23%</u>	<u>29%</u>	<u>0</u>
<u>Route Portion that would adjoin* or occupy private property (miles)</u>	<u>10.8</u>	<u>10.8</u>	<u>14.2</u>	<u>16.8</u>	<u>2.5</u>
<u>Percentage of the Route Portion that would adjoin or occupy private property</u>	<u>31% of the route portion 28% of the total ROW</u>	<u>31% of the route portion 28% of the total ROW</u>	<u>42% of the route portion 38% of the total ROW</u>	<u>48% of the route portion 44% of the total ROW</u>	<u>62.5%</u>

\*For purposes of this analysis the term “adjoin” is defined to include private properties that directly adjoin the ROW or are only separated from the ROW by a road but not other properties (i.e., Cloud Road, in the case of the Sub-alternative. Properties south of Cloud Road are considered to adjoin the ROW because there are no other properties between the ROW and the properties south of Cloud Road; the only separation is Cloud Road itself).

\*\*There are no portions of the ROW in the EJ Community that would adjoin and not cross private property.

The following describes the proximity of the nearest existing residences and communities to the proposed transmission line.

EJ Community:

- Examination of aerial photography indicates possibly two residences are in the vicinity of the intersection of Lone Mountain Road and 235<sup>th</sup> Avenue, which is the portion of the route common to all Action Alternatives. The nearest existing residence would be approximately 640 feet from the proposed centerline, and the property containing the residence may adjoin the ROW, and the property value may be affected.
- The nearest neighborhood/residences of Circle City would be approximately 0.50-mile west of the centerline, which is the portion of the route common to all Action Alternatives. Under the Sub-alternative, the intersection of the Sub-alternative route along Cloud Road with the portion of the route common to all Action Alternatives along 235<sup>th</sup> Avenue would be approximately 0.50-mile east of Circle City.

Portion of the Route Outside the EJ Community:

- Quintero: Under the Proposed Action, the nearest existing residences would be approximately 0.70-mile from the centerline.
- Thunder Ridge Airpark: Under the Proposed Action, the nearest existing residence would be approximately 1,000 feet from the centerline.
- Vistancia: Under Alternative 3, the nearest existing residence would be approximately 1.5 miles south of the transmission line.

The proximity of existing structures/residences to the proposed transmission line are about the same for existing residences within the EJ Community as existing residences outside the EJ Community under the various Action Alternatives; however, it is likely that a greater number of existing residences in the Circle City area would be in relatively close proximity to the transmission line than numbers of residences outside the EJ Community.

Conclusion - The above analysis of proximity of the ROW to private undeveloped/unoccupied property, and proximity of the ROW private developed/occupied property suggests that overall, potential adverse impacts would not be disproportionately high to the EJ community as a result of the Proposed Action or any of the Action Alternatives.

#### **4.10.2.4 No Action Alternative**

Under the No Action Alternative the BLM would not issue a ROW, the Bradshaw-Harquahala RMP would not be amended to establish a single- or multiuse utility corridor, and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives.

The No Action Alternative would result in no socioeconomic or EJ impacts from construction activities and post-construction operational survey and maintenance activities that would have occurred in conjunction with the Proposed Action or Action Alternatives.

However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed public lands. Under this situation, impacts to socioeconomics and EJ could be similar to those described for the Proposed Action and Action Alternatives. Should the route be longer or shorter than the Proposed Action or Action Alternative (resulting in different amounts of construction required), beneficial and adverse impacts may be increased or decreased.

Given APS' commitment to construction of such a proposed transmission line, under the No Action alternative, APS would need to re-engage with the ACC and complete a process for the ACC to issue a new CEC. Should BLM-managed public lands be involved, for example in the vicinity of the Sun Valley Substation location, additional NEPA analysis would also be required for the federal action. The processes to obtain a new CEC from the ACC and any additional NEPA analysis would increase the overall Project cost and delay Project implementation. Delay of implementation could result in the following indirect effects:

- Increased reliability of electrical infrastructure that would be provided by the new 500kV transmission line would be delayed.
- Delay in construction of the 500kV transmission line would delay the capacity to facilitate delivery of electricity from projected renewable energy resources to the Phoenix area, which could in turn delay in development of additional renewable energy resources.

Construction of the 230kV transmission line could be delayed, in which case the development of new residential, commercial, and recreational uses in the Town of Buckeye, City of Surprise, City of Peoria, and unincorporated Maricopa County could be delayed.

#### **4.10.3 Mitigation and Residual Effects**

There is no mitigation proposed for socioeconomic resources, thus no residual effects are anticipated.

Several mitigations are proposed to address EJ concerns and eliminate potential residual effects. They include:

- At least one public meeting on the Draft EIS was held at a time and location easily accessible to the identified EJ community, and this meeting was well publicized using media that are prominent in the EJ community.
- The transmission line route through the EJ community would use public (state or federal) land to the extent possible to minimize direct impacts to the community.

#### **4.10.4 Unavoidable Adverse Impacts**

The potential loss in property values for individuals living within 200 feet of the transmission line would be an unavoidable adverse impact.

## 4.11 SOILS

### 4.11.1 Indicators and Methods

Indicators used to assess potential impacts to soil resources include the following:

- Acres of soil disturbance and acres to be reclaimed
- Suitability of growth medium for reclamation

### 4.11.2 Direct and Indirect Effects by Alternative

#### 4.11.2.1 Impacts Common to All Action Alternatives

##### Construction

The number (22) and type of soil units that would be impacted by the Proposed Action and all Action Alternatives between the Sun Valley Substation and 179th Avenue would be identical. Approximately 62 acres of the proposed ROW in this section would cross soil units identified as being Prime Farmland, if irrigated. High soil shrink/swell potential exists from essentially 235th Avenue east and south along the route to the Sun Valley Substation and immediately west of the Morgan Substation for approximately the first mile of all Action Alternative routes.

Where practical, access within work areas would be via overland travel, with minimal to no grading where feasible in temporary work areas. Topsoil would not be salvaged from temporary work areas unless the areas are to be graded. If grading is required, topsoil would be salvaged for reuse during reclamation. Topsoil would typically be salvaged from areas of permanent disturbance.

After construction activities, all work areas identified as temporary disturbance would be reclaimed and salvaged topsoil would be re-distributed. With the implementation of topsoil salvage and reuse practices, soil conservation measures, BMPs, and other proposed operating procedures, impacts to the temporarily disturbed acres of the soil resource would be site-specific, temporary, and moderate.

##### *Physical Changes to Soil Resources*

Surface disturbance, including the removal of topsoil resources for replacement during reclamation, would result in direct impacts. Physical and chemical changes to the soil would be expected to be long-term and minor, and would occur as a result of topsoil salvage and reclamation operations. Topsoil that is used to reclaim disturbed areas immediately after construction activities would begin to revert to more natural conditions.

Direct physical impacts to soil resources include compaction and crushing of the topsoil by equipment during salvage, stockpiling, construction, and reclamation activities. Physical effects of soil compaction would be short-term, minor to moderate, and include reduced permeability and porosity, damage to microbotic crusts, increased bulk density, decreased available water holding capacity, and increased erosion potential. Soil microorganisms such as bacteria and fungi, important in the decomposition of biological materials and the formation and improvement of soil, would be impacted. Natural processes, such as wind and

water transport of soil particles from surrounding areas would continually inoculate the site with these microorganisms.

### *Soil Productivity*

Soil productivity is defined as the capability of a soil for producing a specific plant under specific management (SCS (Soil Conservation Service 1986). Factors that influence soil productivity include climate, length of growing season, and soil characteristics such as texture, depth, and fertility. Impacts to the soil resource such as erosion and compaction can reduce soil productivity. Productivity of stockpiled topsoil would be directly affected by mixing of the soils during salvage operations. The incorporation of vegetative materials into the salvaged topsoil during stripping would increase the organic matter content of the topsoil material, helping to increase potential productivity. The mixing of soils characteristic of low productivity (i.e. high salt content, clayey texture, or high coarse fragment content) with soils characteristic of higher productivity (i.e. low salt content, loamy texture, or low coarse fragment content) may serve to dilute negative soil characteristics and potentially increase the production potential of the growth medium.

Soil compaction can contribute to soil erosion and reduced soil productivity. Generally, soils in the Study Area characteristically have a high percentage of coarse fragments, which would provide moderate support for heavy equipment by reducing the amount of compression on the underlying soils. Productivity loss due to compaction influences would be negligible to minor.

The total volume of growth medium available for reclamation activities would be salvaged from all disturbance areas, including permanently disturbed areas that would not be reclaimed, and would be expected to provide suitable depth to achieve adequate and uniform coverage for seedbed preparation and reclamation. The quality of these mixed salvage soils is likely to be similar to or slightly better than the characteristics of the individual soils prior to disturbance.

### *Soil Loss/Erosion*

Soil erosion potential is determined based on physical soil characteristics, k-factor rating, and slope. Areas located on steep slopes are inherently susceptible to erosion. The majority of reclaimed areas for all Action Alternatives would incorporate a generally flat to gently sloped surface during regrading and reclamation activities. Potential for erosion would be increased on disturbed areas after soil salvage operations due to removal of the vegetative cover and the loss of surface soil structure. Erosion of growth medium after redistribution on re-graded sites would also have a greater potential until the soil is stabilized by successful revegetation. Soil characteristics identified in **Section 3.11** suggest that disturbed areas would experience low to moderate erosion potential either by wind or water. The wind erosion hazard is expected to be low to moderate due to the high percentage of coarse fragments throughout the soil profiles of many soils in the Study Area (SCS 1986). Windblown dust would result from the disturbance of fine-textured soils during construction and reclamation activities through the completion of the Project.

The majority of the impacts to soil resources would be temporary, although the actual footprints of the structures and new access roads would result in permanent impacts to the soil resource, for those disturbances left unreclaimed. Cutting of trees and removal of

vegetation may occur; however, where practicable, downed vegetation and undisturbed low vegetation would be left in place within the disturbance areas to serve as soil protection and erosion control. Vegetation would only be cleared to the extent necessary, minimizing impacts to soil resources.

### **Operations, Maintenance, and Decommissioning**

Long-term operations and maintenance of the transmission line facilities may require access to the route via existing roads, and may result in temporary disturbance; however, this effect would be minor to negligible. The addition of the 230kV line at some point in the future would have negligible impacts, as established access roads and other permanent impacts would be used, similar if and when decommissioning activities occurred.

#### **4.11.2.2 Proposed Action**

##### **Construction**

The Proposed Action would result in approximately 230 acres of temporary disturbance and 108 acres of permanent disturbance. A total of 29 different soil map units shown in **Figure 3.11-1** would be crossed by the Proposed Action route. Of the 29 different soil units, 10 of them make up approximately 64 percent of the route, each of the 10 making up at least 5 percent. Of these soil units, they all have a low to moderate rating of erosion potential and a poor reclamation suitability rating.

##### **Operations, Maintenance, and Decommissioning**

Impacts to soil resources, for operations, maintenance, and decommissioning activities would be as described in **Section 4.11.2.1**.

#### **4.11.2.3 Alternative 1: Proposed Action with Additional Corridor**

##### **Construction**

Construction activities and impacts as described above in **Sections 4.11.2.1** and **4.11.2.2** would be the same for Alternative 1. Additionally, acres of temporary and permanent disturbance associated with Alternative 1 would also be the same as the Proposed Action.

However, under this alternative, there would be a change in management of lands managed by the BLM, both north and south of SR 74. Co-location of future utilities within the proposed additional corridor could impact additional soils resources located on these lands. However, any future projects would be subject to NEPA and other environmental review, therefore avoidance or mitigation would minimize additional impacts to soil resources.

##### **Operations, Maintenance, and Decommissioning**

Impacts to soil resources, for operations, maintenance, and decommissioning activities would be as described in **Section 4.11.2.1**.

#### **4.11.2.4 Alternative 2: ROW South of SR 74**

##### **Construction**

Construction activities and associated impacts as described above in **Section 4.11.2.1** would be similar to the Proposed Action under this alternative, but could be expanded to include many more acres due to the designation of a multiuse utility corridor south of SR 74 (potential future development within an established multiuse utility corridor is addressed in **Section 4.19**). Alternative 2 would result in approximately 224 acres of temporary disturbance and 104 acres of permanent disturbance. A total of 30 different soil map units shown in **Figure 3.11-1** would be crossed by the Alternative 2 route. Of the 30 different soil units, 11 of them make up approximately 68 percent of the route, each of the 11 making up at least 5 percent. Of these soil units, they all have a low to moderate rating of erosion potential and 10 of the 11 have a poor reclamation suitability rating, with one having a fair rating.

In addition, under this alternative, there would be a change in management of lands managed by the BLM, by establishing a multiuse utility corridor on lands south of SR 74. Co-location of future utilities within the proposed additional corridor would impact additional soil resources located on these lands. However, any future projects would be subject to NEPA and other environmental review, therefore avoidance or mitigation would minimize additional impacts to soil resources.

##### **Operations, Maintenance, and Decommissioning**

Impacts to soil resources, for operations, maintenance, and decommissioning activities would be as described in **Section 4.11.2.1**.

#### **4.11.2.5 Alternative 3: Carefree Highway Route**

##### **Construction**

Construction activities and associated impacts as described above in **Section 4.11.2.1** would be similar to the Proposed Action under this alternative. Alternative 3 would result in approximately 229 acres of temporary disturbance and 108 acres of permanent disturbance. A total of 30 different soil map units shown in **Figure 3.11-1** would be crossed by the Alternative 3 route. Of the 30 different soil units, 7 of them make up approximately 54 percent of the route, each of the 7 making up at least 5 percent, with one of them (soil unit 109 - Schenco-Rock outcrop complex) making up over 10 percent. Of these soil units, they all have a low to moderate rating of erosion potential and a poor reclamation suitability rating.

##### **Operations, Maintenance, and Decommissioning**

Impacts to soil resources, for operations, maintenance, and decommissioning activities would be as described in **Section 4.11.2.1**.

#### **4.11.2.6 State Trust Land Route Variation Sub-alternative**

##### **Sub-Alternative**

###### *Construction*

The Sub-alternative route would cross a total of five different soil map units, with two of them comprising 77 percent of the ROW. Of these soil units, they all have a low to moderate rating of erosion potential and a poor to fair reclamation suitability rating. A portion of the ROW would cross one soil unit identified as being Prime Farmland, if irrigated.

###### *Operations, Maintenance, and Decommissioning*

Impacts to soil resources, for operations, maintenance, and decommissioning activities would be as described in **Section 4.11.2.1**.

##### **Primary Segment Common to All Action Alternatives**

###### *Construction*

The Primary Segment would cross a total of six different soil map units, with three of them comprising 78 percent of the ROW, each of the three making up at least 20 percent. Of these soil units, they all have a low to moderate rating of erosion potential and a poor reclamation suitability rating. A portion of the ROW in this Primary Segment would cross one soil unit identified as being Prime Farmland, if irrigated.

###### *Operations, Maintenance, and Decommissioning*

Impacts to soil resources, for operations, maintenance, and decommissioning activities would be as described in **Section 4.11.2.1**.

#### **4.11.2.7 No Action Alternative**

Under the No Action Alternative the BLM would not issue a ROW, the Bradshaw-Harquahala RMP would not be amended to establish a single- or multiuse utility corridor, and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives. There would be no Project impacts to soil resources as described for the Proposed Action and Action Alternatives. However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed public lands. Under this situation, impacts to soil resources located on lands that are crossed or in the vicinity of the Project could occur. The degree of potential for impacts to these resources and the magnitude of those impacts would depend on the route selected. Should the route be longer or shorter than the Proposed Action or Action Alternatives (resulting in different amounts of ground disturbance), adverse impacts may be increased or decreased.

#### **4.11.3 Mitigation and Residual Effects**

##### **Soil Stabilization**

In order to minimize the potential for erosion, temporarily disturbed surfaces would be restored at or as near to the original contour of the land surface as possible. Water diversions would be constructed along the ROW, as needed, to control surface water and minimize soil

erosion. Temporary construction access roads, not required for future maintenance access, would be restored after construction of the Project is complete. Areas of soil compaction, including temporary access roads, would be scarified as needed. Seeding would be used where appropriate to reestablish soil stability.

### **Revegetation**

Appropriate site-specific seed mixes for revegetation would be used where conditions vary. Salvaged native plants would be used for revegetation, if appropriate, along with seeding using BLM-recommended and approved seed mixes. Preferably, seed would be planted during months identified as most preferable for revegetation success following construction. Seed would be planted as directed by appropriate land managing agency.

### **Mitigation Practices**

Mitigation practices that would be employed as a part of this Project to ensure that the soil resources are protected and/or impacts minimized include the following:

1. Vegetation would be cleared and the construction ROW would be graded only to the extent necessary. Vegetation within the ROW would be trampled or cut at or near the ground level. Except for the area to be excavated, the vegetative root system and subsurface soils would be left intact to the greatest extent practicable. This would help stabilize the soils within the ROW during construction. ROW boundaries would be clearly staked or flagged and no disturbance would be allowed beyond the limits.
2. Design access roads to fit the terrain by avoiding unstable slopes and highly erodible conditions, to the extent practicable, to protect soils and prevent excessive erosion and sedimentation. These protective measures include, but are not limited to, mulch, tracking, matting, or slope length shortening. When soils are wet, construction, operation, and maintenance activities would be restricted so as to properly support construction or maintenance equipment (i.e., when heavy equipment creates ruts in excess of 4 inches deep over a distance of 100 feet or more in wet or saturated soils). Where the soil is deemed too wet, one or more of the following measures would apply:
  - Re-route all construction or maintenance activities around the wet areas so long as the route does not cross into sensitive resource areas.
  - If wet areas cannot be avoided, implement BMPs for use in these areas during construction and improvement of access roads, and their subsequent reclamation. This includes use of wide-track or balloon-tire vehicles and equipment, or other weight dispersing systems approved by the appropriate resource agencies. It also may include use of geotextile cushions, pre-fabricated equipment pads, and other materials to minimize damage to the substrate where determined necessary by resource specialists.

Following the implementation of the mitigation measures, residual effects would include permanent changes to soils; however, the amount of affected acreage would be very small.

#### 4.11.4 Unavoidable Adverse Impacts

Native soil conditions on disturbed areas would be lost due to the breakdown of soil structure, adverse effects to microorganisms, and discontinuation of natural soil development.

### 4.12 TRANSPORTATION AND TRAFFIC

#### 4.12.1 Indicators and Methods

The following indicators would demonstrate the effect of the Project on transportation and traffic within the Study Area:

- Changes in traffic volume
- Miles of access road that would be constructed or improved
- Estimated percentage of access road that would be temporary versus permanent
- Project elements that would occur in standard arrival/departure flight paths

**Table 4.12-1** describes the range of effects in terms of quality, magnitude, and duration resulting from the Project, specific to transportation and traffic.

The analysis was performed by comparing existing traffic levels with amounts of construction-related traffic estimated by APS. The linear distances of proposed access road construction or improvement were also provided by APS and were analyzed against the existing road system to identify intersection improvement locations.

**Table 4.12-1 Description of Transportation and Traffic Effects Levels**

ATTRIBUTE OF EFFECT		DESCRIPTION RELATIVE TO TRANSPORTATION AND TRAFFIC RESOURCES
Quality	Beneficial	An improvement of current transportation or traffic conditions.
	Adverse	A degradation of current transportation or traffic conditions.
Magnitude	Negligible	A change in current transportation or traffic conditions that is too small to be physically measured using normal methods or perceptible to a human observer. There is no noticeable effect on the baseline setting. There are no required changes in management or utilization of the transportation system.
	Minor	A change in current transportation or traffic conditions that is just measurable with normal methods or barely perceptible to a human observer. The change may affect individuals or a small (<25 <u>percent</u> ) portion of transportation system users but does not result in an effect to the overall user population, or the value or productivity of transportation or traffic. There are no required changes in management or utilization.

**Table 4.12-1 Description of Transportation and Traffic Effects Levels (Continued)**

ATTRIBUTE OF EFFECT		DESCRIPTION RELATIVE TO TRANSPORTATION AND TRAFFIC RESOURCES
Magnitude	Moderate	An easily measurable change in current transportation or traffic conditions that is readily noticeable to a human observer. The change affects 25 to 75 <u>percent</u> of individuals or similar portion of users of a transportation system which may lead to an effect to the overall user population, or the value or productivity of transportation or traffic. There are some required changes in management or utilization.
	Major	A large measurable change in current transportation or traffic conditions that is easily recognized by all human observers. The change affects more than 75 <u>percent</u> of individuals of a user population which leads to significant modification of the value or productivity transportation or traffic. There are profound or complete changes in management or utilization. An effect that is not in compliance with applicable regulatory standards or thresholds.
Duration	Short-term	10 years or less.
	Long-term	More than 10 years.

## 4.12.2 Direct and Indirect Effects by Alternative

### 4.12.2.1 Impacts Common to All Action Alternatives

#### Construction

The majority of effects to transportation and traffic would occur during the estimated 22-month construction phase of the Project. Construction would be performed in the following sequence of activities: pre-construction engineering surveys (months prior to construction); surveying and staking of the centerline; construction mobilization, construction of access roads; locating and establishing material and construction yards; installing foundations and anchors; assembling and erecting the structures; installing ground rods and counterpoise; installing conductors, shield wires, and fiber optic cables; commissioning the line; and cleanup and site reclamation.

Under all Action Alternatives, various combinations of local arterial and collector roads would be required for continuous access as identified on **Figure 4.9-1**. Access roads would be necessary to provide access to the ROW for construction equipment, haul trucks, and to operation and maintenance workers (**Figure 4.9-1**). The majority of these access routes would utilize existing public streets, highways, private roads, and adjacent gravel/unsurfaced roads. If an existing road would not meet the service requirements for construction, it would be upgraded as necessary. A portion of the access routes shown on **Figure 4.9-1** would require the development of a new road. A permanent, 14-foot wide access road would be

constructed along the entire length of the ROW. All access roads would either be improved (as necessary) or developed to a width of 14 feet on straight sections and 16- to 20-foot width at curves to safely accommodate the construction traffic; however, for the purposes of this EIS, the disturbance analysis assumes a 14-foot width for access roads.

In locations where a proposed access road intersects with either SR 74 or US 60, turnouts or acceleration/deceleration lanes would be constructed as required by the ADOT. These locations, dependent upon the Action Alternative, are shown on **Figure 4.9-1**. In locations where there is a transition from a paved to an unpaved surface, track-outs would be installed. A track-out is a steel or gravel pad that captures sediment from construction equipment, so it doesn't affect the paved roadway. These track-outs would be located at proposed access road points along SR 74, 211<sup>th</sup> Avenue, US 60, Patton Road, and at one access point leading into Alternative 3 (Carefree Highway Route).

In general, all construction access roads developed/improved outside the transmission line ROW would be reclaimed at least back to their original, pre-disturbance condition. Therefore, these access roads would be considered temporary, especially because some of the proposed access roads outside the ROW are already trails and/or two-track unsurfaced roads. All construction access roads developed/improved inside the transmission line ROW would not be reclaimed and therefore would be considered permanent, since they would be used for future maintenance activities and when the 230kV line is installed. However, unpaved access roads within the ROW would be allowed to naturally revegetate and Arizona crossings (also known as fords) would be installed at drainages/wash crossings. Applicable ADOT BMPs would be implemented to control erosion and provide stabilization.

The location of all proposed access roads would be further refined and specified once the Project is approved, the final route selected, and detailed engineering is actually prepared. This detailed information would be thoroughly described in the Implementation POD that would be finalized once the EIS is finalized and the ROD is issued.

Traffic may become heavier or impeded due to the presence of additional construction-related traffic on the access routes. This effect on traffic would not occur in any one location for the entire 22-month construction phase, but would move with the progress of construction. Most of the increase in traffic volume would be observable on roads between staging areas and the ROW. This effect would be short-term (22 months).

### **Operations, Maintenance, and Decommissioning**

For any of the Action Alternatives, routine operations and maintenance activities would typically be conducted annually, or as required, by using fixed-wing aircraft, helicopters, ground vehicles (4x4 trucks or 4x4 All-Terrain Vehicles (ATVs)), or on foot in accordance with APS' established policies and procedures for transmission line inspection and maintenance. Existing access roads would likely be adequate for the majority of these activities. The majority of these impacts would range from negligible to minor.

However, the transmission line would be constructed approximately 0.33 mile east of a private airstrip (Thunder Ridge Airpark). This is a private facility that serves nine residential homes. Because it is a private facility, the FAA does not have jurisdiction or regulatory authority over this facility. The facility hosts annual fly-in activities that regularly average 20 to 25 planes. The transmission line, once constructed, would run roughly parallel to the

single landing strip and would represent an air hazard if an aircraft approached from the east or overflow the airstrip on a westerly approach. This represents a major, long-term adverse effect to this private air facility. See **Section 4.12.3** for mitigation addressing this effect.

#### 4.12.2.2 Proposed Action

##### Construction

There would be a total of approximately 9.5 miles of temporary access roads constructed/improved outside of the ROW. There would be 38 miles of permanent, access road constructed approximately parallel and/or along the centerline of the ROW. Eight access road intersections with SR 74/US 60 would require upgrades to safely accommodate construction vehicles entering these roadways from access roads and eight track-outs would be constructed to reduce the amount of sediment that would be deposited on SR 74 and US 60 during construction.

Construction-related traffic would vary according to the phase of the construction, and would move with the progress of the construction. The Proposed Action is expected to generate 21,712 vehicle trips within the Study Area during the 22-month construction period. These trips would all occur on SR 74 (10,856 total trips) and US 60 (10,856 total trips). The greatest increase in traffic would occur during the conducting phase of construction; 32 construction-related vehicle trips per day would occur on SR 74 and US 60 for 80 days. This represents less than one percent increase in daily traffic on these two roadways that while measurable is unlikely to be noticed by other motorists. Therefore, the increase in traffic due to construction represents a minor, short-term adverse effect related to the Proposed Action. **Table 4.12-2** provides a summary of the estimated number of daily trips on SR 74 and US 60 during each phase of construction.

**Table 4.12-2 Effect of Construction Traffic on Existing Annual Average Daily Traffic**

(Footnotes at end of table.)

CONSTRUCTION PHASE (# OF ESTIMATED WORK DAYS)	ROADWAY	2009 AADT (MINIMUM - MAXIMUM # VEHICLES)	CONSTRUCTION VEHICLE TRIPS PER DAY <sup>1</sup>	PERCENT INCREASE OF MINIMUM AADT	PERCENT INCREASE OF MAXIMUM AADT
Access Road Construction/Pad Preparation (80 days)	SR 74	5,500 - 5,700	4	<1	<1
	US 60	9,300 - 22,500	4	<1	<1
Survey (40 days)	SR 74	5,500 - 5,700	4	<1	<1
	US 60	9,300 - 22,500	4	<1	<1
Hole Digging/ Foundation Installation (200 days)	SR 74	5,500 - 5,700	20	<1	<1
	US 60	9,300 - 22,500	20	<1	<1
Structure Haul and Erection (144 days)	SR 74	5,500 - 5,700	24	<1	<1
	US 60	9,300 - 22,500	24	<1	<1

**Table 4.12-2 Effect of Construction Traffic on Existing Annual Average Daily Traffic (Continued)**

(Footnotes at end of table.)

CONSTRUCTION PHASE (# OF ESTIMATED WORK DAYS)	ROADWAY	2009 AADT (MINIMUM - MAXIMUM # VEHICLES)	CONSTRUCTION VEHICLE TRIPS PER DAY <sup>1</sup>	PERCENT INCREASE OF MINIMUM AADT	PERCENT INCREASE OF MAXIMUM AADT
Conductoring (80 days)	SR 74	5,500 - 5,700	32	<1	<1
	US 60	9,300 - 22,500	32	<1	<1
Cleanup (40 days)	SR 74	5,500 - 5,700	6	<1	<1
	US 60	9,300 - 22,500	6	<1	<1
Reclamation (40 days)	SR 74	5,500 - 5,700	3	<1	<1
	US 60	9,300 - 22,500	3	<1	<1

<sup>1</sup> Does not include mobilization/demobilization of vehicles that typically stay on site.

Source: T. Strow, MAG, Personal Communication July 25, 2012

Aside from construction-related traffic increases, the Proposed Action would directly affect SR 74 and US 60 by construction vehicles turning onto and off these roadways. Construction vehicles would be entering these roadways at eight different locations, but the intersections would be improved with acceleration/deceleration lanes to meet safety requirements. For some phases, such as hole digging/foundation installation, structure haul and erection and conductoring, there could be 20 to 32 such events each day on SR 74 and US 60. There would be a noticeable effect to traffic and motorists at these locations during these construction phases that would be moderate, short-term (approximately 424 days), and adverse.

Construction impacts associated with air or rail transportation and traffic issues are not anticipated. Under the Proposed Action, the transmission line would be constructed adjacent to, but not within, the LAFB Auxiliary Field #1 APZ. The ACC-certificated route does encompass the northwestern-most end of this zone. Construction activities would not block the railroad tracks, and guard structures would be erected over railroad tracks during wire installation. The construction access onto US 60 would occur south of the roadway and would not involve crossing the BNSF railroad tracks.

### **Operations, Maintenance, and Decommissioning**

Impacts associated with operations, maintenance, and decommissioning would be similar to those already described above in **Section 4.12.2.1**.

The ADOT indicated to BLM that “the Department does not see any conflicts with the placement of this line adjacent to our future ROW easement needs as identified in the ADOT SR 74 Feasibility Report, Right-of- Way Preservation” (R. Samour, personal communication, December 2010).

### **4.12.2.3 Alternative 1: Proposed Action with Additional Corridor**

#### **Construction**

The effects to transportation and traffic under Alternative 1 would be the same as those under the Proposed Action.

#### **Operations, Maintenance, and Decommissioning**

The effects to transportation and traffic under Alternative 1 would be the same as those under the Proposed Action.

### **4.12.2.4 Alternative 2: ROW South of SR 74**

#### **Construction**

There would be a total of 8.5 miles of temporary access roads constructed/improved outside of the ROW under Alternative 2. This represents a moderate, short-term (22-month) effect to transportation within the Study Area. There would be 37 miles of permanent, unimproved access road constructed along the centerline of the ROW. Nine intersections with SR 74/US 60 would require upgrades and 12 track-outs would be constructed.

With the above differences, the effects to transportation and traffic under Alternative 2 would be similar to those under the Proposed Action.

#### **Operations, Maintenance, and Decommissioning**

The effects to transportation and traffic under Alternative 2 would be the same as those under the Proposed Action.

### **4.12.2.5 Alternative 3: Carefree Highway Route**

#### **Construction**

There would be a total of 9.0 miles of temporary access roads constructed/improved outside of the ROW under Alternative 3. This represents a moderate, short-term (22-month) effect to transportation within the Study Area. There would be 38 miles of permanent, unimproved access road constructed along the centerline of the ROW. Only one intersection with US 60 would require upgrade and potentially up to three track-outs would be constructed.

With the above differences, the effects to transportation and traffic under Alternative 3 would be similar to those under the Proposed Action.

#### **Operations, Maintenance, and Decommissioning**

The effects to transportation and traffic under Alternative 3 would be the same as those under the Proposed Action.

#### **4.12.2.6 State Trust Lands Route Variation Sub-alternative**

##### **Sub-alternative**

###### *Construction*

The effects to transportation and traffic under this Sub-alternative would be the same as those under the Proposed Action and all Action alternatives.

###### *Operations, Maintenance, and Decommissioning*

No additional direct impacts to transportation and traffic would occur during operations, maintenance, and decommissioning.

##### **Primary Segment Common to All Action Alternatives**

###### *Construction*

Under the Primary Segment, impacts to transportation and traffic would be the same as described for the Proposed Action.

###### *Operations, Maintenance, and Decommissioning*

No additional direct impacts to transportation and traffic would occur during operations, maintenance, and decommissioning.

#### **4.12.2.7 No Action Alternative**

Under the No Action Alternative the BLM would not issue a ROW, the Bradshaw-Harquahala RMP would not be amended to establish a single- or multiuse utility corridor, and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives. There would be no Project impacts to transportation and traffic as described for the Proposed Action and Action Alternatives. However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed public lands. Under this situation, impacts to transportation and traffic on lands that are crossed or in the vicinity of the Project could occur. The degree of potential for impacts to these resources and the magnitude of those impacts would depend on the route selected.

#### **4.12.3 Mitigation and Residual Effects**

To mitigate the effect of the proximity of the transmission line to the Thunder Ridge Airpark, the transmission lines and structures adjacent to the single airstrip would be marked on a strictly voluntary basis, as the FAA does not have jurisdiction or regulatory authority over this facility.

Following the implementation of the mitigation measures, the transmission line, spherical markers, and lighting would represent a residual effect from the Project.

#### **4.12.4 Unavoidable Adverse Impacts**

Under the Proposed Action and all Action Alternatives, the transmission line would run within 0.33 mile of the Thunder Ridge Airpark private airstrip and would represent an air hazard if an aircraft approached from the east or overflew the airstrip on a westerly approach.

This represents an unavoidable adverse effect to this private air facility. Implemented mitigation measures would reduce overall impacts.

## 4.13 VEGETATION RESOURCES, INCLUDING NOXIOUS AND INVASIVE WEEDS AND SPECIAL STATUS PLANTS

### 4.13.1 Indicators and Methods

#### 4.13.1.1 Indicators

The following indicators were determined to measure impacts to vegetation resources:

##### Vegetation Communities

- Potential disturbance to each vegetation community

##### Special Status Species

- Suitable habitat disturbance
- Occurrence in the Study Area

##### Invasive and Noxious Plants

- Proximity to known noxious or invasive weed invasions

#### 4.13.1.2 Impact Levels

The following impact magnitude levels were defined for vegetation resources (**Table 4.13-1**).

**Table 4.13-1 Description of Effect Magnitude Criteria with regard to Vegetation Resources**

ATTRIBUTE OF EFFECT		DESCRIPTION
Magnitude (Intensity)	Negligible	Vegetation: The changes to vegetation community composition would not be able to be meaningfully measured or evaluated by a trained observer. Special Status Species: The changes to special status species individuals would not be able to be meaningfully measured or evaluated by a trained observer. Invasive and Noxious Plants: There would be no measurable increase in invasive and noxious plants.

**Table 4.13-1 Description of Effect Magnitude Criteria with regard to Vegetation Resources (Continued)**

ATTRIBUTE OF EFFECT		DESCRIPTION
Magnitude (Intensity) Continued	Minor	<p>Vegetation: The changes to vegetation community composition would be detectable on the scale of the local communities within and immediately adjacent to the ROW. There would be no change to the value or productivity of the local community.</p> <p>Special Status Species: There would be a small, but detectable effect to habitat amount/quality or to individuals of a species that would be noticeable primarily on the scale of individuals in a localized area. There would be no effect on the viability of local populations or habitat capability.</p> <p>Invasive and Noxious Plants: The increase in invasive and noxious plants would be detectable in one or a few localized areas (within or immediately adjacent to the ROW) and would be manageable.</p>
	Moderate	<p>Vegetation: The changes to vegetation community composition would be easily measurable on a local scale and may impact the value or productivity of local vegetation communities.</p> <p>Special Status Species: There would be an effect to habitat amount/quality or to individuals of a species that would be clearly detectable and sufficient to cause effects on a local population scale. Effects may be a reduction in population numbers, density, or habitat capability that may reduce the species' existing distribution in the Project Area.</p> <p>Invasive and Noxious Plants: The increase in invasive and noxious plants would be such that new or existing infestations would spread beyond the ROW and may be more difficult to manage.</p>
	Major	<p>Vegetation: The changes to vegetation community composition would impact the value or productivity of local vegetation communities.</p> <p>Special Status Species: There would be an effect to habitat amount/quality or to individuals or a species that would have a substantial, highly noticeable influence on the local population and may affect the regional population. The effect is likely to reduce local population numbers, density, or habitat capability to the point that the species distribution within the Project Area would be substantially reduced if not eliminated, such that the population would not likely return to a sustainable level.</p> <p>Invasive and Noxious Plants: The increase in invasive and noxious plants would be such that unmanageable infestations would spread beyond the ROW.</p>
Duration	Temporary	Short-lived (i.e., during construction).
	Short-term	10 years or less.
	Long-term	More than 10 years.

## 4.13.2 Direct and Indirect Effects by Alternative

### 4.13.2.1 Impacts Common to All Action Alternatives

#### Construction

##### *Vegetation Communities*

Clearing and grading activities associated with construction would either trample or clear vegetation within all temporary use areas. It is anticipated that clearing would be performed only when necessary, and various precautions would be taken to minimize ground disturbance and impacts to vegetation (see **Section 4.13.3**). However, it is possible that little vegetation would remain in some areas of the ROW.

Desert vegetation is slow to recover following disturbance (USGS 1999; Hessing and Johnson 1982; Wallace et al. 1981). Disturbance causes physical, hydrologic, chemical, and biological changes to the ground that make conditions less favorable for desert plants to establish, as the loss of vegetation usually means a loss of protective soil crusts and soil organisms that promote organic growth (USGS 1999). Even if vegetation is not removed, compaction of soils from overland travel causes increased wind and water erosion and decreased water infiltration into the soil, which limits the amount of water available to seedlings or recovering plants.

Succession can occur in deserts, and generally progresses from short- to long-lived species (Abella 2010). Annual species, which are major components of both young and old desert communities, rebound rapidly after disturbance (Abella 2010). In general, one can expect some kind of perennial cover to re-establish within 100 years. However, at least 100 years is expected for communities of perennial, long-lived plants (e.g., creosote bush) to re-establish, and possibly a minimum of several hundred years for the recovery of severely disturbed areas (USGS 1999). All disturbance to vegetation communities within and adjacent to the ROW would be long-term.

The Proposed Action and all Action Alternatives contain a very similar amount of (estimated) temporary and permanent disturbance. The two main vegetation types within the ROWs, creosote-white bursage desert scrub and Sonoran palo verde mixed cacti desert scrub, are also similarly distributed. Creosote-white bursage desert scrub occurs mainly west of US 60, where the Proposed Action and Action Alternative routes follow the same alignment, and Sonoran palo verde mixed cacti desert scrub occurs mainly east of US 60. The adverse impacts under all Action Alternatives from disturbance of both desert scrub vegetation types would be long-term and minor, because the removal of this vegetation would only be measurable on the scale of local communities immediately adjacent to the ROW.

Riparian habitats (Riparian Mesquite Bosque and Riparian Desert Shrubland) within the ROW would be avoided and would not be disturbed by construction activities.

##### *Special Status Species*

The crushing or removal of special status plant individuals would impact individual plants as well as reduce local population sizes if the species is common. Many SRA native plants were found throughout or in large parts of the Study Area. Pre-construction surveys would locate

special status plant individuals in the construction zone and any that cannot be avoided would be relocated/transplanted in accordance with the Arizona Native Plant Law. Not all relocated/transplanted individuals are expected to establish after re-planting due to conditions described above, and water stress due to the arid environment. Large numbers of individuals would likely be removed permanently. In addition, suitable habitat for these species would be lost within the ROW as the ground is disturbed. Impacts would be moderate and long-term for most SRA species, including saguaro, teddybear cholla, straw-topped cholla, tree cholla, Engelmann's hedgehog cactus, California barrel cactus, ocotillo, and yellow-spine prickly pear. Impacts would be moderate because these species are common in the Study Area (particularly within palo verde scrub habitat east of US 60) and local population distributions may be adversely affected due to the number of individuals removed.

Hohokam agave, a Sensitive species that has shown declines, would be adversely affected at the population scale by a loss of individuals. A biological monitor onsite would ensure that Hohokam agave individuals would be avoided. However, river terraces (suitable habitat) may be disturbed under any Action Alternative. If individuals are present, the loss of suitable habitat in the occupied area would be moderate and long-term.

Bigelow's onion, a SRA species that may occur around the Agua Fria River, would be avoided if possible, or salvaged. Suitable habitat would be disturbed, thus a loss of suitable habitat would occur under all Action Alternatives. These impacts would be long-term and minor, because only habitat in the local area (immediately surrounding the Agua Fria River) would be affected.

#### *Invasive and Noxious Plant Species*

The likelihood of invasive and noxious species introduction differs for each invasive and noxious species. In general, invasive and noxious weeds reproduce by seed and are spread rapidly and effectively by animal vectors, vehicles, wind, water, or physical movement (such as Russian thistle). Several invasive and noxious plant species were observed in the Study Area, within roadways, disturbed areas, and in ditches and drainages. If noxious weeds are already present at a site, disturbing the plants would likely facilitate the physical spread of seeds, and disturbing adjacent ground would open up space for new individuals to invade. Thus, any surface-disturbing activity in the vicinity of invasive or noxious plant species increases the potential for further spread and establishment of those species. Impacts from invasive and noxious plant species under any Action Alternative would be short-term and minor, considering mitigation measures outlined in **Section 4.13.3**.

Several invasive and noxious plants were observed in the Study Area that are responsible for changing fire regimes in the region, including cheatgrass, red brome, and Bermuda grass. As these species spread, fuel loading occurs and results in increased fire incidence within areas that historically have not burned frequently, and that contain native species without fire-resistant characteristics. Saguaro, for example, is readily killed by fire and rarely re-sprouts (Abella 2010). Any surface disturbing activity in the vicinity of these species would run the risk of spreading these species further as well as increasing the associated fire danger. Any substantial spread of these fire-prone invasive species as a result of the Proposed Action or Action Alternatives would be long-term and moderate.

## Operations, Maintenance, and Decommissioning

### *Vegetation Communities*

APS would keep necessary work areas around all structures clear of vegetation and would limit the height of vegetation along the ROW. A buffer of permanent disturbance would be established around all transmission line structures to facilitate inspection and maintenance. All woody vegetation, including shrubs and trees, would be cut down and treated with herbicides underneath each structure and 40 feet out from the foot of each structure. An area approximately 0.2-acre in size surrounding each monopole (other types of structures may require more disturbance) would be permanently disturbed and would not return to a natural condition as long as the structure is in place. Major vegetation species that would be removed include palo verde (*Cercidium* spp. and *Parkinsonian* spp.), mesquite (*Prosopis* spp.), acacia (*Acacia* spp.), desert ironwood (*Olneya tesota*), saguaro cactus, and tamarisk (*Tamarix* spp.). Appendix 2A specifies BMPs for the transplanting of saguaros from within the ROW during the Operations, Maintenance, and Decommissioning phase of the Project. The removal of these species within the ROWs would be long-term and minor.

Vegetation maintenance (i.e., pruning) would be conducted as needed (usually every 5-10 years) to provide adequate electrical clearance. Pruning (following IVM based on ANSI A300 Part 1-2001) involves selectively controlling tall-growing vegetation while preserving low-growing herbaceous and woody plant communities. This is done year-round and may involve mechanized equipment, herbicide application, trucks, OHVs, chainsaws, or heavy equipment. Typically this work requires two to six workers accessing the area and is completed in one to two working days. The desired outcome of IVM is stable communities of low shrubs that do not interfere with overhead transmission lines, pose a fire hazard, or hamper access, and that resist the invasion of tall-growing trees. The border zone within the remainder of the ROW is managed to establish small trees and tall shrubs that do not have the potential to block access, strike the electric facilities, or contribute to fuel loading. Pruning would have negligible impacts on vegetation communities.

Annual inspections outside of vegetation maintenance may be conducted using ground vehicles or on foot, and would have negligible effects to vegetation communities. When access is required for routine maintenance and repairs, the same precautions and procedures used during construction would be used to minimize ground disturbance and vegetation impacts. Routine maintenance activities typically do not include ground disturbance, as they are conducted by relatively small crews using minimum equipment, and over a few hours to a few days time. There would be no new roads or access routes required for vegetation maintenance.

If emergency maintenance is required, all efforts would be made to protect the environment. Emergency vegetation maintenance would be required if vegetation is arcing to the line, has caused a power fault, is burning from contact or arcing with the line, or when all portions of the tree are in contact with the line from falling or growing into the wires. These emergencies are rare considering routine vegetation maintenance. Other vegetation hazards that would require more frequent maintenance (more than once every 5-10 years, on average) include the presence of a live or dead standing tree predisposed to falling on electric facilities, a branch close enough to the power line that it poses a public health hazard, or any live or dead

tree that poses a future threat (within one year) to the electric facilities. Emergency maintenance would have long-term and minor impacts on vegetation communities.

#### *Special Status Species*

Special status species plants discovered through on-site monitoring work would not be affected by operations or maintenance activities. Any special status species present in work areas during construction would be avoided or salvaged, thus any salvaged plants would be re-planted following construction in temporary work areas and would be present during operations and maintenance activities, which would not affect plant establishment success.

Emergency maintenance activities may impact salvaged special status plants because the time-sensitive nature of activities may not allow for avoidance and plants may be trampled. These impacts would be long-term and minor because only plants in the immediate area would be affected.

Saguaros (a SRA; see **Section 3.13.3**) would not be treated with herbicides as part of routine vegetation management; however, saguaros within the permanent disturbance areas or that pose a hazard to the line or block access would be transplanted outside the ROW.

#### *Invasive and Noxious Plant Species*

The spread of invasive and noxious plant species is unlikely during operations and maintenance, as new disturbance would not occur and small crews would be used over short periods (and may not involve overland travel). The likelihood of invasive and noxious plants spreading following decommissioning would be similar to that following construction within temporary work zones. Re-vegetation would involve reseeding disturbed areas with native plants and weed-free seed as certified by the ADA.

### **4.13.2.2 Proposed Action**

Impacts to vegetation communities, special status species, and invasive and noxious plant species for construction plus operations, maintenance, and decommissioning activities would be as described in **Section 4.13.2.1**.

### **4.13.2.3 Alternative 1: Proposed Action with Additional Corridor**

Impacts to vegetation communities, special status species, and invasive and noxious plant species for construction plus operations, maintenance, and decommissioning activities would be as described in **Section 4.13.2.1**. In addition, under this alternative, there would be a change in management of lands managed by the BLM, both north and south of SR 74. Co-location of future utilities within the proposed additional corridor would impact additional vegetation resources located on these lands. However, any future projects would be subject to NEPA and other environmental review, therefore avoidance or mitigation would minimize additional impacts to vegetation resources.

#### **4.13.2.4 Alternative 2: ROW South of SR 74**

Impacts to vegetation communities, special status species, and invasive and noxious plant species for construction plus operations, maintenance, and decommissioning activities would be as described in **Section 4.13.2.1**. In addition, under this alternative, there would be a change in management of lands managed by the BLM, by establishing a multiuse utility corridor on lands south of SR 74. Co-location of future utilities within the proposed additional corridor would impact additional vegetation resources located on these lands. However, any future projects would be subject to NEPA and other environmental review, therefore avoidance or mitigation would minimize additional impacts to vegetation resources.

#### **4.13.2.5 Alternative 3: Carefree Highway Route**

Impacts to vegetation communities, special status species, and invasive and noxious plant species for construction plus operations, maintenance, and decommissioning activities would be as described in **Section 4.13.2.1**.

#### **4.13.2.6 State Trust Land Route Variation Sub-alternative**

##### **Sub-alternative**

Impacts to vegetation communities, special status species, and invasive and noxious plant species for construction plus operations, maintenance, and decommissioning activities would be as described in **Section 4.13.2.1**.

##### **Primary Segment Common to All Action Alternatives**

Impacts to vegetation communities, special status species, and invasive and noxious plant species for construction plus operations, maintenance, and decommissioning activities would be as described in **Section 4.13.2.1**.

The Primary Segment would cross one area of North American Warm Desert Riparian Mesquite Bosque, which covers approximately one acre within the 100-foot ROW. This area would be avoided and would not be disturbed by construction activities unless absolutely necessary.

#### **4.13.2.7 No Action Alternative**

Under the No Action Alternative the BLM would not issue a ROW, the Bradshaw-Harquahala RMP would not be amended to establish a single- or multiuse utility corridor, and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives. There would be no Project impacts to vegetation as described for the Proposed Action and Action Alternatives. However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed public lands. Under this situation, impacts to vegetation located on lands that are crossed or in the vicinity of the Project could occur. The degree of potential for impacts to these resources and the magnitude of those impacts would depend on the route selected.

### 4.13.3 Mitigation and Residual Effects

#### 4.13.3.1 Vegetation Communities

Areas of temporary disturbance, identified in Table 2.4-4, would be reclaimed according to BLM stipulations in the ROW grant and the final reclamation plan to meet the RMP reclamation goal to, “Maintain, restore or enhance the diversity, distribution, and viability of populations of native plants, and maintain, restore, or enhance overall ecosystem health.” (BLM 2010a).

The following additional measures provide general guidelines as to what measures may be used to decrease vegetation resource impacts:

- In construction areas where recontouring is not required, vegetation would be left in place wherever possible, to avoid excessive root damage and allow for resprouting.
- In construction areas (e.g., structure sites, spur roads from existing access roads) where recontouring is required, surface restoration would occur in accordance with the land management agency permitting requirements. The method of restoration would typically consist of returning disturbed areas to their natural contour (to the extent practical), reseeding or revegetating with native plants (if required), installing cross drains for erosion control, placing water bars in the road, and filling ditches. Seed must be tested and certified to contain no noxious weeds in the mix by the State of Arizona Agricultural Department. Seed viability also must be tested at a certified laboratory approved by the authorized officer.
- All construction and maintenance activities would be conducted in a manner that would minimize disturbance to vegetation. In addition, all existing roads would be left in a condition equal to or better than their condition prior to the construction of the transmission line, as defined by the land management agency.
- Species protected by the Arizona Native Plant Law would be relocated and transplanted in accordance with the law. A Vegetation Management Plan, approved by the BLM, would be included in the final POD. As dictated by the Arizona Native Plant Law, actions would include: 1) removal and stockpiling for replanting on site or 2) removal and transplanting out of surface disturbance areas. All personnel working on site would complete a mandatory Environmental Awareness Program, which includes pertinent information on the identification of Arizona Native Plant Law-protected plants.
- In designated areas, structures would be placed or rerouted so as to avoid sensitive features such as, but not limited to, riparian areas, or to allow conductors to clearly span the features, within limits of standard tower design.

#### **4.13.3.2 Special Status BLM, USFWS Listed Species, and Arizona Native Plant Law**

Pre-construction surveys would be performed in the ROW corridor and within all areas of potential new surface disturbance (i.e. access roads, laydown areas, etc.). Special status plants would be identified and marked. Designated surveys for Hohokam agave (*Agave murpheyi*) would be conducted in the layout/project planning phase and then again immediately prior (within a few days) to construction.

Special status plants would be protected to the extent that APS would conduct all activities in compliance with the Arizona Native Plant Law, which would include minimizing the destruction of native plants and in some cases relocating/transplanting individuals on or off-site. A Vegetation Management Plan would be prepared, included in the final POD, and approved by the BLM prior to initiating construction. APS would also work within the Arizona Native Plant Law in restoration and reseeded of construction-disturbed areas.

#### **4.13.3.3 Invasive and Noxious Plants**

BLM policy is to prevent the spread of invasive and noxious plants. Mitigation measures would be used at specific locations where resource sensitivity is high, such as where invasive and noxious weed infestations are existing within or near work areas. Several levels of prevention would be implemented such as minimizing disturbance to existing vegetation (leaving plants in place when possible) and reseeded disturbed areas with native plants and weed-free seed as certified by the ADA. All personnel working on site would complete a mandatory Environmental Awareness Program, which includes pertinent information on the identification of invasive and noxious plant species.

APS would treat any invasive species encountered during the course of herbicide vegetation maintenance projects within the ROW where it is reasonable, prudent, and effective. All appropriate regulations required by the landowner or land-management agency would be implemented and adhered to for any herbicide treatment activities.

A residual effect following the mitigation measures would be the slow growing nature of the plants and vegetation communities that are trying to be reestablished in disturbed areas.

#### **4.13.4 Unavoidable Adverse Impacts**

The destruction of native desert vegetation communities and special status plant species that occur within the construction zone would be unavoidable.

## 4.14 VISUAL RESOURCES

### 4.14.1 Indicators and Methods

#### 4.14.1.1 Indicators

Indicators of impacts to visual resources include:

- Level of contrast between the landscape modifications connected with the Project and the surrounding landscape as viewed by sensitive viewers.
- Compliance with VRM classes established for BLM-managed public lands.
- Modifications that sensitive viewers would perceive to dominate the view through strong contrast of form, line, color, or texture in such a way that they demand attention and visually cannot be avoided. Modifications would dominate the view when:
  - At crossings, when structures on either side of SR 74 are visible.
  - The structures intersect the skyline creating strong contrast between the vertical line of the structures and the horizontal line of the skyline.
  - The structures appear larger than other landscape elements due to proximity of the viewer to the structures.
  - The structure characteristics – the cross-arms and structures holding the conductor – become visible.
  - The structures are close enough to the observer that the relatively smooth finish and symmetrical form contrast with the irregular textures and forms in the natural environment.
- Visibility of Project elements from surrounding areas managed for recreation.
- Changes to the VRI for BLM-managed public land that would result from Project-related modifications to the landscape.

#### 4.14.1.2 Methods

Different methods are used to analyze impacts to federal and non-federal lands that would be affected by the Project. The BLM's management system for visual resources is described in **Sections 3.14.2** and **3.14.3**. Impacts to BLM-managed public lands are analyzed based on:

- Conformance to VRM class objectives, as measured by visual contrast analysis.
- Impacts to the VRI that would result from Project implementation. Project components could have a long-term impact on the scenic quality of an area, which would be reflected in the VRI.
- Impacts to surrounding sensitive areas based on visual contrast analysis and determining relative proportions of the areas that would be affected.

VRM Class objectives are as follows:

- Class I - To preserve the existing character of the landscape while providing for natural ecological changes. The level of change to the characteristic landscape should be very low and must not attract attention.
- Class II - To retain the existing character of the landscape. Development may be seen, but should not attract attention of the casual observer. Any changes must repeat the elements of form, line, color, and texture found in the predominant natural features of the landscape.
- Class III - To partially retain the existing character of the landscape. Development may attract attention, but should not dominate the view of the casual observer. Changes should repeat the elements of form, line, color, and texture found in the predominant natural features of the landscape.
- Class IV - To provide for development that requires major modification of the existing character of the landscape. Development may dominate the view and be a major focus of viewer attention. Every attempt should be made to minimize the impacts of the development through careful location, minimal disturbance, and repeating the elements of form, line, color, and texture (BLM 1986).

While scenic corridors have been established by Maricopa County for a portion of the non-federal lands that would be affected by the Project, the management of the corridors does not specify visual objectives. Rather, the visual resources of the corridors are managed through land use specifications. Where applicable, the analysis determines compliance with scenic corridor management stipulations.

Neither the City of Peoria nor the Town of Buckeye general plans contain visual management systems. The general plans contain land use stipulations intended to protect natural resources, compliance with which are evaluated in **Section 4.6**. Compliance of the Project with policies specific to visual resources is analyzed.

Visual impacts to non-federal lands from the Project are evaluated utilizing the BLM's visual contrast rating system. The degree of contrast between Project components and the surrounding landscape is described using the descriptions in **Table 4.14-1**.

**Table 4.14-1 Degree of Contrast Criteria**

CONTRAST CRITERIA LEVEL	DESCRIPTION
None	The element contrast is not visible or perceived.
Weak	The element contrast can be seen but does not attract attention.
Moderate	The element contrast begins to attract attention and begins to dominate the landscape.
Strong	The element contrast demands attention, is not overlooked, and is dominant in the landscape.

**Table 4.14-2** defines the terms that are used to describe effects to visual resources.

**Table 4.14-2 Summary of Terms Used to Describe Visual Effects**

ATTRIBUTE OF EFFECT		DESCRIPTION
Magnitude (Intensity)	Negligible	No measurable change in current conditions. Contrast would be no greater than weak. VRM Class objectives would be met, and there would be no impacts to the VRI, where applicable.
	Minor	A small, but measurable change in current conditions. Contrast would be no greater than moderate. VRM Class objectives would be met, and there would be no impacts to the VRI, where applicable. Areas managed for recreation would have low levels of visual impact and impacts would not be widespread.
	Moderate	An easily discernible and measurable change in current conditions. Contrast would be no greater than moderate to strong; however views would not be dominated on BLM-managed public lands. VRM Class objectives would be met, and there would be no impacts to the VRI, where applicable. Areas managed for recreation would have localized areas of high levels of visual impact. Overall impacts would be moderate if areas of strong impacts and dominance are a relatively small portion of the overall area.
	Major	A large, easily measurable change in current conditions. Contrast would be strong and views would be dominated in areas with sensitive viewers. VRM Class objectives would not be met. Impacts to the VRI, where applicable, would be possible. Areas managed for recreation would have high levels of widespread impact. Overall impacts would be major if areas of strong contrast and/or dominance on BLM-managed lands are a relatively large portion of the overall area, or if an RMPA would be required to change the VRM class.
Duration	Short-term	During construction up to 5 years.
	Long-term	More than 5 years.

A Visual Resource Focus Area was identified to limit the extent of the viewshed analysis to those areas needed to distinguish between the various alternative routes. Also, because the stretch of SR 74 roughly between the Agua Fria River and just past the westernmost crossing

of SR 74 (under the Proposed Action) was determined to be of the greatest visual significance, the viewshed analysis area was refined to this area. More specifically, the analysis area was clipped to roughly six miles north of SR 74 and five miles south of SR74, the Visual Resource Focus Area.

The base elevation was created from two different data sources. The first being high resolution LiDAR (Light Detection And Ranging) data. LiDAR was available only for the immediate Project Area. Since the viewshed analysis needed to extend beyond the range of the LiDAR data area, a U.S. Geologic Survey (USGS) National Elevation Dataset (NED) with 10 meter resolution was available outside the LiDAR area and was used. This was highest resolution data available outside the LiDAR data area.

The viewshed analyses were conducted using Environmental Systems Research Institute (ESRI) ArcGIS and its Spatial Analyst extension. Two different types of viewsheds were performed, the first being a simulation from inside a vehicle driving along SR 74. The perspective height of the driver was assigned to be 4.5 feet (as this was concluded that this height is accurate for a standard vehicle) and the structures were set at 195 feet, which is the estimated maximum height of the proposed monopole structures. The other type of viewshed was from the 195-foot tall structure tops to 4.5 feet above the ground. Though they sound similar, they provide information on two different aspects. For the simulated vehicle to structure view, it shows what can be seen 195 feet above the terrain surface at a given stretch of SR 74. The structures to vehicle view indicates the number of structures that are hypothetically visible at 4.5 feet above the ground surface.

Determination of dominance at the crossings of SR 74 was made by viewing a virtual simulation along SR 74. The virtual simulation was created using ESRI ArcGlobe software where the terrain data was assigned to the base height, and aerial imagery was draped over the base terrain for visual effect. Next, using structure location, three dimensional models of the various proposed monopole were added. This software also allows the viewer to virtually drive down SR 74 and see the structures, with one key limitation, it does not allow the viewer to drive at a speed that can be easily quantified (e.g. miles per hour). To address this issue, a one mile stretch of roadway was created, and the time it took to travel the one mile stretch was determined using a stop watch. Using this information the speed in miles per hour that the simulated car would be traveling at was able to be calculated.

The determination of the point at which the structure becomes dominant in the landscape was made by moving toward or away from the structure from a specific point in the landscape at a slow rate of speed and observing the changes in the landscape. When the factors that define dominance (see **Section 4.14.1.1**) appeared, the distance from the structure was noted. The exercise was repeated at multiple points to assure reliability of analysis.

Where simulations are provided for certain KOPs, the structures are simulated a flat gray color to resemble dulled galvanized steel. Variations in the color of the structures in the simulations are reflected in the description of impacts from variations in distance and lighting.

Completed Visual Contrast Rating Forms for each KOP are contained in **Appendix 4A**.

## 4.14.2 Direct and Indirect Effects by Alternative

### 4.14.2.1 Impacts Common to All Action Alternatives

#### Construction

##### *General Effects*

Under all Action Alternatives:

- Trees and tall saguaro cactus would be removed from the ROW area, creating a visible change in the vegetation between the ROW area and surrounding lands. Where ground disturbance would be visible it would appear as bare ground in the short term, and as the disturbed areas revegetate, they may differ in color from the surrounding vegetation.
- A centerline access road would be created along the ROW, along with spur routes to structure locations. Visually these routes would appear as bare ground or two-tracks.
- Spoil material from foundation excavation would be spread around each structure location. The color of excavated material would differ from other surface colors. Vegetation would be crushed or removed during structure construction. Remaining vegetation would be covered by spreading of spoil material, resulting in areas surrounding structures appearing devoid of vegetation and removing shades of green from this part of the landscape. In areas where the viewer is superior – above the area looking down – the change in the vegetation character within the ROW would accentuate the impact of the transmission line in the landscape and help draw attention to it.
- Monopole structures, flat galvanized in color would be erected approximately every 1,100 feet, adding a series of vertical lines to the landscape. The relative strength of the vertical lines would vary with the distance and angle from which they are being viewed.
- Conductors would be non-reflective, but may still be visible in certain circumstances, adding regular, curvilinear horizontal lines to the landscape.
- In areas where no sensitive viewers are identified, the transmission line would strongly contrast with the surrounding environment and dominate the view within a 0.2 to 0.4-mile radius of the line, depending on topography and other landscape characteristics.

##### *Portion of Route Common to All Action Alternatives on BLM-managed Lands*

Leaving the Sun Valley Substation, the transmission line would be on BLM-managed public lands designated VRM Class IV and within a designated utility corridor.

KOP 1 - The simulated view from KOP 1 (**Figure 4.14-1b**) looks northeast at the transmission line approximately 0.5-mile away within the BLM utility corridor from Pulte's Festival Ranch development.

The addition of the transmission line to the landscape as viewed from KOP 1 would add a series of strong vertical lines created by the monopole structures, which repeat the vertical lines of the fence in the foreground and contrast strongly with the predominant horizontal lines in the landscape. In the simulation, the conductors are visible and add several subtle horizontal lines to the landscape, which repeat the horizontal line at the skyline as well as the other more subtle horizontal lines in the vegetation patterns. The gray color of the structures would moderately contrast with the predominantly light tans and browns of the landscape. The structures appear smooth, moderately contrasting with most of the vegetation in the landscape that creates a soft, feathery appearance.

The monopoles in the foreground moderately contrast with the faint lattice towers also visible, giving the sense of visual clutter. The area viewed from KOP 1 contains very little development – fencing and faint views of lattice towers. The addition of the transmission line infrastructure would focus the viewer's attention on the transmission line, moderately contrasting with the surrounding largely undeveloped environment.

KOP 2 - The simulated view from KOP 2 (**Figure 4.14-2b**) looks southwest at the transmission line approximately 0.5-mile away within the BLM utility corridor from the Spurlock Ranch development. Similar to KOP 1, the addition of the transmission line to the landscape as viewed from KOP 2 would add a series of strong vertical lines that contrast strongly with the horizontal line at the skyline. In the simulation, the vertical lines of the lattice structures in the background are faint and subdued, and only vaguely repeat the vertical lines of the monopoles. The area viewed from KOP 2 contains very little development – faint views of lattice towers. The transmission line would moderately contrast with the surrounding largely undeveloped environment, and focus the viewer's attention.

Compliance with the Visual Resource Management Class Objectives - As viewed from KOPs 1 and 2, the transmission line would meet the VRM Class IV objectives established for this portion of the Project because the description for the class allows for major modification of the environment that may dominate the view and focus the viewer's attention.

Impacts to the Visual Resources Inventory - The BLM-managed public lands in the southwest corner of the Study Area northeast of the Sun Valley Substation are designated Class III to IV, and are within the North Phoenix Valley Scenic Quality Rating Unit. The VRI indicates that the scenic quality for the unit is C (low) and sensitivity is high. The addition of the transmission line would be a new cultural modification. The unit scored -3 for cultural modification, indicating that any existing modifications may add visual variety to the area and promote disharmony. Considering the fact that the area is already highly culturally modified and that the transmission line would harmonize with existing development, the addition of the transmission line would not affect the Scenic Quality Inventory score, or change the VRI class.

Overall Impact to Route Portions on BLM-managed Public Lands - Within the portion of the route common to all Action Alternatives that is on BLM-managed public lands, the overall contrast would be moderate. VRM Class objectives would be met and there would be no impact to the VRI. Overall impacts to this portion of the route would be minor and long-term.

*Portion of Route Common to All Action Alternatives on All Other Lands*

**KOP 3** - The simulated view from KOP 3 (**Figure 4.14-3b**) looks at the transmission line less than 0.5 mile away crossing US 60 near the BNSF commercial area and the Broadstone Ranch development. Sensitive viewers would be traveling at highway speeds on US 60. The topography is relatively flat and the transmission line would be visible for long distances and become more distinct as viewers approach the crossing. Viewers would likely be able to see the transmission line for a few minutes, but it may not be noticeable for the entire time it would be visible.

The Project would add a series of strong vertical lines created by the monopole structures, which repeat the more subtle vertical lines of the existing monopoles. In the simulation the conductors are visible and add several subtle horizontal lines to the landscape, which repeats the indistinct horizontal line at the skyline. The smooth texture and gray color of the monopoles would blend with the relatively smooth texture of the highway surface and existing monopoles. In this location use of monopoles (as opposed to lattice towers) would harmonize with the existing monopoles. Because most of the lines in the landscape viewed from this KOP are created by the divided highway and elements paralleling it, the greatest contrast would be with the horizontal conductors. The addition of the transmission line would weakly contrast with the surrounding natural environment, add to the sense of development, and further reduces the naturalness of the landscape.

**KOP 4** - The simulated view from KOP 4 (**Figure 4.14-4b**) looks east at the transmission line less than 0.5-mile away passing behind the Thunder Ridge Airpark community before turning east to follow the Joy Ranch Road alignment. The monopoles supporting the transmission line would add strong vertical lines to the existing landscape. In the simulation, the lines repeat the existing vertical lines created by the structures and saguaros in the existing landscape. The conductors would create faint horizontal lines that also repeat the horizontal lines in the structures. The smooth gray color of the structures would blend with the colors and textures in the existing developments. Because the existing landscape appears modified and developed, the addition of the transmission line would blend with the existing developments and increase the sense of development, weakly to moderately contrasting with the surrounding developments as the monopoles would be noticeably taller than the surroundings. The additions would not be out of character with the existing development; they do not dominate the view or demand the viewers' attention.

**KOP 5** - No simulation was prepared for KOP 5. This KOP represents the view of eastbound travelers on SR 74 traveling at highway speeds, looking south-southeast. At its nearest point, the transmission line would be approximately two miles south of the KOP; however, viewers would be looking southeast, where the line would be over two miles away. Viewers would see the distant view of the transmission line running east and west, paralleling the Joy Ranch Road alignment for several miles.

The addition of the transmission line in the view would add a series of fine short vertical lines. Because of the relatively flat topography and sparse vegetation, the series of structures should be subtly visible paralleling the highway. The lines would appear the same stature of the saguaros in the view, and would repeat the vertical lines of the saguaros. The color of the structures would vary from light gray to almost black depending on the time of day they are

being viewed and the lighting conditions. Depending on the height of the structures, they may or may not contrast with the strong horizontal line at the skyline. Under certain conditions, the structures may not be distinguishable from the saguaros. Because of the distance between the viewer and the transmission line, the line would be a relatively minor addition to the view, contrast would be weak, and the surrounding landscape would effectively absorb the addition.

KOP 6 - No simulation was prepared for KOP 6. Visual effects from this KOP would be similar to those described for KOP 5. This KOP represents the view of east bound travelers on SR 74 traveling at highway speeds, looking east-southeast at the transmission line approximately two miles away. Viewers would see the distant view of the transmission line running east and west, paralleling the Joy Ranch Road alignment, and approaching the SR 74 alignment in the distance. Unlike KOP 5, the structures in the distance to the east approaching the SR 74 alignment would be more noticeable as they are directly ahead in the view of the driver and passengers of eastbound travelers on SR 74, and would contrast with the strong horizontal line at the skyline. Intermittent vegetation alongside the road would partially obscure the structures and views would be intermittently broken. Because of the distance between the viewer and the transmission line, and the intermittent nature of the visibility, contrast would be weak, but would not attract attention and the line would be a minor addition to the view.

KOP 7 - The simulated view from KOP 7 (**Figure 4.14-5b**) looks at the transmission line crossing 211<sup>th</sup> Avenue approximately 0.5-mile away south of SR 74. Sensitive viewers traveling south on 211<sup>th</sup> would have just turned off SR 74 and would be accelerating to 35 to 45 miles per hour. The transmission line and its crossing of 211<sup>th</sup> would be visible until southbound travelers on 211<sup>th</sup> cross beneath it.

Because there are numerous lines in the existing landscape, the landscape would absorb the addition of the transmission line fairly well. The monopoles supporting the transmission line would add strong vertical lines that blend with several shorter vertical lines created by saguaros and the existing communications tower and weakly to moderately contrast with the horizontal lines at the skyline. The conductors would be faintly visible as horizontal lines that repeat the other horizontal lines in the landscape. The gray color of the monopoles would blend with the dark color of the road surface and saguaros. The main area of contrast would come from the addition of the transmission line in a landscape that appears fairly natural. The infrastructure is most visible and noticeable in the center of the view, and diminishes at the periphery at either side, due to the lack of vegetation within the road perimeter. As drivers continue traveling south on 211<sup>th</sup> Avenue, the transmission line would become more prominent in the landscape and would eventually dominate the view until drivers pass underneath it. The addition of the transmission line would moderately contrast with the surrounding natural environment, add a sense of development, and reduce the naturalness of the landscape. **Figure 4.14-5c** is discussed and referenced in **Section 4.14.2.6**.

KOP 8 - No simulation was prepared for KOP 8. This KOP represents the view that southbound travelers on the rock crushing/ranch road would have as they approach and come to a stop at the intersection of SR 74, looking south. The transmission line would be following the Joy Ranch Road alignment east, approaching the south side of SR 74. The impact of the addition of the transmission line as viewed from this KOP would be similar to

but less than that described for KOP 19 (for which a simulation was prepared, and is described later in this section), as the distance between the KOP and the line would be greater at this KOP.

Scenic Corridors - No portion of the Proposed Action or Action Alternative routes would be within the SR 74 Scenic Corridor outside the jurisdiction of the City of Peoria; therefore there would be no impact to the SR 74 Scenic Corridor. The portion of the route common to all Action Alternatives would cross the Wickenburg Scenic Corridor. Assuming the standards for the Wickenburg Scenic Corridor would be the same as the SR 74 Scenic Corridor under the Maricopa County Zoning Ordinance, the transmission line would comply with the ordinance under all Action Alternatives.

Overall Impact to Portion of Route Common to All Action Alternatives on All Other Lands - Within the portion of the route common to all Action Alternatives that is on all lands other than those managed by the BLM, the contrast would range from weak to moderate. Overall impacts to this portion of the route would be minor and long-term.

#### *Compliance with Town of Buckeye General Plan*

The portion of the Project that would fall within the Town of Buckeye jurisdiction would be common to all Action Alternatives, and would:

- Be within a designated utility corridor on BLM-managed public lands leaving the Sun Valley Substation following the CAP.
- Parallel another existing transmission line north of the CAP between the Festival by Lyle Anderson and Spurlock Ranch developments.
- Be on the eastern boundary of the Town of Buckeye as the route follows the Happy Valley Road alignment to the north.

The proposed route demonstrates proper planning through placement within a designated utility corridor, co-location with an existing transmission line, and by following jurisdictional boundaries, which would minimize impacts to sensitive landscapes.

### **Operations, Maintenance, and Decommissioning**

A centerline access road within the ROW would be allowed to revegetate; however, new vegetation would be crushed when the route is traveled for inspection of or maintenance to the line; this would result in little visual effect. The ROW would be maintained clear of any large trees or cactus, which would result in a long-term visible difference between the ROW and surrounding landscape in areas where trees and saguaros are present in any number. Preventing the ROW from revegetating with trees and saguaros would have a minor long-term impact on visual resources in areas where trees and saguaros are more numerous, as this would prevent the ROW disturbance from fully revegetating and blending with the surrounding landscape.

At the end of the life of the Project the Project components (structures and conductors) would be removed from the Project Area, re-disturbing previously disturbed areas through use of heavy equipment along centerline access and spur routes, resulting in short-term minor impacts to visual resources in areas where the access routes would be visible (in areas where the access routes would be in the foreground or where the viewer is in a superior position).

Areas where vegetation is crushed or removed would be rehabilitated and would revegetate to match the surrounding landscape in the long term, resulting in minor impacts to visual resources in areas where the ROW would be visible.

#### **4.14.2.2 Proposed Action**

##### **Amendment of the RMP**

Under the Proposed Action, the Bradshaw-Harquahala RMP would be amended to create a single-use utility corridor corresponding to the transmission line ROW on BLM-managed public lands. While the creation of a single-use utility corridor in and of itself would not impact visual resources the installation of a transmission line in that corridor would impact visual resources.

In addition to the utility corridor, the Proposed RMPA would change the VRM Class from VRM Class III to VRM Class IV on 3,375 acres of BLM-managed public lands for the area corresponding to the existing transportation corridor north of SR 74 and on the entire key-shaped piece south of SR 74. Changing the VRM Class of these lands would not have a direct or indirect impact on visual resources or the VRI.

##### **Construction**

###### *Portion of Route on BLM-managed Public Lands - Linear KOP*

Overview - The concept of the linear KOP is explained in **Section 3.14.5.7. Figure 4.14-6** is a viewshed analysis for the Proposed Action route in relation to the linear KOP and its identified viewpoints, and the relative number of structures that would be visible in different areas. This figure demonstrates that at any point along the SR 74 linear KOP, some portion of the transmission line infrastructure would be visible from SR 74, and a range of number of structures that would be visible from any given area. However, it is possible, even likely, that there would be brief periods of time where eastbound or westbound travelers on SR 74 would not be able to see the infrastructure traveling at highway speeds because the visible structures would be behind them and therefore the infrastructure would not be in their field of vision.

Easternmost Crossing and KOP 17b - The simulated view from KOP 17b looks at the easternmost crossing of the transmission line from the south to the north side of SR 74 as it would be viewed by westbound travelers (**Figure 4.14-7b**). Sensitive viewers would be traveling on SR 74 at highway speeds. Because of topography, the top portions of the transmission line would have been visible for a few minutes as the viewers traveled through the gently curving and undulating portion of SR 74 east of the KOP.

The addition of the transmission line in the view would add both strong vertical and horizontal lines through the center of the view and directly in front of the butte, which is the focus of the view. Numerous saguaros create short, dark vertical lines; however, the size and color of the structures are of such magnitude that they do not repeat the vertical lines in the landscape. The horizontal lines created by the conductors would be subtle, but would be in front of the undulating horizontal line at the skyline, and therefore contrast strongly. The structures appear cylindrical and uniform, and would moderately contrast with the feathery to stippled appearance of the vegetation. The infrastructure interjects a sense of development

that would moderately contrast with the natural and scenic appearing landscape. Overall contrast of the transmission line with the surrounding landscape would be moderate.

The area is currently designated VRM Class III. Travelers on SR 74 would be traveling at highway speeds of 65 mph or more, limiting the amount of time that they would be viewing the transmission line. **Figure 4.14-8** is a viewshed analysis of the easternmost crossing of SR 74 by the transmission line following the Proposed Action route. This figure shows where along SR 74 the crossing would be visible, and for how long by direction of travel.

When the transmission line is located at the periphery of the ACC-certificated route and when the crossing is in the distance, topography and vegetation would limit views of the infrastructure and distance would reduce its prominence in the landscape; under these conditions the transmission line would not dominate the view, and the Project would meet the VRM Class III objectives. As travelers in either direction on SR 74 approach the crossing, at some point the crossing would become prominent and dominate the view until the traveler passes under the crossing and it is no longer visible.

As travelers on SR 74 approach the crossing, it would become dominant in the landscape when:

- Structures on either side of the SR 74 are visible.
- The structures intersect the skyline creating strong contrast between the vertical line of the structures and the horizontal line of the skyline.
- The structures appear larger than other landscape elements due to proximity of the viewer to the structures.
- The structure characteristics – the cross-arms and structures holding the conductors – become visible.

**Figure 4.14-8** indicates that, within approximately 0.3-mile either side of the crossing for a total of 0.6-mile of SR 74, the above criteria are present and the transmission line would dominate the view; VRM Class III objectives would not be met. The length of SR 74 within the linear KOP is 10 miles long; approximately 6 percent of the length of SR 74 within the linear KOP would not meet VRM Class III objectives due to the easternmost crossing. However, the transmission line would meet VRM Class IV objectives that would be in place for this area as a result of the Proposed RMPA to change the VRM Class from III to IV.

KOP 17c - The simulated view from KOP 17c looks at the transmission line paralleling the north side of SR 74 as it would be viewed by westbound travelers (**Figure 4.14-9b**). Sensitive viewers would be traveling on SR 74 at highway speeds. Because of topography, the top portions of the transmission line would be visible for a few minutes as the viewers travel through the gently curving and undulating portion of SR 74 east of the KOP, and the westbound viewer would have recently passed under the easternmost crossing.

The addition of the transmission line in the view would add a series of vertical lines in the middle ground. Due to the distance between the KOP and the infrastructure, the conductors would not be visible and the structures would appear as fine, light-colored lines against the landscape in the background. Under different lighting conditions the structures could appear lighter or darker, and be more or less noticeable. The vertical lines of the structures weakly

contrast with the curvilinear horizontal lines in the landscape, and somewhat repeat the vertical lines created by the numerous saguaros. The distance between the KOP and the structures and the somewhat complex landscape would allow the landscape to absorb the infrastructure. Overall contrast of the transmission line with the surrounding landscape would be weak.

The structures visible in the landscape would be located on BLM-managed public lands within the transportation corridor north of SR 74. The area is currently designated VRM Class III. As viewed from KOP 17c, the transmission line infrastructure would be noticeable, and portions may be more or less noticeable and attract attention under different lighting conditions. However, the Project would not dominate the view, and therefore would meet VRM Class III objectives.

KOP 18a - No simulation was prepared for KOP 18a, which is the entry point for the linear KOP for eastbound travelers on SR 74. Sensitive viewers would be traveling on SR 74 at highway speeds. At the linear KOP entry point the topography is transitioning from relatively flat and open to the west, to hilly and undulating to the east. Eastbound travelers on SR 74 from this KOP would see the transmission line infrastructure approaching SR 74 from the south, and then crossing to the north side of SR 74. The structures would be visible as a series of regularly spaced medium to strong vertical lines. The structures would intersect and weakly to moderately contrast with the irregular horizontal line at the skyline. The scenic nature of the landscape would help absorb the addition of the transmission line as viewed from this KOP, but the addition of the human development would moderately contrast with the surrounding natural environment. The appearance of the color of the structures would vary with the lighting conditions, but would weakly contrast either with the surrounding landscape or bright sky under any circumstance. Overall contrast of the transmission line with the surrounding landscape would be weak to moderate.

A portion of the structures would be on BLM-managed public lands designated VRM Class III. The structures would be noticeable and may attract attention, but because of the distance between the KOP and the structures, the transmission line would not dominate the view, and would meet VRM Class III objectives as viewed from KOP 18a.

Westernmost Crossing and KOP 18b - The simulated view from KOP 18b looks at the westernmost crossing of the transmission line from the south side to the north side of SR 74, then paralleling SR 74 going into the distance, as viewed by eastbound travelers (**Figure 4.14-10b**). Sensitive viewers would be traveling on SR 74 at highway speeds. Because eastbound travelers would be approaching the westernmost crossing from relatively flat and open terrain, the crossing would be visible in the distance for a few minutes before it became very noticeable.

The addition of the transmission line in the view would add strong vertical and horizontal lines at the crossing in the foreground, and a series of vertical lines that are less prominent to the north of SR 74. The structures in the foreground would appear taller than the landscape in the background and contrast strongly with the undulating horizontal line at the skyline. The series of structures to the north of SR 74 would be more distant, appear smaller, and somewhat repeat the vertical lines created by the numerous saguaros. The light color and smooth texture of the structures would distinguish them from the surrounding darker and

textured landscape. Overall contrast of the transmission line with the surrounding landscape would be strong.

The area is currently designated VRM Class III. Travelers on SR 74 would be traveling at highway speeds of 65 mph or more, limiting the amount of time that they would be viewing the westernmost crossing of the transmission line. **Figure 4.14-11** is a viewshed analysis of the westernmost crossing of SR 74 by the transmission line following the Proposed Action route. This figure shows where along SR 74 the crossing would be visible and for how long by direction of travel.

As stated in the discussion of the easternmost crossing above, as travelers in either direction on SR 74 approach the crossing, at some point the crossing would become prominent and dominate the view until the traveler passes under the crossing and it is no longer visible. **Figure 4.14-11** indicates that the crossing would dominate the view, for approximately 0.40-mile either side of the crossing for a total of 0.80-mile of SR 74, where the criteria are present, and the VRM Class III objectives would not be met. The length of SR 74 within the linear KOP is 10 miles long; approximately eight percent of the length of SR 74 within the linear KOP would not meet VRM Class III objectives due to the westernmost crossing. However, the transmission line would meet VRM Class IV objectives that would be in place for this area as a result of the Proposed RMPA to change the VRM Class from III to IV.

KOP 18c - The simulated view from KOP 18c looks at the transmission line north of SR 74 as viewed by eastbound travelers (**Figure 4.14-12b**). Sensitive viewers would be traveling on SR 74 at highway speeds. Because of topography, the top portions of the transmission line would have been visible for a few minutes as the viewers traveled through the gently curving and undulating portion of SR 74 west of the KOP. The transmission line would be visible in the view from this KOP, but it would not be noticeable and nearly impossible to locate in the photo simulation. Topography would block foreground to middleground views of the transmission line; the structures would appear in the background as very small, fine light colored vertical lines that repeat the delineators in the foreground, and are thus difficult to locate. Contrast between the transmission line and the surrounding landscape would be unnoticeable, and therefore would meet VRM Class III objectives.

Overall Compliance with Visual Resource Management Class Objectives within the Linear KOP - The portion of the BLM-managed public lands within the existing transportation corridor north of SR 74 and the key-shaped piece south of SR 74 are currently designated VRM Class III. BLM-managed public lands north of the transportation corridor are currently designated VRM Class II. This area is within the SRMA and there are numerous OHV routes within the area (see **Section 3.9** and **Figure 3.9-3**). It is reasonable to expect that recreational users would be viewing the transmission line from any point in this area and not just from the KOPs (and not even primarily from the KOPs). Therefore, visual dominance of the line within this area is important to the impact analysis.

Using the simulation tool described in **Section 4.14.1.2**, it was determined that the transmission line would dominate the view within approximately 800 feet of each structure when viewed from points within the landscape surrounding the proposed ROW north of SR 74. Structures would average a distance of 1,100 feet apart, but would be much closer together under certain topographic conditions. For analysis purposes, it is estimated that the

view would be dominated (as defined in **Section 4.14.1.1**) in areas within 800 feet of the centerline of the ROW (**Figure 4.14-13**). This area north of SR 74 totals 1,108 acres, of which an estimated 1,095 acres would be within the VRM Class III designated area, and 13 acres would be within the VRM Class II designated area. The VRM Class III area north of SR 74 (currently designated as a transportation corridor) is comprised of 2,354 acres. The acreage where the transmission line would dominate the view, and therefore not meet Class III objectives, represents an estimated 50 percent of the VRM Class III designated area north of SR 74.

Visual dominance of the transmission line in the landscape in this area would be a major impact to visual resources in the VRM Class III area and a negligible impact in the VRM Class II area. However, the transmission line would meet VRM Class IV objectives that would be in place for the existing transportation corridor as a result of the Proposed RMPA to change the VRM Class from III to IV.

The VRM Class III lands south of SR 74 total 1,013 acres. Under the Proposed Action, an estimated 269 acres would be visually dominated by the transmission line. The acreage where the transmission line would dominate the view, and therefore not meet Class III objectives, represents approximately 26 percent of the VRM Class III designated area south of SR 74. Visual dominance of the transmission line in the landscape in this area would be a minor impact to visual resources in the VRM Class III area south of SR 74. However, the transmission line would meet VRM Class IV objectives that would be in place for this area south of SR 74 as a result of the Proposed RMPA to change the VRM Class from III to IV.

Overall Impact to Route Portion on BLM-managed Public Lands within the Linear KOP - The portion of the route within the Linear KOP would have areas of strong contrast where the Project would dominate the view. Existing VRM Class objectives would not be met on approximately 50 percent of the BLM-managed public lands within the transportation corridor north of SR 74 and 26 percent of the lands south of SR 74 designated VRM Class III; however, there would be no impact to the VRI. The transmission line would meet VRM Class IV objectives that would be in place for these areas as a result of the Proposed RMPA to change the VRM Class from III to IV. Overall impacts to visual resources in this portion of the route under the Proposed Action would be major and long-term.

*Portion of Route on BLM-managed Public Lands - Castle Hot Springs SRMA and Hieroglyphic Mountains RMZ*

**Section 3.9** provides an overview of the Castle Hot Springs SRMA and the Hieroglyphic Mountains RMZ. These areas are heavily used for recreation and are sensitive to visual changes in the landscape. **Figure 4.14-6** shows a viewshed analysis for the Proposed Action route in relation to the recreation areas and KOPs for those recreation areas.

KOP 10 - KOP 10 is located within the SRMA and RMZ. Sensitive viewers would be recreationists preparing to leave from The Boulders Staging Area. They would have reached the staging area via SR 74 where they may have seen portions of the line in the distance or passed beneath the crossings, depending on their direction of travel. Viewers would be parked in the parking lot, focused on their preparations, with views of the transmission line to the southeast over a mile away.

The simulated view from KOP 10 (**Figure 4.14-14b**) looks at the transmission line paralleling the south side of SR 74. The monopoles would appear as a series of short vertical lines in the middle ground that break the skyline where there is not a backdrop of mountains, and repeat the short vertical lines created by the numerous saguaros. Where the monopoles break the skyline, the vertical lines would contrast strongly with the horizontal line at the skyline. From this distance and under these lighting conditions, the conductors would not be visible.

In the simulation, the scene is backlit, resulting in the monopoles appearing light gray and contrasting with the background of the gray-green colors in the vegetation in the middle ground. Some development is visible as dots in the background, but because the development is distant it appears to be a subtle and small part of the view. The transmission line in the middle ground would not appear to be a continuation of the development in the foreground or background, rather new development in the middle ground; it would add a sense of development, moderately contrasting with the natural appearing and scenic view.

While KOP 10 is located within the SRMA and RMZ, the portion of the Project visible from KOP 10 would not be on BLM-managed public lands; therefore, determination of compliance with VRM class objectives is not applicable.

KOP 12 - The simulated view from KOP 12 (**Figure 4.14-15b**) looks from the Quintero Golf Course at the proposed westernmost crossing to the north side of SR 74. Sensitive viewers would be golfers or residents of Quintero who are moving at low rates of speed and viewing the transmission line to the southeast approximately one mile away.

The monopoles supporting the transmission line would be most easily seen in this KOP where they are visible against the sky. Many of the structures would be against a backdrop of distant mountains and are nearly invisible. The gray color of the structures would blend well with the distant land forms. Where structures would be visible, the vertical lines they create would blend well with the numerous short vertical lines created by the saguaros. The area of moderate contrast between the monopoles and surrounding landscape would be limited to a portion of the view; the complexity and scenic nature of the view absorbs most of the transmission line with little effect to the scenic quality. As the viewer pans to the south and west the topography flattens out and the monopoles would become skylined and more noticeable in the distance. In the evening when the lighting is different, they may appear lighter in color and some structures may be more noticeable against the backdrop of the mountains, while structures that are skylined may be less noticeable. For the majority of the view the transmission line would be absorbed by the surrounding landscape, and where visible, would only weakly contrast.

The area is currently designated VRM Class III. As viewed from KOP 12, the transmission line infrastructure would be noticeable, and portions may be more or less noticeable and attract attention under different lighting conditions. However, the Project would not dominate the view, and therefore would meet VRM Class III objectives.

KOP 13 - KOP 13 is located within the SRMA but not within the RMZ. The simulated view from KOP 13 (**Figure 4.14-16b**) looks at the transmission line crossing BLM-managed public lands north of SR 74 within the transportation corridor currently designated VRM Class III. Sensitive viewers would be recreationists within the SRMA who have reached the

KOP via single-track OHV or by foot. Viewers would be standing still or moving at low rates of speed, looking at the transmission line nearly a mile away to the southwest.

The addition of the transmission line in the view would add a series of strong vertical lines that strongly contrast with the horizontal lines that are predominant in the view. From the perspective of this KOP, only one structure would break the skyline, and the structures would not appear larger than the surrounding landscape elements. **Figure 4.14-16c** is discussed and referenced in **Section 4.14.2.4**.

While there are numerous saguaros in the view they would be dwarfed by the size of the monopoles, and the repetition of the vertical lines and dark colors is subtle. The conductors would be faintly visible along the nearest monopoles, adding very subtle horizontal lines. Panning to the left, the viewer would see the transmission line scaling the nearby low hills with the structures and conductors skylined. In the simulation photo, the structures are backlit, resulting in them appearing dark and harmonizing with the darker colors in the landscape. Under different lighting conditions the color of the structures may appear light gray or white and contrast with the surrounding landscape. The construction of the transmission line would remove vegetation and expose land. During the Operations and Maintenance phase, the ROW would be maintained clear of taller growing vegetation. From this KOP, these changes would be visible as a narrow strip of bare ground or different vegetation color than surrounding vegetation, depending on the stage of revegetation. Overall contrast of the transmission line with the surrounding landscape would be strong.

From KOP 13 the transmission line attracts attention, but it would not dominate the view, and therefore it would meet VRM Class III objectives.

**KOP 20** - The simulated view from KOP 20 (**Figure 4.14-17b**) looks at the transmission line paralleling the south side of SR 74 south of the intersection of Castle Hot Springs Road and SR 74. Sensitive viewers would be east-or westbound travelers on SR 74 slowing to turn north onto Castle Hot Springs Road, or travelers on Castle Hot Springs Road approaching the intersection with SR 74 and slowing to a stop. Viewers would be looking at the transmission line 0.25-mile away or less.

The addition of the transmission line in the view would add a structure and conductors in the foreground, just behind a low hill adjacent to SR 74, with structures and conductors going into the distance looking either direction (east or west). The structure would somewhat repeat the vertical line of the saguaros in the landscape; however, the structure would be much larger, regular shaped, smooth, and differ in color, resulting in a strong contrast. The structure would contrast moderately with the undulating horizontal line at the skyline. The horizontal lines created by the conductors would repeat the strong horizontal line created by the road and guard rail, and the undulating line at the skyline to a limited extent. The color of the structure would blend to a limited extent with some of the colors seen in the vegetation, but its smooth texture would moderately contrast with the variety of textures in the landscape. Overall contrast of the transmission line with the surrounding landscape would be moderate to strong.

The area is currently designated VRM Class III. Travelers on Castle Hot Springs Road approaching this intersection would be slowing and coming to a stop. Because the transmission line would be in the center of the field of view, its proximity to other landscape

features make it appear larger than its surroundings and because travelers would come to a stop looking straight ahead, the transmission line would dominate the view from KOP 20 and would not meet VRM Class III objectives. However, this situation would only last as long as the vehicle is stopped at the intersection (a few seconds or up to a couple of minutes while waiting for traffic to clear), until the traveler turns east or west on SR 74. The transmission line would meet VRM Class IV objectives that would be in place for this area as a result of the Proposed RMPA to change the VRM Class from III to IV.

Overall Visual Impacts to the Castle Hot Springs SRMA and Hieroglyphic Mountains RMZ - Recreationists within the SRMA and RMZ are almost exclusively engaging in some form of motorized recreation. Recreationists would be viewing the landscape containing the transmission line from moving OHVs or when stopped. As indicated by **Figure 4.14-6**, the transmission line would be frequently visible in the southern portion of the SRMA, with diminishing views at greater distances to the north. The greatest number of structures would be sparsely visible from the highest points within the SRMA and RMZ. The Project would be most consistently visible and to the greatest extent in the southwest portion of the visual resources focus area. The view within the SRMA would be dominated in areas closer to the ROW frequented by recreation users. For recreational users within the SRMA, the transmission line begins to dominate the view within approximately 800 feet of the line. Further than 800 feet away from the line, the transmission line would begin to become proportional to the surrounding landscape, and the complexity of the landscape absorbs them, so that they no longer dominate the view. Approximately 1,095 acres of the SRMA and none of the RMZ would be within 800 feet of the line and would have views dominated by the line. This acreage represents approximately one percent of the 112,340 acres of the SRMA that are within the Recreation and Special Designations Study Area. Because of the limited area where the transmission line would dominate the view and the nature of OHV recreation occurring within the SRMA, overall visual impacts to the visual resources would be moderate and long-term.

The transmission line would be most consistently visible and to the greatest extent in the southwest portion of the RMZ; however, the view would not be dominated in any portion of the RMZ. Because of the distance between the viewers and the Project, and the fact that the view would not be dominated within the RMZ, visual impacts within the RMZ would be minor and long-term.

#### *Portion of Route on BLM-managed Public Lands - Impact to the Visual Resource Inventory*

As described in **Section 3.14.2**, there is a VRI for the BLM-managed public lands within the Study Area. The portion of the Proposed Action route visible from KOPs 4, 5, 6, 7, 8, 9, 10, 11, 14, 15, 16, 17a, 21, and 22 would not be on BLM-managed public lands, therefore determination of compliance with VRM class objectives and analysis of impacts to VRI is not applicable.

The BLM-managed public lands north and south of SR 74 within the Study Area are within the Hieroglyphic Mountains Scenic Quality Rating Unit. The VRI indicates that the scenic quality for the unit is B (moderate) and sensitivity is high. The addition of the transmission line would be a new cultural modification. The unit scored zero for cultural modification,

indicating that any existing modifications add little or no visual variety to the area and introduce no discordant elements.

Part, if not all of the monopoles visible in the landscape from KOP 12 would be located on BLM-managed public lands within the transportation corridor north of SR 74. While the transmission line would add a discordant element, the complexity and scenic nature of the view from KOP 12 would absorb the addition of the transmission line with little effect to scenic quality.

The views of the transmission line as viewed by recreational viewers in the SRMA are represented by KOP 13, where the transmission line would attract attention but not dominate the view. However, as described above, the transmission line would dominate the view of about 1,100 acres of BLM-managed public lands north of SR 74 under the Proposed Action. Within the area where the transmission line would dominate the view, it would be a very discordant element.

The transmission line at the SR 74 crossings would add a strong discordant element of development into a view that otherwise appears very natural. However, the easternmost crossing only dominates the view for less than a mile, or six percent of the linear KOP; and the westernmost crossing only dominates the view for less than a mile, or eight percent of the linear KOP. While the scenic quality of this portion of BLM-managed public lands would be significantly impacted by the addition of the transmission line crossing, the area that would be affected is limited.

The transmission line as viewed from KOP 18c would have no discernible impact on the landscape, therefore, no impact to the VRI is indicated as viewed from this KOP.

As viewed from KOP 20, the transmission line would be in the center of the field of view, its proximity to other landscape features would make it appear larger than its surroundings, and because travelers would come to a stop looking straight ahead, the transmission line would dominate the view from KOP 20 and would introduce discordant elements. However, this situation would only last as long as the vehicle is stopped at the intersection (a few seconds or up to a couple of minutes while waiting for traffic to clear), until the traveler turns east or west on SR 74.

As observed from the KOPs, the addition of the transmission line would score between zero and -4 for cultural modification at each KOP, depending on the viewpoint. Considering the acreage of the greatest visual impact (where the transmission line would dominate the view within the SRMA and along portions of SR 74) is limited, and relatively small in comparison to the extent of the entire scenic quality rating unit (SQRU), the change in the score for the SQRU would be small and would not affect the Scenic Quality rating assigned to the SQRU.

#### *Portion of Route on All Other Lands*

KOP 11 - KOP 11 is located on State Trust lands within the SRMA and RMZ; however, the portion of the transmission line that would be viewed from this KOP is not located on BLM-managed public lands. Sensitive viewers would be recreationists, most likely those accessing the point via OHV. Viewers would be standing still or traveling at low rates of speed, looking at the transmission line at least four miles away to the south.

The simulated view from KOP 11 (**Figure 4.14-18b**) looks at the transmission line paralleling the south side of SR 74. Under the lighting conditions present at the time the simulated photo was taken, the transmission line would not be visible. Under different lighting conditions the structures may appear lighter or darker and may be visible in the landscape, appearing as tiny vertical lines in the middle ground to distance. Because the view from KOP 11 is viewer superior, the structures would be viewed against topography in the background, which would reduce the visibility of the structures under many lighting conditions. The construction of the transmission line would remove vegetation and expose land. During the Operations and Maintenance phase, the ROW would be maintained clear of taller growing vegetation. From this KOP, these changes would be visible as a thin line of bare ground or different vegetation color than surrounding vegetation, depending on the stage of revegetation. Because of the distance between the KOP and the Project, the transmission line would be a very small part of the overall view. If the viewer were standing at the KOP and unfamiliar with the area and for OHV recreationists traveling on the trails, the transmission line would not be noticeable. From KOP 11, the visual impact of the transmission line would be at the lowest levels of detection, and impacts would be negligible and long-term.

KOP 17a - No simulation was prepared for KOP 17a, which is the entry point for the linear KOP for westbound travelers on SR 74, who would be traveling at highway speeds. Viewers from this KOP would see the transmission line infrastructure coming in from the south perpendicular to SR 74, and then paralleling the south side of SR 74 approximately 0.5-mile away, going into the distance looking west. The structures would be visible as a series of regularly spaced short fine vertical lines. The structures would have landscape behind them and would not be skylined, resulting in weak to moderate contrast. The complexity and scenic nature of the landscape would absorb the addition of the transmission line as viewed from this KOP. The addition of the vertical elements from the structures would weakly contrast with the horizontal elements in the view, the impact of which would be minimized by the distance between the viewer and the transmission line. The appearance of the color of the structures would vary with the lighting conditions. When the structures are front lit they may appear lighter and moderately contrast with the darker colors in the background. When the structures are backlit they would appear darker, which would reduce their visibility in the landscape. Overall contrast of the transmission line with the surrounding landscape would be weak to moderate.

KOP 19 - The simulated view from KOP 19 (**Figure 4.14-19b**) looks at the transmission line paralleling the south side of SR 74 looking south from the intersection of the Quintero access road and SR 74. Sensitive viewers would be travelers on SR 74 slowing to turn at the intersection or travelers on the Quintero access road approaching and stopping at the intersection. Viewers would be looking at the transmission 0.25-mile away or less.

The addition of the transmission line in the view would add a structure and conductors in the foreground to middle ground, with structures and conductors going into the distance looking either direction (east or west). The structure would somewhat repeat the vertical line of the saguaros in the landscape; however, the structure would be much larger, regular shaped, smooth, and differ in color. The structure would contrast moderately with the subtle irregular horizontal line created by the mountain range in the distance at the skyline. The horizontal

lines created by the conductors would repeat the strong horizontal line created by the road striping. Under the lighting conditions at the time of the photo used for the simulation, the light color of the structure contrasts moderately with the darker color of the saguaros; however, the light color of the structure reduces the contrast with the sky. The smooth texture of the structure would contrast moderately with the variety of textures in the landscape. Overall contrast of the transmission line with the surrounding landscape would be moderate.

Travelers on the Quintero access road approaching this intersection would be slowing and coming to a stop. Because the transmission line would be in the center of the field of view, its proximity to other landscape features would make it appear larger than its surroundings; however, this situation would only last as long as the vehicle is stopped at the intersection (a few seconds or up to a couple of minutes while waiting for traffic to clear), until the traveler turns east or west on SR 74.

Overall Impact to Portion of Route on All Other Lands - Within the portion of the route that is on all lands other than those managed by the BLM, the contrast would range from weak to moderate. Overall impacts to this portion of the route would be minor and long-term.

*Overall Impact to Portion of SR 74 within the Linear KOP*

As demonstrated by **Figure 4.14-6**, some portion of the Project would be visible from almost any point along SR 74. However, as the figure indicates, the number of structures visible for the majority of the segment of SR 74 would be relatively low. Due to the distance between SR 74 and the proposed ROW, a portion of many of the structures would not be visible, obscured by topography; in many cases viewers from SR 74 would be seeing the tops of the structures. Approximately 14 percent of the portion of SR 74 within the linear KOP would have views dominated by the transmission line in conjunction with the easternmost and westernmost crossings. Aside from the crossings and those areas immediately north of the crossings, the views along SR 74 would not be dominated by the transmission line. The overall impact to the visual resources along the portion of SR 74 within the linear KOP under the Proposed Action would be moderate and long-term.

*Impacts to the Visual Resources of Lake Pleasant Regional Park*

KOP 16 - The simulated view from KOP 16 (**Figure 4.14-20b**) looks at the transmission line paralleling the south side of SR 74, west of the Morgan Substation. Sensitive viewers would be recreationists standing still or moving at low rates of speed in the campground looking at the transmission line approximately two miles away. The addition of the transmission line in the view would add a series of evenly spaced short vertical lines in the middle ground following the horizontal line of the road cut. The conductor would not be visible given the distance from the KOP. The lines in the landscape are predominantly horizontal and irregular; however, the contrast with the horizontal lines would be minimized by the fact that the vertical lines of the structures only intersect the subtle horizontal lines at a couple of points. The landscape is somewhat complex with numerous hills and a mountain range in the background, which would absorb the fine, light colored lines of the structures. Under the conditions that the photo was taken, the structures would be side lit, and appear light against the landscape. The light color contrasts moderately with the dark background, which makes the structures more noticeable and distinctive from other landscape features. Under different lighting conditions the structures would appear darker and repeat the vertical lines created by

the saguaros in the foreground, reducing the color contrast. Overall contrast of the transmission line with the surrounding landscape would be weak to moderate. The majority of Lake Pleasant Regional Park lies to the north of KOP 16. Visibility of the transmission line would be blocked in many cases (see **Figure 4.14-6**). Where the line would be visible, distance of the viewer from the line would make the infrastructure difficult to distinguish in the landscape. Impacts to the visual resources of Lake Pleasant Regional Park would be negligible to minor and long-term.

#### *Compliance with City of Peoria General Plan*

Within the City of Peoria boundaries, the Proposed Action route would utilize the SR 74 transportation corridor and would comply with the City of Peoria General Plan.

### **Operations, Maintenance, and Decommissioning**

Impacts from operations, maintenance and decommissioning under the Proposed Action would be the same as those described in **Section 4.14.2.1**.

#### **4.14.2.3 Alternative 1: Proposed Action with Additional Corridor**

##### **Amendment of the RMP**

Under Alternative 1, the Bradshaw-Harquahala RMP would be amended to designate the existing transportation corridor on BLM-managed lands north of SR 74 and the entire key-shaped piece of BLM lands south of SR 74 to also be a multiuse utility corridor. Designation of a utility corridor would not directly or indirectly impact the visual resources. However, co-location of future utilities within the proposed additional corridor could impact additional visual resources located on these lands. Any future projects would be subject to NEPA and other environmental review, therefore avoidance or mitigation (similar to that described for the proposed Project) would minimize additional impacts to visual resources. In addition to the utility corridor, the Proposed RMPA would change the VRM Class from VRM Class III to VRM Class IV on 3,375 acres of BLM-managed public lands for the area corresponding to the existing transportation corridor north of SR 74 and on the entire key-shaped piece south of SR 74. Changing the VRM Class of these lands would not have a direct or indirect impact on visual resources or the VRI.

### **Construction, Operations, Maintenance, and Decommissioning**

Impacts from construction and operations, maintenance, and decommissioning under Alternative 1 would be the same as those described in **Section 4.14.2.2**.

#### **4.14.2.4 Alternative 2: ROW South of SR 74**

##### **Amendment of the RMP**

Under Alternative 2, the Bradshaw-Harquahala RMP would be amended to designate the entire key-shaped piece of BLM-managed public lands south of SR 74 as a multiuse utility corridor. The proposed transmission line ROW would be within this multiuse utility corridor. Designation of a multiuse utility corridor south of SR 74 would not directly or indirectly impact the visual resources or the VRI. However, co-location of future utilities within the proposed additional corridor could impact additional visual resources located on these lands.

Any future projects would be subject to NEPA and other environmental review, therefore avoidance or mitigation (similar to that described for the proposed Project) would minimize additional impacts to visual resources.

In addition to the utility corridor, the Proposed RMPA would change the VRM Class from VRM Class III to VRM Class IV on 1,013 acres of BLM-managed public lands for the entire key-shaped piece south of SR 74. Changing the VRM Class of these lands would not have a direct or indirect impact on visual resources or the VRI.

## **Construction**

### *Portion of Route on BLM-managed Public Lands - Linear KOP, Castle Hot Springs SRMA*

Overview - The concept of the linear KOP is explained in **Section 3.14.5.7**. **Figure 4.14-21** is a viewshed analysis for the Alternative 2 route in relation to the linear KOP and its identified viewpoints, and the relative number of structures that would be visible in different areas. A comparison of **Figure 4.14-21** with **Figure 4.14-6** (viewshed analysis of the Proposed Action route) shows that the overall viewshed impacts of Alternative 2 in terms of areas where the transmission line would be visible and number of structures visible in different areas, would be very similar to the impacts of the Proposed Action route.

Similar to the Proposed Action, **Figure 4.14-21** also demonstrates that at any point along the SR 74 linear KOP, some portion of the transmission line infrastructure would be visible from SR 74. However, it is possible, even likely, that there would be brief periods of time where eastbound or westbound travelers on SR 74 would not be able to see the infrastructure traveling at highway speeds because the visible structures would be behind them and therefore the infrastructure would not be in their field of vision.

KOP 20 - The visual impacts of the transmission line as viewed from KOP 20 would be the same as described in **Section 4.14.2.2**.

Overall Compliance with Visual Resource Management Class Objectives within the Linear KOP - The portion of the BLM-managed public lands south of SR 74 is currently designated VRM Class III. This area is within the SRMA and is used by OHV recreationists. It is reasonable to expect that recreational users would be viewing the transmission line from any point in this area. Therefore, visual dominance of the line within this area is important to the impacts analysis.

Using the simulation tool described in **Section 4.14.1.2**, it was determined that the transmission line would dominate the view within an estimated 800 feet of each structure when viewed from points within the landscape surrounding the proposed ROW south of SR 74. Structures would average a distance of 1,100 feet apart, but would be much closer together under certain topographic conditions. For analysis purposes, it is estimated that the view would be dominated (as defined in **Section 4.14.1.1**) in areas within 800 feet of the centerline of the ROW (**Figure 4.14-22**). This area south of SR 74 totals 1,013 acres, of which the view is dominated and the transmission line would not meet VRM Class III objectives on an estimated 370 acres, and represents 36 percent of the VRM Class III designated area south of SR 74. Visual dominance of the transmission line in the landscape in this area would be a major impact to visual resources in the VRM Class III area. However,

the transmission line would meet VRM Class IV objectives that would be in place for this area as a result of the Proposed RMPA to change the VRM Class from III to IV.

Overall Visual Impacts to Castle Hot Springs SRMA and Hieroglyphic Mountains RMZ - Impacts to the SRMA and RMZ would be similar to those described in **Section 4.14.2.2**; however, under Alternative 2 the transmission line would be south of SR 74, increasing the distance between the majority of recreation viewers north of SR 74 and the transmission line, somewhat reducing the visual effect in the SRMA and RMZ. The transmission line would dominate the views in a portion of the SRMA, located south of SR 74, but this area would represent less than 0.1 percent of the SRMA. The view would not be dominated in any portion of the RMZ. Because of the distance between the viewers and the Project, the acreage of dominance within the SRMA is very small, visual impacts within the SRMA would be moderate and in the RMZ would be negligible under Alternative 2.

#### *Portion of Route on BLM-managed Public Lands – Impacts to Visual Resource Inventory*

As described in **Section 3.14.2**, there is a VRI for the BLM-managed public lands within the Study Area. Although KOPs 17d and 18d are located on BLM-managed public lands north of SR 74, the portion of the Alternative 2 route visible from these KOPs would not be on BLM-managed public lands, therefore determination of compliance with VRM class objectives and analysis of impacts to VRI is not applicable.

The BLM-managed public lands north and south of SR 74 within the Study Area are within the Hieroglyphic Mountains Scenic Quality Rating Unit. The VRI indicates that the scenic quality for the unit is B (moderate) and sensitivity is high. The addition of the transmission line would be a new cultural modification. The unit scored zero for cultural modification, indicating that any existing modifications add little or no visual variety to the area and introduce no discordant elements.

As viewed from KOP 20, the transmission line would be in the center of the field of view, its proximity to other landscape features would make it appear larger than its surroundings, and because travelers would come to a stop looking straight ahead, the transmission line would dominate the view from KOP 20 and would introduce discordant elements. However, this situation would only last as long as the vehicle is stopped at the intersection (a few seconds or up to a couple of minutes while waiting for traffic to clear), until the traveler turns east or west on SR 74.

Impacts to the VRI would be similar to those described for the Proposed Action in **Section 4.14.2.2**; however, the amount of acreage where the transmission line would dominate the view would be less than under the Proposed Action.

#### *Overall Impact to Portion of Route on BLM-managed Public Lands*

The portion of the Alternative 2 route on BLM-managed public lands would have areas of strong contrast where the Project would dominate the view. VRM Class objectives would not be met on approximately 36 percent of BLM-managed public lands currently designated VRM Class III south of SR 74; however, the transmission line would meet VRM Class IV objectives that would be in place for this area as a result of the Proposed RMPA to change the VRM Class from III to IV. There would be no impact to the VRI. Overall impacts to this portion of the route would be major and long-term.

*Portion of the Route on All Other Lands*

KOPs 10 and 11 - The visual impacts of the transmission line as viewed from KOPs 10 and 11 would be the same as described in **Section 4.14.2.2**.

KOP 12 - No simulation was prepared for KOP 12 viewing the Alternative 2 route. Sensitive viewers would be golfers or residents of Quintero who are moving at low rates of speed and viewing the transmission line to the southeast approximately one mile away. As viewed from KOP 12, the Alternative 2 route would be paralleling the south side of SR 74, looking southeast. Compared to the simulation for the Proposed Action (**Figure 4.14-15b**), the closest and most prominently visible structures in the left portion of the view would not be present under Alternative 2. The structures that would be barely visible and unnoticeable against the backdrop of mountains would continue into the distance. Under different lighting conditions the structures may be more visible and may even be noticeable. Because the structures would not be expected to be skylined, or would be very distant if skylined, contrast with the surrounding landscape would be weak if any. Overall impacts to visual resources as viewed from this KOP under Alternative 2 would be negligible and long-term.

KOP 13 - The simulated view from KOP 13 (**Figure 4.14-16c**) looks at the transmission line crossing private lands south of SR 74. Sensitive viewers would be recreationists within the SRMA who have reached the KOP via single-track OHV or by foot. Viewers would be standing still or moving at low rates of speed, looking at the transmission line nearly a mile away to the southwest.

The addition of the transmission line in the view would add a series of vertical lines that weakly to moderately contrast with the horizontal lines that are predominant in the view. The vertical lines of the structures would repeat the irregular vertical lines created by the numerous saguaros in the view. The conductors would be faintly visible along the nearest monopoles, adding very subtle horizontal lines. Panning to the left, the transmission line would disappear behind the nearby low hills. In the simulation photo, the structures are backlit, resulting in them appearing dark and harmonizing with the darker colors in the landscape. Under different lighting conditions the color of the structures may appear light gray or white and contrast with the surrounding landscape. Overall contrast of the transmission line with the surrounding landscape would be moderate.

KOP 17d - KOP 17d is located on BLM-managed public lands on the north side of SR 74, looking west-southwest toward the south side of SR 74 where the transmission line would be developed on lands other than those managed by the BLM under Alternative 2. Sensitive viewers would be westbound travelers on SR 74 traveling at highway speeds. Viewers would have seen portions of the transmission line following the south side of SR 74 through the undulating topography for a few minutes and would be looking at the transmission line 0.25-mile away or less.

The simulated view from KOP 17d (**Figure 4.14-23b**) looks at the transmission line south of SR 74 as viewed by westbound travelers. The addition of the transmission line in the view would add a series of vertical lines that contrast strongly with the undulating horizontal line and skyline. The monopoles in the foreground would appear taller than other landscape elements. The vertical lines of the structures would somewhat repeat the vertical lines created by the saguaros; however, the structures would be much larger, regular shaped, smooth, and

differ in color. The curvilinear horizontal lines created by the conductors would repeat the undulating horizontal lines in the landscape, and fade in the distance. The gray color of the structures would somewhat blend with the background of sky as viewed from this KOP; however, the color of the structures would appear darker or lighter under different lighting conditions. Overall contrast of the transmission line with the surrounding landscape would be strong and would dominate in the foreground.

KOP 18d - KOP 18d is located on BLM-managed public lands on the north side of SR 74, looking east toward the south side of SR 74 where the transmission line would be developed on lands other than those managed by the BLM under Alternative 2. Sensitive viewers would be westbound travelers on SR 74 traveling at highway speeds. Viewers would have seen portions of the transmission line following the south side of SR 74 through the undulating topography for a few minutes, and would be looking at the transmission line 0.25-mile away or less.

The simulated view from KOP 18d (**Figure 4.14-24b**) looks at the transmission line south of SR 74 as viewed by eastbound travelers. The addition of the transmission line in the view would add a series of vertical lines that contrast strongly with the undulating horizontal line and skyline. The vertical lines of the structures would somewhat repeat the vertical lines created by the saguaros; however, the structures would be much larger, regular shaped, smooth, and differ in color. The curvilinear horizontal lines created by the conductors would somewhat repeat the curvilinear lines created by SR 74 and associated shoulder, and fade in the distance. The gray color of the structures would somewhat blend with the background of the sky as viewed from this KOP, however, the color of the structures would appear darker or lighter under different lighting conditions. Overall contrast of the transmission line with the surrounding landscape would be strong.

Overall impact to Portion of Route on All Other Lands - Within the portion of the route that is on all lands other than those managed by the BLM, the contrast would range from none to strong. Overall impacts to this portion of the route would be moderate and long-term.

#### *Overall Impact to Portion of SR 74 within the Linear KOP*

As demonstrated by **Figure 4.14-21**, some portion of the Project would be visible from almost any point along SR 74. However as the figure indicates, the number of structures visible for the majority of the segment of SR 74 would be relatively low. Unlike the Proposed Action, in many cases a portion of the structures would not be obscured by topography under Alternative 2; viewers from SR 74 would be seeing more of each structure. Because the proposed ROW would be routed closer to SR 74 than under the Proposed Action, the structures would be closer to the viewers, and in some cases, the views along SR 74 would be dominated by the transmission line. Approximately 54 percent of SR 74 would be within 800 feet of the transmission line, suggesting that the views would be dominated in those areas. The overall impact to the visual resources along the portion of SR 74 within the linear KOP under Alternative 2 would be major and long-term.

#### *Impacts to the Visual Resources of Lake Pleasant Regional Park*

Comparing **Figures 4.14-6** and **4.14-21**, impacts to the visual resources of Lake Pleasant Regional Park under Alternative 2 would be similar to those under the Proposed Action, except fewer structures would be visible in certain areas under Alternative 2. Contrast would

be weak and overall impacts to the visual resources of Lake Pleasant Regional Park under Alternative 2 would be negligible to minor and long-term.

#### *Compliance with City of Peoria General Plan*

Within the City of Peoria boundaries on BLM-managed public lands, the Alternative 2 route would utilize the SR 74 transportation corridor and would comply with the City of Peoria General Plan.

### **Operations, Maintenance, and Decommissioning**

Impacts from operations, maintenance and decommissioning under Alternative 2 would be the same as those described in **Section 4.14.2.1**.

#### **4.14.2.5 Alternative 3: Carefree Highway Route**

**Figure 4.14-25** is a viewshed analysis for the Alternative 3 route in relation to its identified viewpoints. The viewshed analysis shows the extent to which the Alternative 3 route would be visible in the landscape and the relative number of structures that would be visible in different areas.

### **Construction**

#### *Compliance with Visual Resource Management Class Objectives and Impacts to the Visual Resource Inventory*

The portion of the Project unique to Alternative 3 would not cross BLM-managed public lands, therefore determination of compliance with VRM class objectives and analysis of impacts to VRI is not applicable.

#### *Portion of the Route on All Other Lands*

KOP 12 - No simulation was prepared for KOP 12 viewing the Alternative 3 route. As viewed from KOP 12, the Alternative 3 route would be approximately two miles south of the KOP, and would not be visible in the view from KOP 12 due to topography.

#### *Portion of Route Unique to Alternative 3*

KOP 9 - The simulated view from KOP 9 (**Figure 4.14-26b**) looks from SR 74 at the transmission line as it follows the Joy Ranch Road alignment approaching the south side of SR 74 and turning south to follow the 179<sup>th</sup> Avenue alignment. Sensitive viewers would be eastbound travelers on SR 74 traveling at highway speeds, looking at the transmission line less than 0.25-mile away, and going south into the distance.

The undulating topography blocks most of the view of the Project infrastructure to the south, such that only the tops of the structures would be visible in the distance, and the conductor would be only faintly visible. The presence of the vertical lines created by the saguaros would make the tops of the monopole virtually indistinguishable in the view. Because the lines and color of the monopoles would blend well with the lines and colors of the landscape, there would be little or no contrast; the view continues to look very natural and the scenery undiminished by the addition of the transmission line from this location.

KOP 14 - The simulated view from KOP 14 (**Figure 4.14-27b**) looks at the transmission line crossing private lands within the Saddleback Heights development south of SR 74, looking south. Sensitive viewers would be property owners or guests who have reached the KOP location by OHV or on foot who would be looking at the transmission line approximately 1.5 miles away.

The addition of the transmission line in the view would add a series of regularly spaced vertical lines in the middle ground in front of low hills. As viewed from this KOP, the structures would occasionally be visible against the sky, and the conductors would be faintly visible when skylined. Under the lighting conditions that the photo was taken the structures appear as faint light gray lines against the reddish brown landscape behind, and as dark gray lines when skylined.

The color of the structures would vary with lighting conditions, and would be more visible and create greater contrast when side lit and appear brighter in color. Because the skylining would be minimal, the vertical structures would only weakly contrast with the irregular horizontal skyline and would appear similar to and repeat the vertical lines created by the saguaros. The faint horizontal lines of the conductors would somewhat repeat the subtle horizontal lines in the landscape. The complexity and relative scenic quality of the landscape would absorb the transmission line such that while noticeable, overall contrast would be weak.

KOP 15 - The simulated view from KOP 15 (**Figure 4.14-28b**) looks at the transmission line crossing private lands within the existing Vistancia development south of the CAP, looking north. Sensitive viewers would be Vistancia residents looking at the transmission line approximately 1.5 miles away.

The addition of the transmission line in the view would add a series of regularly spaced fine vertical lines in the middle ground. Because of the distance between the KOP and the transmission line, the structures with rolling hills behind them would be difficult to discern, while structures that would be skylined would weakly contrast with the undulating horizontal line and be more visible. The development underway in the foreground competes for dominance with the simple hilly landscape in the middle ground, distracting from the addition of the transmission line, resulting in overall contrast that is weak.

Overall Impact to Route Portion Unique to Alternative 3 - Within the portion of the route unique to Alternative 3, the contrast would be weak. No BLM-managed public lands would be crossed, therefore VRM Objectives would not be applicable and there would be no impact to the VRI. Overall impacts to this portion of the route would be negligible and long-term.

#### *Linear KOP*

While the Alternative 3 route would not cross BLM-managed public lands within the linear KOP, it would be visible from within the linear KOP. Because no BLM-managed public lands would be crossed, VRM Objectives would not be applicable and there would be no impact to the VRI.

KOP 19 - No simulation was prepared for KOP 19 viewing the Alternative 3 route. Sensitive viewers would be travelers on SR 74 slowing to turn at the intersection, or travelers on the

Quintero access road approaching and stopping at the intersection. As viewed from KOP 19, the Alternative 3 route would be approximately two miles south of the KOP.

The transmission line would appear as a series of thin regularly spaced vertical lines that would be intermingled with or protrude above the irregular horizontal line created by the vegetation in the foreground. The structures would appear relatively short due to distance and topography, and would be partially obscured by the vegetation in the foreground. The vertical lines of the structures would repeat the vertical lines created by the numerous saguaros in the foreground. Under certain lighting conditions the structures would appear dark and would moderately contrast where skylined in the portion of view to the east or left, and would be less visible against the backdrop of mountains in the view to the west or right. Under lighting conditions that would make the structures appear lighter, the effect would be reversed. Overall contrast from KOP 19 would be weak.

KOP 20 - No simulation was prepared for KOP 20 viewing the Alternative 3 route. As viewed from KOP 20, the Alternative 3 route would be over two miles south of the KOP, and would not be visible in the view from KOP 12 due to topography.

Overall Impact to Route Portion within the Linear KOP - Within the Linear KOP, the contrast would range from none to weak. No BLM-managed public lands would be crossed, therefore VRM Objectives would not be applicable and there would be no impact to the VRI. Overall impacts to this portion of the route would be minor and long-term.

Overall Impact to Portion of SR 74 within the Linear KOP - As demonstrated by **Figure 4.14-25**, some portion of the Project would be visible from any point along SR 74 in the western portion of the linear KOP, but would only be intermittently visible in the eastern portion. As the figure indicates, the number of structures visible for the majority of the segment of SR 74 would be relatively low, except in the far western portion, where a relatively high number of structures would be visible. The overall impact to the visual resources along the portion of SR 74 within the linear KOP under Alternative 3 would be minor and long-term.

#### *Castle Hot Springs SRMA and Hieroglyphic Mountains RMZ*

Under Alternative 3, no portion of the transmission line would cross the SRMA; however, the transmission line would be visible from the SRMA. The visibility of the portion of the transmission line between 179<sup>th</sup> Avenue and the Morgan Substation would be limited due to topography and distance between the transmission line and the public lands. The portion of the transmission line paralleling 179<sup>th</sup> Avenue would be visible from the southwest corner of the SRMA and RMZ. Comparing **Figure 4.14-25** with **Figures 4.14-6** and **4.14-21**, a greater number of structures would be visible in the SRMA and RMZ than under the Proposed Action and Alternative 2; however, that portion of the transmission line would be farther away from the viewers in the SRMA and RMZ than under the Proposed Action and Alternative 2, reducing the visual effect. The overall contrast would be none to moderate, and the impact of Alternative 3 to visual resources in the SRMA and RMZ would be negligible to minor and long-term.

### *Impacts to the Visual Resources of Lake Pleasant Regional Park*

Comparing **Figures 4.14-6, 4.14-21, and 4.14-25**, impacts to the visual resources of Lake Pleasant Regional Park under Alternative 3 would be similar to those under the Proposed Action and Alternative 2, except fewer structures would be visible in certain areas under Alternative 3. Overall contrast would be weak, and impacts to the visual resources of Lake Pleasant Regional Park under Alternative 2 would be negligible to minor and long-term.

### *Compliance with City of Peoria General Plan*

Within the City of Peoria boundaries, the Alternative 3 route would not be within the SR 74 transportation corridor or any other corridor, and thus would not comply with the City of Peoria General Plan.

## **Operations, Maintenance, and Decommissioning**

Impacts from operations, maintenance, and decommissioning under Alternative 3 would be the same as those described in **Section 4.14.2.1**.

### **4.14.2.6 State Trust Land Route Variation Sub-alternative**

#### **Sub-alternative**

Under the State Trust Land Route Variation, the Sub-alternative route could be combined with the Proposed Action or any of the Action Alternative routes. The impacts analysis below is limited to the four-mile long Sub-alternative route.

#### *Construction*

Castle Hot Springs SRMA, Hieroglyphic Mountains RMZ - The Sub-alternative route would not have an appreciable impact to visual resources of these areas due to distance between the transmission line and the areas (for example, over four miles to the west-southwest between the line and KOP 10 at The Boulders Staging Area within the SRMA).

Compliance with Visual Resource Management Class Objectives and Impacts to the Visual Resource Inventory - The lands associated with the Sub-alternative route visible from KOPs 4, 7, 21, and 22 would not cross BLM-managed public lands, therefore determination of compliance with VRM class objectives and analysis of impacts to VRI is not applicable.

KOP 4 - Sensitive viewers from KOP 4 would be residents or users of Thunder Ridge Airpark. No simulation was prepared from KOP 4 for the Sub-alternative route. Under the Sub-alternative, the transmission line would not be visible from KOP 4, and there would be no contrast. However, the transmission line may be visible to residents of the Thunder Ridge Air Park area as a series of evenly spaced thin vertical lines in the distance that may be noticeable, but would not attract attention, as the line would be located approximately three miles to the west. The line would appear similar to, but somewhat larger than it appears as viewed from KOP 11.

KOP 7 - The simulated view from KOP 7 (**Figure 4.14-5c**) looks at the transmission line intersecting 211<sup>th</sup> Avenue from the east, then turning north to parallel 211<sup>th</sup> Avenue, looking south. Sensitive viewers traveling south on 211<sup>th</sup> would have just turned off SR 74 and would be accelerating to 35 to 45 miles per hour.

The line is then faintly visible turning west to parallel Cloud Road in the distance. The addition of the transmission line in the view would add a series of strong regularly spaced vertical and horizontal lines in the middle ground, and shorter subtle vertical lines in the distance. The vertical lines created by the structures would contrast strongly with the horizontal line at the horizon in the middle ground, and the irregular horizontal line created by the mountains in the distance. The vertical lines of the structures would somewhat repeat the vertical lines created by the few saguaros in the landscape. The horizontal lines of the conductors would repeat the strong horizontal line in the middle ground, but contrast moderately with the vertical lines of the communications tower behind the transmission line, and the saguaros. The structures would appear very solid, smooth and regular, and contrast with the soft, feathery texture of the surrounding vegetation. The transmission line combined with the road, the fencing along the road, and the communications tower would give the view a feeling of development. The strong lines of the road and associated shoulder, the transmission line and the horizon would appear to compete for dominance and conflict, resulting in overall moderate to strong contrast.

KOP 21 - The simulated view from KOP 21 (**Figure 4.14-29b**) looks at the transmission line paralleling the north side of the Cloud Road alignment, looking west-northwest. Sensitive viewers would be residents standing still or moving at low rates of speed, looking at the transmission line less than 0.25-mile away. The addition of the transmission line in the view would add a series of regularly spaced tall vertical lines created by the structures and horizontal lines created by the conductors that become indistinct in the distance. The structures would be much taller than anything else in the view, which would moderately contrast with the much shorter and boxy form of the residences. The vertical and horizontal lines of the transmission line would contrast weakly with the diagonal lines of the roof tops in the foreground to middle ground. The structures and conductors would be light gray in color and contrast weakly with the blue sky background. Under different lighting conditions, such as back lighting, the structures and conductors may appear dark and contrast more strongly with the sky. The transmission line would blend with the developed appearance of residences, road, and fences in the foreground and middle ground, resulting in overall weak to moderate contrast.

KOP 22 - The simulated view from KOP 22 (**Figure 4.14-30b**) looks at the transmission line paralleling the west side of 211<sup>th</sup> Avenue, looking west. Sensitive viewers would be residents standing still or moving at low rates of speed, looking at the transmission line less than 0.25-mile away.

The addition of the transmission line in the view would add very large, smooth, multi-sided structures that create very strong vertical lines in the foreground. The conductors would create several roughly parallel horizontal lines. While there are other vertical and horizontal lines in the landscape, the lines created by the structures and conductors would dominate rather than repeat the other lines. The gray color of the structures would somewhat repeat shades of gray in the surrounding vegetation. The color of the structures would vary with lighting conditions, but because of the close proximity of the structure to the KOP in this simulation, the color change would not lessen the contrast with and dominance in the surrounding landscape. The multi-sided nature of the structure would give it a slight appearance of texture, but overall the structure would appear to be smooth, somewhat

repeating the smooth texture of the fencing in the foreground and contrasting with the other textures in the surrounding vegetation. Overall the transmission line would contrast strongly with almost every aspect of the surrounding landscape resulting in a major impact to visual resources as viewed from this KOP.

Overall Impact to Route Portion for the Sub-alternative - Within the Sub-alternative route, the contrast would range from moderate to strong. No BLM-managed public lands would be crossed, therefore VRM Objectives would not be applicable and there would be no impact to the VRI. Overall impacts to this portion of the route would be moderate and long-term.

Lake Pleasant Regional Park - The Sub-alternative route would not have an appreciable impact to visual resources of the park due to distance between the transmission line and the park.

Compliance with City Plans - The Sub-alternative route would not be within the Town or Buckeye or the City of Peoria boundaries, therefore the general plans would not be applicable.

#### *Operations, Maintenance, and Decommissioning*

Impacts from operations, maintenance and decommissioning under the State Trust Land Route Variation Sub-alternative would be the same as those described in **Section 4.14.2.1**.

### **Primary Segment Common to All Action Alternatives**

#### *Construction*

The visual impacts of the transmission line along the Primary Segment would be the same as those described under **Section 4.14.2.1** for KOPs 4, 5, 6, and 7.

Castle Hot Springs SRMA and Hieroglyphic Mountains RMZ - The Primary Segment would not have an appreciable impact to visual resources of these areas due to distance between the transmission line and the areas.

Compliance with Visual Resource Management Class Objectives and Impacts to the Visual Resource Inventory - The lands associated with the Primary Segment visible from KOPs 4, 5, 6, and 7 would not be on BLM-managed public lands, therefore determination of compliance with VRM class objectives and analysis of impacts to VRI is not applicable.

Compliance with City Plans - The Primary Segment Common to All Action Alternatives would not be within the Town of Buckeye or the City of Peoria boundaries, therefore the general plans would not be applicable.

Lake Pleasant Regional Park - The Primary Segment would not have an appreciable impact to visual resources of the park due to distance between the transmission line and the park.

Overall Impact to Route Portion - Within the Primary Segment, the contrast would range from weak to moderate. No BLM-managed public lands would be crossed, therefore VRM Objectives would not be applicable and there would be no impact to the VRI. Overall impacts to this portion of the route would be minor.

## *Operations, Maintenance, and Decommissioning*

Impacts from operations, maintenance, and decommissioning under the Primary Segment common to all Action Alternatives would be the same as those described in **Section 4.14.2.1**.

### **4.14.2.7 No Action Alternative**

Under the No Action Alternative the BLM would not issue a ROW, the Bradshaw-Harquahala RMP would not be amended to establish a single- or multiuse utility corridor and change the VRM class; and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives. There would be no Project impacts on visual resources as described for the Proposed Action and Action Alternatives. However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed public lands. Under this situation, impacts to visual resources located on lands that are crossed or in the vicinity of the Project could occur. The degree of potential for impacts to these resources and the magnitude of those impacts would depend on the route selected.

### **4.14.3 Comparison of Alternatives**

**Table 4.14-3** compares the impacts of the Proposed Action and Action Alternatives.

### **4.14.4 Mitigation and Residual Effects**

#### **4.14.4.1 Micrositing**

Within the linear KOP, the transmission line would be designed to minimize visual impacts from SR 74. Monopole structures would be used as they are less visually disturbing in foreground/middle ground situations (see **Section 4.14.4.2**). APS worked with the BLM to microsite a sampling of individual structures to understand how visual impacts from the portion of the Project located on BLM-managed public lands would be minimized. Structures were first proposed to be located within the ACC-certificated route as far north as possible from SR 74. Individual structures would be micrositied, reducing visual contrast by taking greater advantage of the terrain – to provide either screening or backdropping of the transmission line structures. Minor shifts would be made in the route alignment and potential structure locations within the proposed ROW. Along the approximately 6-mile segment north of SR 74 and within the proposed ROW, the alignment would be shifted from 2 to 195 feet (when comparing centerline to centerline). The structures would be shifted away from ridgelines and points of higher elevation to minimize the amount of the structures that would be visible from SR 74. In certain locations, the lower elevation would reduce sky-lining and provide additional back-dropping or screening opportunities depending on the angle of view. At locations where the transmission line would cross SR 74, individual structures on either side of the highway would be shifted to maximize the distance between the structures and the highway. Simulations comparing previous structure locations with micrositied locations would be used to determine effectiveness of micrositing efforts and make adjustments where possible. As a result, micrositing would reduce impacts to views of travelers on SR 74 and may reduce major impacts to some specific viewpoints within the linear KOP to less than

major levels; however, it would not change the overall impact analysis or reduce the estimated area of visual dominance on BLM-managed public lands.

#### 4.14.4.2 Structure Type

Simulations of the proposed transmission line were prepared replacing monopoles with lattice structures as viewed from selected KOPs from SR 74 within the linear KOP where the transmission line would be located on BLM-managed public lands north of SR 74. Because of the relative proximity of the transmission line to SR 74, particularly where the transmission line would cross SR 74, it was determined that the lattice structures were more visually disruptive than the monopole structures. Therefore, to minimize visual impacts along the linear KOP, the BLM would require the use of monopoles on BLM-managed public lands.

The southern portion of the SRMA and RMZ are most greatly impacted by the number of structures visible to the west of the linear KOP, where the landscape flattens out, distant views are common; and the landscape becomes less scenic and complex, and therefore has less capacity to absorb the transmission line (**Figures 4.14-6, 4.14-21, and 4.14-25**). In general, the remainder of the route beginning where the route diverges from SR 74 could be constructed using lattice structures south of the highway on private and State Trust lands. Because the viewers in the southern portion of the SRMA and RMZ would be superior to the transmission line, the transmission line would be against a backdrop of lands rather than skylined, and the views would be distant, the use of lattice structures would minimize visual impacts within the SRMA and RMZ, as well as any other distant views from the south, because the viewer would be looking through the lattice structure. However, monopoles would be used when the transmission line would be in the foreground/middle ground of sensitive viewers, such as existing residences and communities. Where the transmission line would be in proximity to another existing line, the same type of support structure (monopole, lattice, or H-frame) would be used as is used in the existing transmission line, to the extent possible, in order to maintain architectural consistency.

Where the transmission line would cross lands other than BLM-managed public lands, the above are recommendations to minimize visual impacts from the transmission line; the final decision regarding design and infrastructure type would be between the appropriate land-managing agency and APS.

**Table 4.14-3 Comparison of Visual Resource Impacts by Alternative**

		PROPOSED ACTION	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	SUB-ALTERNATIVE ROUTE	PRIMARY SEGMENT
Portion of the route common to all Action Alternatives on BLM-managed Public Land	Contrast	Weak to moderate	Same as Proposed Action				
	Meets VRM Class Objectives?	Yes, where applicable	Same as Proposed Action				
	Overall Long-term Impact	Minor	Same as Proposed Action				
Portion of the route common to all Action Alternatives on All Other Lands	Contrast	Weak to Moderate	Same as Proposed Action				
	Overall Long-term Impact	Minor	Same as Proposed Action				

**Table 4.14-3 Comparison of Visual Resource Impacts by Alternative (Continued)**

		PROPOSED ACTION	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	SUB-ALTERNATIVE ROUTE	PRIMARY SEGMENT
Portion of Route on BLM-managed Public Lands - Linear KOP	Contrast	None to strong and dominating	Same as Proposed Action	Moderate to strong and dominating	None to moderate	N/A	N/A
	Meets Current VRM Class Objectives?	Yes, in approx. 50% of VRM Class III north of SR 74 and 74% of VRM Class III south of SR 74  No, in approx. 50% of VRM Class III north of SR 74 and 26% of VRM Class III south of SR 74	Same as Proposed Action	Yes, in approximately 64% of VRM Class III south of SR 74  No, in approximately 36% of VRM Class III south of SR 74	N/A	N/A	N/A
	Would Meet VRM Objectives with the Proposed RMPA?	Yes	Same as Proposed Action	Yes	N/A	N/A	N/A
	Overall Long-term Impact	Major	Same as Proposed Action	Major	Minor	N/A	N/A

**Table 4.14-3 Comparison of Visual Resource Impacts by Alternative (Continued)**

		PROPOSED ACTION	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	SUB-ALTERNATIVE ROUTE	PRIMARY SEGMENT
Castle Hot Springs SRMA and Hieroglyphic Mountains RMZ	Contrast	Minimal to strong and dominating	Same as Proposed Action	Negligible to moderate	None to moderate	N/A	N/A
	Meets VRM Class Objectives?	Yes, in approx. 50 % of VRM Class III north of SR 74 and 74% of VRM Class III south of SR 74  No, in approximately 50% of VRM Class III north of SR 74 and 26% of VRM Class III south of SR 74	Same as Proposed Action	Yes, in approximately 64 % of VRM Class III south of SR 74  No, in approximately 36% of VRM Class III south of SR 74	Yes, no portion of the transmission line would cross or dominate the views within the SRMA.	N/A	N/A
	Would Meet VRM Objectives with the <u>Proposed</u> RMPA?	Yes	Same as Proposed Action	Yes	N/A	N/A	N/A
	Overall Long-term Impact	Minor to moderate	Same as Proposed Action	Negligible to moderate	Minor	N/A	N/A

**Table 4.14-3 Comparison of Visual Resource Impacts by Alternative (Continued)**

		PROPOSED ACTION	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	SUB-ALTERNATIVE ROUTE	PRIMARY SEGMENT
Visual Resources Inventory		In the area where the transmission line would dominate the view, it would be a very discordant element; however, it would not affect the Scenic Quality rating assigned to the SQRU.	Same as Proposed Action	In the area where the transmission line would dominate the view, it would be a very discordant element. The amount of acreage where the transmission line would dominate the view would be less than under the Proposed Action and would not affect the Scenic Quality rating assigned to the SQRU.	N/A	N/A	N/A
Portion of Route on All Other Lands	Contrast	Weak to Moderate	Same as Proposed Action	None to Strong	See Portions of Route Unique to Alternative 3 below	Weak to Strong	Weak to Moderate
	Overall Long-term Impact	Minor	Same as Proposed Action	Moderate		Moderate	Minor
Portion of Route Unique to Alternative 3	Contrast	N/A	Same as Proposed Action	N/A	Weak	N/A	N/A
	Overall Long-term Impact	N/A	Same as Proposed Action	N/A	Negligible	N/A	N/A

**Table 4.14-3 Comparison of Visual Resource Impacts by Alternative (Continued)**

		PROPOSED ACTION	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	SUB-ALTERNATIVE ROUTE	PRIMARY SEGMENT
Lake Pleasant Regional Park	Contrast	Weak to moderate	Same as Proposed Action	Weak	Weak	N/A	N/A
	Overall Long-term Impact	Negligible to minor	Same as Proposed Action	Negligible to minor	Negligible to minor	N/A	N/A
Impact to Portion of SR 74 within the Linear KOP		Moderate	Same as Proposed Action	Major	Minor to Moderate	N/A	N/A
Complies with Town of Buckeye and City of Peoria General Plans?		Yes	Yes	<u>No – City of Peoria</u>	No – City of Peoria	N/A	N/A

#### 4.14.4.3 Color

The color of the structures or lattice towers affects how well the structure blends in the environment. Photographs of boards treated with the BLM's standard environmental colors were taken from KOPs representing typical topography and vegetation within the Project Area. The photographs were then analyzed to identify which standard environmental color would minimize visual impacts. While no one color works best in all situations and lighting conditions, the shadow gray and shale green colors blended best under front lit conditions and had low levels of contrast in back lit situations. A complete analysis of the color selection process is available in the Project Record. Surface treatment options for monopole structures are very limited and do not achieve much color variation. The colors available would be shades of gray ranging to almost black; no surface treatments available would resemble shale green. Among the surface treatments available for the monopole structures, the BLM would require a treatment that would be non-reflective and most closely resemble shadow gray.

Following the implementation of the mitigation measures, although impacts to visual resources would be reduced in some cases, residual effects would still occur with the transmission line still being present in the area where there was not one previously.

#### 4.14.5 Unavoidable Adverse Impacts

As described under **Section 4.14.4**, micrositing of structures may be used to reduce the visibility of the transmission line from certain points by taking advantage of topography. Treating the structures with shadow gray or shale green, or a surface treatment that would achieve a similar color may help the structures to blend with the colors in the surrounding landscape and reduce the overall visibility of the structures at a distance. These treatments would help to reduce contrast and make the transmission line less conspicuous in the landscape from certain viewpoints. However, most of the impacts with the highest intensity levels described under **Section 4.14.1** would be unavoidable. For the Proposed Action, Alternative 1, and Alternative 2, the VRM Class would be changed as a result of the RMPA. In addition, application of micrositing and the color of the structures would not alleviate these major impacts.

### 4.15 WATER RESOURCES

#### 4.15.1 Indicators and Methods

##### 4.15.1.1 Indicators

The following surface water indicators are used to evaluate identified issues and the potential impacts to surface water resources from the Project:

- Changes in volume, timing, and/or extent of surface water flow
- Number of drainages and floodplains crossed by the transmission line and access roads

- Acres of waters of the U.S. potentially impacted
- Proximity of Project components that drain directly to the Agua Fria River

There were no groundwater resources issues raised during scoping. Groundwater indicators are:

- Measurable effect on groundwater levels as a result of construction water uses
- Potential for hydrocarbon spills or releases to occur over shallow groundwater

#### **4.15.1.2 Methods**

A PJD of waters of the U.S. associated with the Proposed Action and the other Action Alternatives was prepared by URS (URS 2013a), followed by application of two impact assessment models for the same (URS 2013b; URS 2013c). The Study Area for the assessments included the proposed 200-foot wide ROW routes associated with the Proposed Action and Action Alternatives, as well as a corridor for the corresponding new (but temporary) access roads. The PJD determined the presence of waters of the U.S. within the limits of the proposed transmission line disturbance corridors associated with each Action Alternative. The impact assessment models used the PJD as well as Project configuration (e.g., span lengths) to evaluate potential maximum impact acreages, without defining which specific waters of the U.S. features would be subject to these disturbances. However, when the final Project design and configuration is identified, it is expected that the actual disturbance of jurisdictional waters would be less because APS would avoid to the extent possible jurisdictional waters when siting poles, access roads, construction pad areas, and tensioning/pulling sites (URS 2013b).

An earlier desktop review (URS 2012i) used aerial photography to count the total number of drainages visible within those same corridors. While all of these drainages may represent channelized flow paths that at least occasionally convey runoff, not all of them are jurisdictional waters of the U.S. Thus, the PJD-determined waters of the U.S. are a subset of the total number of drainages. Section 404 permits would need to be obtained before filling any jurisdictional waters of the U.S. Other washes that are not jurisdictional are also relevant to the impact analysis, separate from Section 404, so their counts are also provided below.

#### **4.15.2 Direct and Indirect Effects by Alternative**

##### **4.15.2.1 Impacts Common to All Action Alternatives**

##### **Surface Water Resources**

###### *Construction*

If the estimated short-term, average 48,000 gallons per day (33 gpm) of construction water is sourced from surface water, it would be leased or purchased from an existing municipal or agricultural user. This water would not likely come from one of the Study Area washes, because they only flow ephemeral and are not reliable water sources. If construction water is sourced from either of the two major Study Area streams (the Agua Fria and Hassayampa Rivers), it would likely be obtained from reservoirs upstream of the Study Area or from one

of the distribution canals such as the CAP. Impacts to volume, timing, and/or extent of surface water flow resulting from this water usage would be negligible because the quantity would be small, the period of use would be temporary, and it would represent an alteration of an existing use rather than a new use.

Construction activities almost always have the potential to locally increase runoff due to vegetation removal, soil compaction, and drainage path modification. However, construction associated with the Project (during either the first phase or the additional 230kV line addition at a later date) would be unlikely to do so to any more than a negligible degree because the construction corridor (and presumably any new or upgraded roads) would be limited in acreage in comparison to overall watershed size and dispersed among a number of tributary drainages. Therefore, construction activities would not be likely to alter the volume, timing, and/or extent of surface water flow to any measurable degree. Furthermore, the Study Area's ephemeral washes are naturally subject to very wide fluctuations in discharge that occur on an erratic basis and their channel characteristics have been formed accordingly. If minor changes in runoff characteristics did occur, they would not be likely to have a noticeable effect on channel morphology or these channels' abilities to provide for flood control, energy dissipation, and sediment movement.

Similarly, via the same mechanisms as listed above, construction activities generally have the potential to increase turbidity, suspended sediment concentrations, and/or dissolved mineral concentrations, either due to erosion of upland soils or in-stream bed and bank erosion. However, the Study Area surface waters are likely naturally high in turbidity because of suspended particulates and likely to contain naturally occurring constituents that are leached from the soils, including minerals and salts. Any increases that may be due to construction activities would likely be negligible or minor due to the limited and dispersed disturbance acreage and the implementation of erosion and runoff control BMPs. However, the proximity of construction activity disturbances to drainages is one measure by which alternatives can be compared; this is discussed below for the individual alternatives.

Concrete truck wash-out could also be a potential source of surface water quality impacts, either due to concrete materials themselves entering the washes or due to wash waters being discharged with sufficient velocity to erode soils and transport them to the washes. However, the primary wash out areas for concrete trucks would be in designated locations in the lay down yards, which would be constructed on private lands. Additional wash out for purposes of cleaning chutes may take place at other designated locations along the ROW, but this occurrence would be minimal. Regardless, all wash out areas would be required to comply with the AZPDES General Permit for Stormwater Discharges Associated with Construction Activity to Waters of the U.S., which stipulates no discharge of these types of wash waters. Assuming that this and all other requirements of the General Permit are complied with, impacts from this activity would result in negligible impacts to surface water.

Although construction-related disturbances would occur throughout the ROW, and thus would be done within or proximate to ephemeral drainages, APS does not plan to place transmission line structures, anchors, or other permanent structures within the drainage channels. Instead, all washes would be spanned. This would help to minimize water quality degradation (such as increases in turbidity, suspended sediments, or minerals). It would also help to minimize impacts to riparian vegetation, if any, associated with the drainage channel,

which in turn would also help to maintain water quality. Even the widest channel (the Agua Fria River crossing) under all Action Alternatives would be well within the allowable span length. However, given the width of floodplains, some structures may inevitably need to be located within the floodplain. This is discussed further by individual alternative, below.

Project-related road construction activities and use likely represent a greater potential source for water quality impacts than activities related to construction of the transmission line itself. In addition to the potential for turbidity, sediment, and salt increases (which, if they occurred, should be localized, short-term, and minor, assuming proper BMP use), there would be the potential for inadvertent hydrocarbon releases or other contaminants (e.g., concrete mix) due to accidents or spills. However, this potential would also be reduced by proper work practices, clean-up protocols, and other BMPs. Further, the resultant impact to surface water quality would be reduced because of the lack of live water in the Study Area. The potential for these impacts can be somewhat related to the acreage of roadway and the number of drainage crossings (whether or not they are jurisdictional waters of the U.S.). These are compared by alternative in the following subsections. Note that existing roads that would be used in association with the Project are not included in either acreage estimates or potential number of waters of the U.S. or other non-jurisdictional crossings. These existing roads would not result in construction activities, waters of the U.S. fills, or sediment production. They would, however, be a potential location for an inadvertent spill or release during transport.

The above discussions on surface water impacts would apply to both phases of construction (i.e., the 500kV line and the 230kV line). However, presumably, stringing the 230kV line would not require as much earthwork, thus there would be even lower water usage than the first construction phase. It would also presumably not require concrete. Further, it would not likely require as much heavy equipment use, further reducing the potential for inadvertent hydrocarbon releases as compared to the first phase.

Last, the potential for impacts to public drinking water supplies if transmission lines or other components fall into the river (presumably the Agua Fria) or CAP canal during construction of either of the lines would be negligible. First, proper installation practices make it highly unlikely that this would occur. Second, conveyances of public drinking water (prior to treatment) would only have the potential to intersect the transmission line where it crosses the Agua Fria River (seasonally) or the CAP canal. The CAP crossing for all Action Alternatives is across a section of the canal that is buried, and if the line fell in this location, it would very likely hit the ground, not the water. In the very unlikely event that the line falls in the water, there would likely be a temporary shutdown of the conveyance while the line was removed; this would not likely impact municipal water supply, because public drinking water systems are required to have a storage reserve for a specified time period.

#### *Operations, Maintenance, and Decommissioning*

There would be no water usage during Project operations or maintenance, thus there would be no reduction of surface water quantity during those activities. During decommissioning, presumably water usage would be required at a similar quantity as during construction. If sourced from surface water, impacts to its quantity or level would be negligible, for the same reasons as it would be during construction.

The construction-related soil and vegetation disturbances would remain during operations and maintenance, due to road travel and the time for rehabilitation of non-used areas. This would have some potential to increase turbidity, sediment, and mineral concentrations; however, these increases would likely be negligible or minor due to the limited and dispersed disturbance acreage and the implementation of erosion and runoff control BMPs. These BMPs are outlined in Appendix 2A; they include measures to avoid or minimize direct and indirect impacts to ephemeral streams. With time, reclamation success would further reduce this potential. Appendix 2B includes a discussion of how reclamation vegetation would be managed to control dust. Note that APS anticipates that future maintenance would be very minimal, based upon past history.

The potential for impacts to public drinking water supplies if transmission lines or other components fall into the river (presumably the Agua Fria) or CAP canal during operations, maintenance, or decommissioning would be negligible. First, there would be no tall trees whose limbs could cause a downed lined. Second, proper decommissioning and decommissioning practices make it highly unlikely that a line would fall into either of these water features.

Although APS does not plan to install transmission line structures, anchors, or other permanent structures within the drainage channels, during operations, structures that start out near, but outside of a drainage channel, may end up within one because many of the Study Area washes are unstable and can migrate laterally during significant runoff events. If this occurred, there could be a short-term acceleration of in-stream erosion and downstream sedimentation. However, this occurrence would likely be a high priority maintenance issue for APS.

As described above under construction, there may be several instances where permanent structures must be placed within the existing floodplain. Although it is unlikely given their small footprint, these structures could possibly impede flood flows or redirect flood flows to areas not currently within a flood hazard area by raising the base flood elevation. However, APS would obtain proper permits for such locations and conduct any necessary assessments including scour analysis and/or potential for flow displacement. Based upon those results, APS would determine the appropriate protection measures as committed to in Section 2.4.1.1 to ensure that water quality and channel stability are maintained.

## **Groundwater Resources**

### *Construction*

If the estimated short-term, average 48,000 gallons per day (33 gpm) of construction water is sourced from groundwater, it would be leased or purchased from an existing well owner. The well would likely be completed in the alluvial aquifer of the Phoenix AMA. Due to the small amount of water required, the well owner would not need a grandfathered right or withdrawal permit to pump from the AMA. Further, Project use would not represent a new groundwater withdrawal, and would therefore have a negligible impact on groundwater quantity or levels in the alluvial aquifer.

As with any construction project, there would be some potential for inadvertent releases of hydrocarbons or other contaminants due to accidents or spills. However, this potential would be reduced by proper work practices, clean-up protocols, etc. Further, the resultant impact to

groundwater quality would be negligible because there are no known areas of shallow groundwater within the Study Area. Similarly, there would be negligible impacts to groundwater quality from concrete truck wash-out practices.

The above discussion would apply to both phases of construction (i.e., the 500kV line and the 230kV line). However, presumably, stringing the 230kV line would not require as much earthwork, thus there would be even lower water usage than the first construction phase. It would also presumably not require concrete. Further, it would not likely require as much heavy equipment use, further reducing the potential for inadvertent hydrocarbon releases as compared to the first phase.

#### *Operations, Maintenance, and Decommissioning*

There would be no water usage during Project operations or maintenance, thus there would be no impact to groundwater quantity or levels during those activities. During decommissioning, presumably water usage could be required at a similar quantity as during construction, although likely less would be needed. If sourced from groundwater, impacts to its quantity or level would be negligible. The potential to impact groundwater quality would also be negligible, for the same reasons as it would during construction.

### **4.15.2.2 Proposed Action**

#### **Surface Water Resources**

##### *Construction*

As noted above, the proximity of construction disturbances to drainages is related to the potential for impacts due to erosion and sedimentation, or from inadvertent spills or releases. Due to the large number of drainages crossed (both jurisdictional and non-jurisdictional), the information on their numbers can be used as a stand-in for proximity. According to URS (2012k), the Proposed Action route would cross 552 drainages. Fewer than half (191) of these drainages have been determined to be jurisdictional (URS 2013c); temporary disturbance of these waters of the U.S. is predicted to be no more than 3.70 acres (URS 2013b). Similarly, URS (2012k) estimated that the Proposed Action access road construction (not including the center line road, which is included in the above disturbance calculation) would cross 55 drainages. The predicted maximum acreage associated with the subset of these road crossings that are jurisdictional is 0.81 acres (URS 2013c). The combined total direct disturbance impact for the Proposed Action would be 4.51 acres of jurisdictional waters; 1.22 acres of this total would represent maximum potential permanent disturbances.

The Proposed Action route would cross three segments of a 100-year flood zone associated with water overflowing from the Granite Reef Aqueduct near the west end of the route. These segments would be approximately 1,190, 1,000, and 610 feet long, so there may need to be one or two structures placed within this flood zone. Continuing east, the line would cross 100-year floodplain segments of approximately 370 and 1,800 feet associated with Iona Wash; the latter segment is an off-stream flood zone that would likely need to have one or two structures placed within it. Trilby Wash has 100-year floodplain that is approximately 670 feet wide at the route crossing, so no structure placement would likely be necessary. One-hundred-year floodplains associated with three tributaries to Padelford Wash would be

crossed by the route, in a total of five segments. The longest of these segments would be approximately 300 feet, which would easily be spanned by the line (the total for all five is approximately 700 feet). Continuing east, the line would cross three relatively narrow (45, 55, and 80 feet) 100-year floodplains associated with three unnamed drainages that are tributary to the Agua Fria River; structure placement within these floodplains could easily be avoided. Last, the Agua Fria River's 100-year floodplain is approximately 840 feet at the Proposed Action route crossing, and may or may not require a structure to be placed within it. In sum, the line would cross approximately 7,360 feet of 100-year floodplains associated with several different drainages. Between two and five structures may need to be placed within a floodplain under the Proposed Action.

*Operations, Maintenance, and Decommissioning*

See discussion under **Section 4.15.2.1**.

### **Groundwater Resources**

*Construction*

See discussion under **Section 4.15.2.1**.

*Operations, Maintenance, and Decommissioning*

See discussion under **Section 4.15.2.1**.

### **4.15.2.3 Alternative 1: Proposed Action with Additional Corridor**

#### **Surface Water Resources**

*Construction*

As noted above, the proximity of construction disturbances to drainages is related to the potential for impacts due to erosion and sedimentation, or from inadvertent spills or releases. Due to the large number of drainages crossed, the information on the number of washes can be used as a stand-in for proximity. Identical to the Proposed Action, the Alternative 1 route would cross 552 drainages (191 of which are jurisdictional); associated new access roads would cross 55 drainages. This could result in a total estimated disturbance of approximately 4.51 jurisdictional acres temporarily disturbed, with 1.22 acres of those potentially permanently impacted. It is not known how many more drainages would be outside the actual ROW, but within the rest of the proposed multiuse utility corridor under this alternative.

Regarding potential impacts to floodplains, Alternative 1 would have identical impacts during construction activities. In addition, under this alternative, there would be a change in management of lands administered by BLM, both north and south of SR 74. Co-location of future utilities within the proposed additional corridor could potentially impact additional surface water resources located on these lands. However, any future projects would be subject to NEPA and other environmental review, therefore avoidance or mitigation would minimize additional impacts to surface water resources.

*Operations, Maintenance, and Decommissioning*

See discussion under **Section 4.15.2.1**.

## Groundwater Resources

### *Construction*

See discussion under **Section 4.15.2.1**. In addition, under this alternative, there would be a change in management of lands administered by BLM, both north and south of SR 74. Co-location of future utilities within the proposed additional corridor could potentially impact ground water resources located on these lands, depending upon the Project. However, any future projects would be subject to NEPA and other environmental review, therefore avoidance or mitigation would minimize additional impacts to ground water resources.

### *Operations, Maintenance, and Decommissioning*

See discussion under **Section 4.15.2.1**.

## 4.15.2.4 Alternative 2: ROW South of SR 74

### Surface Water Resources

#### *Construction*

As noted above, the proximity of construction disturbances to drainages is related to the potential for impacts due to erosion and sedimentation, or from inadvertent spills or releases. Due to the large number of drainages crossed (both jurisdictional and non-jurisdictional), the information on their numbers can be used as a stand-in for proximity. According to URS (2012k), the Alternative 2 route would cross 566 drainages. Fewer than half (189) of these drainages have been determined to be jurisdictional (URS 2013c); temporary disturbance of these waters of the U.S. is predicted to be no more than 4.01 acres (URS 2013b). Associated new roads outside the corridor would cross 49 drainages (URS 2012k). The predicted maximum acreage associated with the subset of these road crossings that are jurisdictional is 1.9 acres (URS 2013c). The combined acreage of potentially disturbed jurisdictional waters is 5.91 acres; only 0.42 acres of this total would represent maximum potential permanent disturbances of these waters. This is essentially the same as the Proposed Action in regard to impact potential.

The Alternative 2 route would cross three segments of a 100-year flood zone associated with water overflowing from the Granite Reef Aqueduct near the west end of the route. These segments would be approximately 1,190, 1,000, and 610 feet long, so there may need to be one or two structures placed within this flood zone. Continuing east, the line would cross 100-year floodplain segments of approximately 370 and 1,800 feet associated with Iona Wash; the latter segment is an off-stream flood zone that would likely need to have one or two structures placed within it. Trilby Wash has 100-year floodplain that is approximately 670 feet wide at the route crossing, so no structure placement would likely be necessary. Three segments of one-hundred-year floodplains associated with three tributaries to Padelford Wash would be crossed by the route. The longest of these segments would be approximately 210 feet, which would easily be spanned by the line (the total for all three is approximately 475 feet). Continuing east, the Alternative 2 line would cross six 100-year floodplains segments (totaling approximately 660 feet) associated with three unnamed drainages that are tributary to the Agua Fria River; structure placement within these floodplains could easily be avoided, as the longest of these segments is approximately 250

feet. Last, the Agua Fria River's 100-year floodplain is approximately 840 feet at the Alternative 2 route crossing, and may or may not require a structure to be placed within it. Overall, this alternative would cross approximately 7,615 feet of 100-year floodplain associated with several different drainages. This is slightly more (255 feet) than under the Proposed Action and Alternative 1. Between two and five structures may need to be placed within a floodplain under Alternative 2, which is the same as could be required under the Proposed Action and Alternative 1.

In addition, under this alternative, there would be a change in management of lands administered by BLM, by establishing a multiuse utility corridor on lands south of SR 74. Co-location of future utilities within the proposed additional corridor could impact additional surface water resources located on these lands. However, any future projects would be subject to NEPA and other environmental review, therefore avoidance or mitigation would minimize additional impacts to surface water resources.

#### *Operations, Maintenance, and Decommissioning*

See discussion under **Section 4.15.2.1**.

### **Groundwater Resources**

#### *Construction*

See discussion under **Section 4.15.2.1**. In addition, under this alternative, there would be a change in management of lands administered by BLM, by establishing a multiuse utility corridor on lands south of SR 74. Co-location of future utilities within the proposed additional corridor could impact ground water resources located on these lands depending upon the Project. However, any future projects would be subject to NEPA and other environmental review, therefore avoidance or mitigation would minimize additional impacts to ground water resources.

#### *Operations, Maintenance, and Decommissioning*

See discussion under **Section 4.15.2.1**.

### **4.15.2.5 Alternative 3: Carefree Highway Route**

### **Surface Water Resources**

#### *Construction*

As noted above, the proximity of construction disturbances to drainages is related to the potential for impacts due to erosion and sedimentation, or from inadvertent spills or releases. Due to the large number of drainages crossed (both jurisdictional and non-jurisdictional), the information on the number of washes can be used as a stand-in for proximity. According to URS (2012k), the Alternative 3 route would cross 544 drainages; fewer than half (188) of these drainages have been determined to be jurisdictional (URS 2013c). Temporary disturbance of these waters of the U.S. is predicted to be no more than 4.54 acres (URS 2013b). Associated new roads outside the corridor would cross 50 drainages (URS 2012k). The predicted maximum acreage associated with the subset of these crossings that are jurisdictional is 1.32 acres (URS 2013c). The combined total for Alternative 3 would be 5.86 acres of jurisdictional waters potentially impacted during construction, only 0.58 acres of

which would represent maximum potential permanent disturbances of these waters. This is essentially the same impact potential as the Proposed Action, Alternative 1, or Alternative 2.

The Alternative 3 route would cross three segments of a 100-year flood zone associated with water overflowing from the Granite Reef Aqueduct near the west end of the route. These segments would be approximately 1,190, 1,000, and 610 feet long, so there may need to be one or two structures placed within this flood zone. Continuing east, the line would cross 100-year floodplain segments of approximately 370 and 1,800 feet associated with Iona Wash; the latter segment is an off-stream flood zone that would likely need to have one or two structures placed within it. Trilby Wash has 100-year floodplain that is approximately 670 feet wide at the route crossing, so no structure would likely be necessary. A 1,150-foot segment of one-hundred-year floodplains associated with Padelford Wash would be crossed by this route, and may require a structure to be placed within it. Continuing east, the Alternative 3 route would cross five 100-year floodplains segments (totaling approximately 1025 feet) associated with three unnamed drainages that are tributary to the Agua Fria River; structure placement within these floodplains could easily be avoided, as the longest of these segments is approximately 410 feet. Last, the Agua Fria River's 100-year floodplain is approximately 1,335 feet at the Alternative 3 route crossing, and would likely require a structure to be placed within it. Overall, this alternative would cross approximately 9,150 feet of 100-year floodplain associated with several different drainages. This is somewhat more than under the Proposed Action and Alternatives 1 and 2. Between three and six structures may need to be placed within a floodplain under Alternative 3, which is slightly more than could be required under the Proposed Action and Alternatives 1 and 2.

#### *Operations, Maintenance, and Decommissioning*

See discussion under **Section 4.15.2.1.**

### **Groundwater Resources**

#### *Construction*

See discussion under **Section 4.15.2.1.**

#### *Operations, Maintenance, and Decommissioning*

See discussion under **Section 4.15.2.1.**

### **4.15.2.6 State Trust Land Route Variation Sub-alternative**

#### **Sub-alternative**

#### *Surface Water Resources*

#### Construction

As noted above, the proximity of construction disturbances to drainages is related to the potential for impacts due to erosion and sedimentation, or from inadvertent spills or releases. Due to the large number of drainages crossed (both jurisdictional and non-jurisdictional), the information on the number of washes can be used as a stand-in for proximity. According to URS (2012k), within this four-mile Sub-alternative route, the line would cross 73 drainages. Approximately one-third (26) of these drainages have been determined to be jurisdictional

(URS 2013c). Temporary disturbance of these waters of the U.S. is predicted to be no more than 0.66 acres, of which 0.55 acres would be permanent (URS 2013c). There would be no associated new access roads.

There would be no 100-year flood zones crossed by the Sub-alternative route.

Operations, Maintenance, and Decommissioning

See discussion under **Section 4.15.2.1**.

## **Primary Segment Common to All Action Alternatives**

### *Surface Water Resources*

#### Construction

As noted above, the proximity of construction disturbances to drainages is related to the potential for impacts due to erosion and sedimentation, or from inadvertent spills or releases. Due to the large number of drainages crossed (both jurisdictional and non-jurisdictional), the information on the number of potential waters of the U.S. can be used as a stand-in for proximity. According to URS (2012k), within this four-mile Primary Segment route, the line would cross 70 drainages. Less than one-third (22) of these drainages have been determined to be jurisdictional (URS 2013c). Disturbance of these waters of the U.S. during construction is predicted to be no more than 0.39 acres; these would remain as permanent impacts (URS 2013c). There would be no associated new access roads. This is essentially the same impact potential as under for Sub-alternative.

As with the Sub-alternative, there would be no 100-year flood zones crossed by the Primary Segment of the transmission line.

### *Groundwater Resources*

#### Construction

See discussion under **Section 4.15.2.1**.

Operations, Maintenance, and Decommissioning

See discussion under **Section 4.15.2.1**.

## **4.15.2.7 No Action Alternative**

Under the No Action Alternative the BLM would not issue a ROW, the Bradshaw-Harquahala RMP would not be amended to establish a single- or multiuse utility corridor, and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives. There would be no Project impacts on water resources as described for the Proposed Action and Action Alternatives. However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed public lands. Under this situation, impacts to water resources located on lands that are crossed or in the vicinity of the Project could occur. The degree of potential for impacts to these resources and the magnitude of those impacts would depend on the route selected.

### **4.15.3 Mitigation and Residual Effects**

No mitigation, beyond those practices and requirements already included in **Chapter 2**, is required because impacts to water resources are predicted to be negligible, minor, and/or have a very low potential to occur, thus no residual effects are anticipated.

### **4.15.4 Unavoidable Adverse Impacts**

No unavoidable adverse impacts are anticipated.

## **4.16 WILDLIFE RESOURCES, INCLUDING SPECIAL STATUS WILDLIFE AND MIGRATORY BIRDS**

### **4.16.1 Indicators and Methods**

#### **4.16.1.1 Indicators**

The following indicators were determined to measure impacts to wildlife resources:

##### General Wildlife and Migratory Birds

- Direct mortality of less-mobile species, including migratory bird nests
- Suitable habitat (i.e., mapped vegetation community) loss and fragmentation, including riparian corridors
- Increased noise and vibrations that would reduce habitat quality Electrocutation risk to migratory birds
- Increased access for predators

##### Special Status Species

- Suitable habitat disturbance, or proximity to suitable habitat
- Probability of occurrence in the Study Area

#### **4.16.1.2 Impact Levels**

The following impact magnitude levels were defined for wildlife resources (**Table 4.16-1**).

**Table 4.16-1 Description of Effect Magnitude Criteria with regard to Wildlife Resources**

ATTRIBUTE OF EFFECT		DESCRIPTION
Magnitude (Intensity)	Negligible	The changes to individuals or habitat would not be able to be meaningfully measured or evaluated by a trained observer.
	Minor	There would be a small, but detectable effect to habitat amount/quality or to individuals of a species that would be noticeable primarily on the scale of individuals in a localized area. There would be no effect on the viability of the local population or habitat capability.
	Moderate	There would be an effect to habitat amount/quality or to individuals of a species that would be clearly detectable or sufficient to cause effects on a local population scale. Effects may be a reduction in population numbers, density, or habitat capability that may reduce the species' existing distribution in the Project Area.
	Major	There would be an effect to habitat amount/quality or to individuals or a species that would have a substantial, highly noticeable influence on the local population and may affect the regional population. The effect is likely to reduce local population numbers, density, or habitat capability to the point that the species distribution within the Project Area would be substantially reduced if not eliminated, such that the population would not likely return to a sustainable level.
Duration	Temporary	Short-lived (i.e., during construction).
	Short-term	10 years or less.
	Long-term	More than 10 years.

## 4.16.2 Direct and Indirect Effects by Alternative

### 4.16.2.1 Impacts Common to All Action Alternatives

#### Construction

##### *Mortality*

All ground-clearing/disturbance activities that could affect special status species or habitat would be monitored. Where warranted, a qualified biologist would be retained to conduct pre-construction activities to minimize or prevent impacts to sensitive species or habitat. In cases where special status species or species of concern are identified, appropriate action would be taken to avoid adverse impacts on the species and its habitat.

Direct impacts to small mammals and reptiles would occur during construction activities when individuals are unable to move away from vehicles and other heavy equipment. Mortality would occur when individuals are buried or run over by equipment; many small

mammals and reptiles utilize small burrows underground, so these impacts are particularly likely if individuals stay underground within the direct disturbance area instead of moving to adjacent habitat. In general, large mammals would not be directly impacted by construction equipment because they would move away from the disturbance area or could be easily seen and avoided.

Pre-construction surveys would be implemented during the nesting season to locate raptor and other migratory bird nests. If a nest is found, a timing or spatial buffer may be implemented following BLM guidelines. Incidental take of migratory birds is not permitted under BLM policy.

#### *Habitat loss*

There are at least 40 reptile or amphibian, 40 mammal, and over 50 migratory bird species that are likely to occur in creosote white-bursage desert scrub or palo verde-mixed cacti desert scrub habitats within the Study Area. Construction activities would remove desert scrub communities and convert them to disturbed lands, which would be unsuitable habitat for most wildlife. Special status species that use desert scrub include desert tortoise, Arizona chuckwalla, reticulate Gila monster, golden eagle (foraging only), ferruginous hawk, American peregrine falcon (foraging only), western burrowing owl, prairie falcon (foraging only), California leaf-nosed bat (foraging only), cave myotis (foraging only), greater western mastiff bat (foraging only), LeConte's thrasher, elf owl, Costa's hummingbird, Gila woodpecker and gilded flicker, Lawrence's goldfinch, and sage thrasher. Individuals of these species using habitat within the ROW for breeding, cover, foraging, and movement would be either forced into adjacent suitable habitat, or forced to travel some distance to find suitable habitat. Desert scrub habitats are not unique and are very abundant in the vicinity of the ROW and in the general area. However, adjacent habitat may be less suitable because it may already be occupied or defended, and resources may already be at a carrying capacity to maintain a particular species' population.

The removal of desert scrub habitats for either temporary or permanent uses under any Action Alternative would essentially be a permanent removal of habitat for wildlife and special status species. Sonoran desert vegetation is slow-growing and although annuals would colonize in the short-term following disturbance, a stable, perennial community would not emerge for the long-term (see Vegetation Resources, **Section 4.13.2.1**). Impacts to wildlife and special status species from desert scrub habitat losses would be minor because only wildlife individuals in the area immediately within and adjacent to the ROW would be adversely affected, and there would be no change to species' distributions in the Study Area.

Riparian areas and desert washes are high-value centers of biodiversity and are used by a wide variety of wildlife, including special status amphibians, birds, and mammals. Riparian areas would be avoided and would not be disturbed by construction activities, unless absolutely necessary. Impacts from habitat losses to species that utilize riparian habitats (special status species include lowland leopard frog, snowy egret, bald eagle, southwestern willow flycatcher, belted kingfisher, western red bat, western yellow bat, Bell's vireo, yellow warbler, and red-napped sapsucker), therefore, would be negligible. Desert washes containing seasonal flows or riparian vegetation occur throughout the Study Area, and would be avoided if possible. The loss of desert wash habitat, if it occurred, would be long-term and

moderate to two special status species: crissal thrasher and Lucy’s warbler. Habitat capability for these species would be adversely affected by the loss of these areas. Desert washes are mainly present west of the Action Alternative routes (i.e., Hieroglyphic Mountain area), so any disturbance to these areas would be the same under all Action Alternatives.

Impacts to special status species from habitat loss are summarized in **Table 4.16-2**.

*Noise and Vibration*

Smaller mammals and reptiles would be affected by noise and vibration caused by heavy equipment if individuals cannot escape by fleeing the construction area or by finding refuge underground. Hearing capabilities in these individuals may be damaged for the short- or long-term and may affect predator detection abilities. These impacts would be minor, as only individuals in the immediate vicinity of construction activities would be affected. Larger mammals such as coyotes or badgers would move away from construction noise, would be displaced for the duration, and may return to the area following construction activities. Other species that may be using the area for foraging would be similarly displaced. Displacement impacts would be short-term and minor. Species present in habitats that are not disturbed, but are adjacent to the construction zone, such as within riparian habitats along the Agua Fria River (species listed above), would also be temporarily disturbed by noise. However, these impacts would be short-term and would not affect populations, reproduction, or habitat capability within riparian areas.

Pre-construction surveys would locate any nests within the construction zone and these nests would be avoided (see **Section 4.16.3**). Some nests may be within a larger radius where noise and vibration impacts may still be present, but would not cause adverse reproductive effects. In addition, many migratory birds would be present and not nesting in the area; these individuals would simply avoid the noise. Impacts to migratory birds from noise and vibration would be short-term and minor, as only individuals in the local area would be affected.

Impacts to special status species from habitat losses and noise are summarized in **Table 4.16-2**.

**Table 4.16-2 Summary of Impacts to Special Status Species**

(Footnotes at end of table.)

SPECIES	POSSIBLE OCCURRENCE	IMPACTS	
		HABITAT LOSS	NOISE
Lowland leopard frog	Agua Fria or Hassayampa Rivers	No loss of aquatic or riparian habitats	Noise Impacts <sup>1</sup>
Sonoran desert tortoise	Sonoran desert scrub (Hieroglyphic Mountains [Mtns])	Habitat loss <sup>1</sup> – long-term and minor	Short-term and minor, if present
Arizona chuckwalla	Rocky hills or mountains with crevices or boulders (Hieroglyphic Mtns)	Habitat loss – long-term and minor	Short-term and minor, if present

**Table 4.16-2 Summary of Impacts to Special Status Species (Continued)**

(Footnotes at end of table.)

SPECIES	POSSIBLE OCCURRENCE	IMPACTS	
		HABITAT LOSS	NOISE
Reticulate Gila monster	Rocky hills or mountains with crevices or boulders (Hieroglyphic Mtns)	Habitat loss – long-term and minor	Short-term and minor, if present
Snowy egret	Agua Fria River	No loss of aquatic or riparian habitats	Noise Impacts <sup>1</sup>
Golden eagle	Any habitat (foraging)	Habitat loss (foraging) – long-term and minor	No nesting substrate within one mile of any ROW (Castle Hot Springs - 10 miles N of SR 74; Vulture Mountains - 5 miles NW of Circle City); Noise impacts to foraging eagles would be negligible.
Bald eagle	Lake Pleasant	No loss of aquatic or riparian habitats	Noise Impacts <sup>1</sup> Negligible impacts would occur to migrating juveniles or wintering eagles, if roosting or foraging within a one mile radius of construction activities.
Ferruginous hawk	Open country	Habitat loss – long-term and minor	No impacts to nests (pre-construction surveys would locate and avoid); noise impacts to foraging individuals would be negligible.
American peregrine falcon	Cliffs (limited) Any habitat (foraging)	Habitat loss (foraging) – long-term and minor	No impacts to nests (pre-construction surveys would locate and avoid); noise impacts to foraging individuals would be negligible.
Western burrowing owl	Open country	Habitat loss – long-term and minor	No impacts to nests (pre-construction surveys would locate and avoid); noise impacts would be minor and short-term.
Southwestern willow flycatcher	Agua Fria River – riparian habitat	No loss of aquatic or riparian habitats	Noise Impacts <sup>1</sup>
LeConte's thrasher	Hassayampa River vicinity – creosote bursage desert scrub	Habitat loss – long-term and minor	No impacts to nests (pre-construction surveys would locate and avoid); noise impacts would be minor and short-term.

**Table 4.16-2 Summary of Impacts to Special Status Species (Continued)**

(Footnotes at end of table.)

SPECIES	POSSIBLE OCCURRENCE	IMPACTS	
		HABITAT LOSS	NOISE
Belted kingfisher	Agua Fria and Hassayampa Rivers	No loss of aquatic or riparian habitat	Noise Impacts <sup>1</sup>
California leaf-nosed bat	Sonoran desert scrub (foraging)	Habitat loss (foraging) – long-term and minor	Negligible
Cave myotis	Arid areas around cliffs (foraging)	Habitat loss (foraging) – long-term and minor	Negligible
Western red bat	Agua Fria River (foraging and roosting)	No loss of aquatic or riparian habitat	Noise Impacts <sup>1</sup>
Western yellow bat	Agua Fria River (foraging and roosting)	No loss of aquatic or riparian habitat	Noise Impacts <sup>1</sup>
Greater western mastiff bat	Hieroglyphic Mtns (roosting)	Habitat loss (foraging and roosting) – long-term and minor	Negligible
Prairie falcon	Cliffs (Hieroglyphic Mtns)	Habitat loss (foraging) – long-term and minor	No impacts to nests (pre-construction surveys would locate and avoid); noise impacts to foraging individuals would be negligible.
Elf owl	East of US 60	Habitat loss – long-term and minor	Negligible
Costa's hummingbird	East of US 60	Habitat loss – long-term and minor	Negligible
Gila woodpecker and gilded flicker	East of US 60	Habitat loss – long-term and minor	Short-term and minor, if present
Crissal thrasher	Washes east of US 60	Habitat loss – long-term and moderate	No impacts to nests (pre-construction surveys would locate and avoid); noise impacts would be minor and short-term.
Lucy's warbler	Washes east of US 60	Habitat loss – long-term and moderate	No impacts to nests (pre-construction surveys would locate and avoid); noise impacts would be minor and short-term.
Bell's vireo	Agua Fria River – riparian habitat	No loss of aquatic or riparian habitat	Noise Impacts <sup>1</sup>

**Table 4.16-2 Summary of Impacts to Special Status Species (Continued)**

(Footnotes at end of table.)

SPECIES	POSSIBLE OCCURRENCE	IMPACTS	
		HABITAT LOSS	NOISE
Yellow warbler	Agua Fria River – riparian habitat	No loss of aquatic or riparian habitat	Noise Impacts <sup>1</sup>
Red-naped sapsucker	Agua Fria River – riparian habitat	No loss of aquatic or riparian habitat	Noise Impacts <sup>1</sup>
Lawrence’s goldfinch	Agua Fria or east of US 60	Upland habitat loss – long-term and minor; No loss of aquatic or riparian habitat	Noise Impacts <sup>1</sup>
Sage thrasher	Throughout (overwintering habitat)	Habitat loss (winter) – long-term and minor	Short-term and minor, if present

<sup>1</sup>Impacts would differ among the Proposed Action and Alternatives; see Sections 4.16.2.2 through 4.16.2.6.  
 Note: All impacts not written in boldface would be the same for the Proposed Action and Action Alternatives.

**Operations, Maintenance, and Decommissioning**

*Noise and Vibration*

Routine maintenance activities would not impact wildlife or special status species. Human disturbance would be minimal in most cases and consist of single vehicle entries over established routes.

Unforeseen maintenance activities such as major or emergency repairs could have impacts similar to construction because heavy equipment would be necessary. It may not be feasible to schedule emergency maintenance activities with sensitivity to wildlife resources; thus adverse impacts to wildlife could occur. Emergency maintenance activities that took place during migratory bird nesting periods for instance would have adverse impacts on nesting success. In general, noise during maintenance activities would disturb and displace wildlife in the vicinity, but most activities would be short-lived and wildlife would return to the area following the disturbance. Impacts from emergency maintenance would be minor because only individuals in the immediate area would be affected.

Collisions

There exists the potential for raptors and other migratory bird species to be killed from power line collisions. Bird collisions with power lines result from a complex mixture of biological (characteristics of each species), environmental (such as land uses and weather), and engineering factors (such as aspects of line structure; Avian Power Line Interaction Committee [APLIC] 2012). Collisions can be minimized by marking lines (to increase visibility) and other precautions or modifications to existing lines following guidance in APLIC (2012).

### *Electrocution Risk*

Transmission line structures are attractive sites for raptors and migratory birds to perch, roost, loaf, and nest (APLIC 2006). This behavior brings birds into the proximity of live power lines and can often lead to electrocution. Raptor electrocutions would be minimized by constructing the transmission line according to raptor-safe design standards, which meet or exceed recommendations from the Avian Power Line Interaction Committee (APLIC 2006). Individual migratory bird mortalities would be avoided and thus there would be no adverse impacts to any migratory bird species or population from electrocution. BLM policy does not permit incidental take of migratory birds.

### *Habitat Fragmentation*

Populations of small mammals, amphibians, or reptiles could be fragmented by the transmission line if a portion of the population becomes isolated by or avoids the disturbance area. These impacts would be short-term and minor, as only local individuals would be affected. Individual mammal predators or bats would navigate around the disturbance area if necessary. Impacts to these individuals would be negligible to minor as some would be forced outside of normal movement patterns.

Habitats for migratory birds may be fragmented by the transmission line. Many migratory bird species require large, undisturbed areas of suitable habitat. Transmission lines, despite raptor/bird protection features, still pose a barrier for migratory flights and may reduce the security of the habitat (via increased predation along the edges, removal of cover, etc.), so that a large area of previously undisturbed habitat becomes two or more smaller areas of undisturbed habitat. These impacts would be long-term and moderate, because habitat capability for these species may be adversely affected.

Disturbance of desert wash habitat would adversely impact wildlife movements and linkage through the Study Area. Desert washes would be avoided during construction, if possible. If these areas are disturbed, impacts to species that use washes for movement (e.g., amphibians and aquatic reptiles during flow periods) would be moderate and long-term.

The Proposed Action and Action Alternatives follow the CAP canal, which serves as an east-west movement route for wildlife, for three miles near the Sun Valley Substation. There would be no disturbance to the CAP canal under the Proposed Action or any Action Alternative.

Permanent roads associated with the transmission line (14-foot wide) would not measurably disrupt wildlife behavior as these roads would be used very infrequently, and would not be improved (i.e., paved). Direct fragmentation impacts to wildlife from permanent roads would be negligible.

### *Increased access or predation*

Operation of the transmission line would adversely affect birds, raptors, and small mammals that are vulnerable to predation from ground predators along the centerline disturbance or from raptors perched on the transmission structures or line. Small mammals and reptiles near the line would be vulnerable to predation by perched raptors. Some ground predators may become more common along the line due to facilitated access along the permanent roads,

thus smaller wildlife could also become more exposed to ground predators. These impacts would be long-term and minor, as only local individuals would be affected.

#### 4.16.2.2 Proposed Action

##### Construction

The Proposed Action crosses south of riparian forests and woodlands that are adjacent to semi-permanent water in the Agua Fria River. No riparian habitat would be disturbed. The riparian habitat next to the route is continuous with riparian habitat to the north, and may be occupied by southwestern willow flycatchers, most likely as migration or non-breeding habitat. Therefore, southwestern willow flycatchers would be disturbed temporarily by noise. Other species may also be present in this habitat, including amphibians or aquatic reptiles, foraging or roosting bats, numerous migratory bird species, or any of ten other special status species: lowland leopard frog, snowy egret, bald eagle, belted kingfisher, western red bat, western yellow bat, Bell's vireo, yellow warbler, red-napped sapsucker, or Lawrence's goldfinch. Noise impacts to these wildlife and special status species would be short-term and minor, because only individuals in the immediate area would be affected.

##### *Sonoran Desert Tortoise*

APS would follow mitigation measures listed in **Section 4.16.3.1** for the Sonoran desert tortoise, including surveying and monitoring for desert tortoise within tortoise habitat in order to avoid take. If desert tortoises are encountered during construction, APS would follow BLM's Strategy for *Desert Tortoise Habitat Management on Public Lands in Arizona* and any appropriate guidance issued by AGFD and USFWS. Preconstruction and construction crews would look out for and avoid tortoises. If tortoises must be moved to avoid harming them, they would be moved according to AGFD, "Guidelines for Handling Sonoran Desert Tortoises" (2007).

The Proposed Action crosses Category II and Category III tortoise habitat. Disturbances and degradation of tortoise habitat would be avoided or minimized during construction. The maximum amount possible of tortoise habitat would be maintained within the footprint of the Proposed Action in order to ensure the existence of viable populations within suitable habitat. Any disturbance of Category II and Category III tortoise habitat would be compensated at a rate determined by the BLM and APS, following DTCT 1991, which is Attachment 1 to IM AZ-2012-031. BLM's mandate is "no net loss" of desert tortoises or habitat.

The Proposed Action ROW would cross 135 acres of Category II desert tortoise habitat, which 1) may be essential to the maintenance of viable populations, 2) within which population density is medium to high or low density contiguous with medium or high density areas; and 3) contains a population that is stable or decreasing. This is the maximum amount of Category II desert tortoise habitat that would be disturbed by the Proposed Action and compensated following the Compensation for Desert Tortoise report (DTCT 1991).

The Proposed Action ROW would also cross 192 acres of Category III desert tortoise habitat, which 1) is not essential to maintenance of viable populations, 2) within which population density is low to medium and not contiguous with medium or high density areas, and 3) contains a population that is stable or decreasing. This is the maximum amount of Category

III desert tortoise habitat that would be disturbed by the Proposed Action and compensated following the Compensation for Desert Tortoise report (DTCT 1991).

There would be no net loss of desert tortoise habitat under the Proposed Action.

### **Operations, Maintenance, and Decommissioning**

Impacts to wildlife resources, including special status species for operations, maintenance, and decommissioning activities would be as described in **Section 4.16.2.1**.

#### **4.16.2.3 Alternative 1: Proposed Action with Additional Corridor**

##### **Construction**

Riparian habitat impacts would be the same as under the Proposed Action as the alignment is the same across the Agua Fria River. Impacts to southwestern willow flycatcher and other riparian species from noise would be short-term and minor.

##### *Sonoran Desert Tortoise*

Desert tortoise habitat impacts would be the same as under the Proposed Action as the alignment is the same.

In addition, under this alternative, there would be a change in management of lands administered by BLM, both north and south of SR 74. Co-location of future utilities within the proposed additional corridor would impact additional wildlife resources and special status species located on these lands. However, any future projects would be subject to NEPA and other environmental review, therefore avoidance or mitigation would minimize additional impacts to wildlife resources.

### **Operations, Maintenance, and Decommissioning**

Impacts to wildlife resources, including special status species for operations, maintenance, and decommissioning activities would be as described in **Section 4.16.2.1**.

#### **4.16.2.4 Alternative 2: ROW South of SR 74**

##### **Construction**

Riparian habitat impacts would be the same as under the Proposed Action as the alignment is the same across the Agua Fria River. Impacts to southwestern willow flycatcher and other riparian species from noise would be short-term and minor.

##### *Sonoran Desert Tortoise*

The Alternative 2 ROW would cross 308 acres of Category III tortoise habitat. Any disturbance of Category III habitat would be compensated appropriately following the Compensation for Desert Tortoise report (DTCT 1991). There would be no net loss of desert tortoise habitat under Alternative 2.

In addition, under this alternative, there would be a change in management of lands administered by BLM, by establishing a multiuse utility corridor on lands south of SR 74. Co-location of future utilities within the proposed additional corridor would impact additional wildlife resources located on these lands. However, any future projects would be

subject to NEPA and other environmental review, therefore avoidance or mitigation would minimize additional impacts to wildlife resources.

### **Operations, Maintenance, and Decommissioning**

Impacts to wildlife resources, including special status species for operations, maintenance, and decommissioning activities would be as described in **Section 4.16.2.1**.

#### **4.16.2.5 Alternative 3: Carefree Highway Route**

##### **Construction**

The Alternative 3 route crosses the Agua Fria River at a point where the surrounding vegetation and habitats differ little between the uplands and the river channel. As under all Action Alternatives, no riparian habitat would be disturbed. No riparian habitat is in the vicinity of this alternative; therefore, there would be no potential noise impacts to southwestern willow flycatcher or other riparian species. Impacts to southwestern willow flycatcher and other riparian species would be negligible.

##### *Sonoran Desert Tortoise*

The Alternative 3 ROW would cross 244 acres of Category III tortoise habitat. Any disturbance of Category III habitat would be compensated appropriately following the Compensation for Desert Tortoise report (DTCT 1991). There would be no net loss of desert tortoise habitat under Alternative 3.

### **Operations, Maintenance, and Decommissioning**

Impacts to wildlife resources, including special status species for operations, maintenance, and decommissioning activities would be as described in **Section 4.16.2.1**.

#### **4.16.2.6 State Trust Land Route Variation Sub-alternative**

##### **Sub-alternative**

Overall, impacts to wildlife would be as described in **Section 4.16.2.1**, with the exception of riparian species and desert tortoise, described below.

The Sub-alternative does not contain riparian habitat and no impacts to riparian species would occur.

##### *Sonoran Desert Tortoise*

The Sub-alternative also does not contain any designated desert tortoise habitat, although some marginally suitable habitat for tortoise exists within the common desert scrub habitats crossed by the Sub-alternative. There would be no net loss of desert tortoise habitat under the Sub-alternative.

### **Primary Segment Common to All Action Alternatives**

Impacts to wildlife resources within the Primary Segment would be the same as described for the Sub-alternative, with the exception of wildlife species that utilize mesquite bosque riparian habitat, described below.

The Primary Segment would cross one area of North American Warm Desert Riparian Mesquite Bosque, which covers approximately one acre within the 200-foot ROW. This area would be avoided and would not be disturbed by construction. However, construction noise in surrounding areas may temporarily disturb species that utilize this habitat. No special status species in the Study Area are known to prefer mesquite bosque habitat; however, a variety of amphibians, birds, reptiles and foraging bats may utilize the habitat. Noise impacts to these wildlife species, if present, would be short-term and minor.

#### **4.16.2.7 No Action Alternative**

Under the No Action Alternative the BLM would not issue a ROW, the Bradshaw-Harquahala RMP would not be amended to establish a single- or multiuse utility corridor, and the transmission line would not be constructed as described under the Proposed Action or Action Alternatives. There would be no Project impacts on wildlife or special status species as described for the Proposed Action and Action Alternatives. However, APS is committed to construction of the transmission line, which could be accomplished exclusive of federally managed public lands. Under this situation, impacts to wildlife or special status species located on lands that are crossed or in the vicinity of the Project could occur. The degree of potential for impacts to these resources and the magnitude of those impacts would depend on the route selected.

#### **4.16.3 Mitigation and Residual Effects**

Pre-construction surveys would be implemented during the migratory bird nesting season to locate raptor and other migratory bird nests. Surveys would be conducted in the layout/project planning phase so that sensitive areas (such areas with a high density of tortoises) can be identified and avoided if possible; and then again immediately prior (within a few days) to construction. The survey area would be determined by the timing of the survey (inside or outside the migratory season) and the buffer requirements. Survey areas for raptors would be determined by buffer requirements in Guidelines for Raptor Conservation in the Western United States (USFWS 2008a). If an active nest is found, a timing or spatial buffer would be implemented following BLM and USFWS guidelines. Each buffer would be implemented on a case-by-case basis, considering, for example, the duration of construction activities in the area and topographical barriers (if any) between the active nest and construction activities. The decision maker regarding buffers would be the Field Manager, with advice from the BLM Wildlife Biologist.

All ground-clearing/disturbance activities that could affect special status species or habitat would be monitored. A qualified biologist would be retained to conduct pre-construction activities to minimize or prevent impacts to Sonoran desert tortoises and active migratory bird nests. Monitors would be present where active migratory bird nests were located during pre-construction surveys to assure buffer distances are maintained.

All personnel working on site would complete a mandatory Environmental Awareness Program, which includes pertinent information on biological resource identification of special status species or species of concern. APS's environmental contractor, approved by the BLM, would provide this training. All training would be conducted by experienced and qualified biologists approved by the BLM. The training, at a minimum, would cover

identification of tortoises, how to move them according to AGFD guidelines, the protocols for waiting for clearances prior to construction, and when a monitor needs to be present. Migratory birds and active nests would be covered with a briefing on the criminal penalties of take under the Migratory Bird Treaty Act, as well as the protocols for waiting for clearances prior to construction and the need to comply with timing stipulations and/or buffers around active migratory bird nests.

Holes or pits created by construction would be covered when not in use and would be checked for animals prior to use, in order to minimize trapping or burying of wildlife.

Raptor electrocutions would be minimized by constructing the transmission line according to raptor-safe design standards, which meet or exceed recommendations from the APLIC (2006). Avian collisions with the power line would be minimized by following recommendations for bird diverters in APLIC (2012) in areas specifically identified as having high use.

Gates would be installed on permanent ROW access roads, as required by the land owner or land managing agency, or if APS finds it to be warranted, to restrict unauthorized vehicular access to the ROW. This would prevent unnecessary traffic along access roads that would disrupt wildlife behavior or cause direct impacts (collisions) to wildlife.

#### **4.16.3.1 Mitigation specific to Sonoran Desert Tortoise**

BLM objectives regarding mitigation for desert tortoises on construction projects are to 1) avoid, minimize, or eliminate loss or degradation of habitat and 2) avoid or minimize take of tortoises. On BLM-administered land, the following mitigation measures would be implemented along with compensation, following the Final Report on Compensation for the Desert Tortoise (DTCT 1991), for any desert tortoises or desert tortoise habitat that is disturbed on BLM lands, as clarified in BLM Instructional Memorandum No. AZ-2012-031.

The first focus of the desert tortoise mitigation policy is on avoiding and minimizing impacts to tortoises and their habitat. If an action with on-site mitigation measures would result in residual impacts, then compensation would be required. Category II habitats would be compensated for at a rate ranging from 2:1 to 5:1. Category III habitats would be compensated for at a rate of 1:1. Acquiring habitat is the primary means of compensation for impacts to tortoise habitat; however, compensation funds can also be used for other tortoise conservation efforts. Purchasing private lands with tortoise habitat would bring these lands into federal protection, making the habitat more secure. Further, reclamation of temporarily disturbed areas would also be conducted and would assist with restoring impacted habitat.

Compensation for habitat loss or take on BLM-administered land would involve either the direct purchase of privately-owned desert tortoise habitat for transfer to conservation management, or the direct payment of funds to an appropriate land management agency/entity for purchase of tortoise habitat or other tortoise management actions (DTCT 1991). However, acquiring tortoise habitat is the primary means of compensating for residual impacts (BLM IM AZ-2012-031).

To minimize the potential for desert tortoise mortality, prior to and during ground-clearing construction activities in desert tortoise habitat on BLM land, a desert tortoise monitor would

survey the ROW. The monitor would meet qualifications for GS-0486 series Wildlife Biologist according to the U.S. Office of Personnel Management (opm.gov) and have the necessary experience and expertise required by the BLM. The survey area would include the ROW plus at least a 50-foot buffer either side of the ROW. Construction monitors would be present in areas where tortoises or fresh tortoise sign was observed during the pre-construction surveys. Any potential tortoise shelter sites in harm's way would be cleared for tortoises and then rendered unusable (i.e., filled in or blocked with rocks or other native materials). If tortoises are encountered during the pre-construction phase or during construction, APS would follow BLM's Strategy for *Desert Tortoise Habitat Management on Public Lands in Arizona* and any appropriate guidance issued by AGFD and USFWS. Preconstruction and construction crews would look out for and avoid tortoises. If tortoises must be moved to avoid harming them, they would be moved according to AGFD, "Guidelines for Handling Sonoran Desert Tortoises" (2007).

As part of the Environmental Awareness Program, desert tortoise training would be provided to all construction personnel who would be present before and during the ground-clearing activities and any fencing of work areas within desert tortoise habitat. Training would cover identification of tortoises, how to move them according to AGFD guidelines, the protocols for waiting for clearances prior to construction, and when/if a monitor needs to be present. Desert tortoise training would also include general procedures on how to reduce tortoise mortality, such as checking stationary vehicles for tortoises, and recommendations on how to avoid disturbing tortoises that are detected. BLM would have in place any applicable and relevant enforcement procedures for these guidelines, similar to other construction projects on BLM land.

To minimize the potential for vehicle collisions with desert tortoises, vehicle speeds would not exceed 15 mph on all dirt access roads in desert tortoise habitat. Speed limit signs would be installed on all centerline access roads in desert tortoise habitat, and caution signs indicating the potential presence of Sonoran desert tortoises would be posted at the beginning of any such access road in desert tortoise habitat.

Following the implementation of mitigation measures, residual effects would still occur to wildlife resources as a result of the loss of wildlife habitat during construction activities, although there would be no net loss of desert tortoise habitat.

#### **4.16.4 Unavoidable Adverse Impacts**

The loss of wildlife habitat within all areas of permanent and temporary disturbance associated with the transmission line would be unavoidable.

All adverse impacts to wildlife or special status species during emergency maintenance activities, after all reasonable measures to protect wildlife have been taken, would be unavoidable.

## **4.17 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES**

An *irreversible* commitment of resources occurs if the commitment cannot be changed once made. An irreversible commitment of resources occurs when resources are used, consumed, destroyed, or degraded during Project construction and operation and cannot be reused or recovered. It effectively removes the option of future resource use. *Irretrievable* commitments of resources occur when there are long-term losses of resource production or use. These losses are not permanent and can be reversed in the long term if Project facilities or land uses change.

### **4.17.1 Air Quality and Climate Change**

There would be no irreversible commitments of air quality resources. Project construction would result in some minor degradation of air quality, due to emissions from vehicles and equipment as well as fugitive dust; however, air quality would return to baseline conditions following construction activities. Emissions and dust resulting from operations and maintenance activities would be temporary and minimal, and would also return to baseline conditions quickly following the activities. However, these temporary impacts could constitute irretrievable commitments of air resources.

Project construction would result in irreversible emissions of GHGs during construction and operation activities. In addition, the Project would result in the irretrievable loss of carbon sequestration by vegetation that is removed during construction activities. Temporarily disturbed areas, successful revegetated and reclaimed, would help to limit this irretrievable loss.

### **4.17.2 Cultural Resources**

Cultural resources would be irreversibly committed if sites were inadvertently destroyed during Project construction or as a result of increased human activity in the Project Areas after construction activities. Irreversible commitments to National Register-eligible cultural resources would not occur during the operation of the transmission line due to visual impacts because the settings of the eligible historic properties in the Project Area are not essential to their significance.

### **4.17.3 Geology and Minerals**

There would be no irreversible or irretrievable commitments of geological or mineral resources as a result of construction or operation of the transmission line because the Project would have negligible impacts on these resources, and would not affect the surface accessibility of these resources during the life of the Project. Any permanent alteration to surface topography from Project construction would not affect the productivity or future use of geological or mineral resources in the Project Area.

#### **4.17.4 Hazardous Materials and Hazardous and Solid Waste**

No irreversible and irretrievable impacts are anticipated. However, impacts to human health or the environment may be irreversible and irretrievable if hazardous materials or wastes are released improperly into the environment during construction or operation and maintenance activities. However, compliance with laws and applicable regulations, compliance with applicant-committed EPMs, and proper handling, containment, and disposal protocols for hazardous materials and wastes, the potential irreversible and irretrievable effects from the release of hazardous materials and wastes would be reduced to a low level.

#### **4.17.5 Land Use and Range Resources**

There would not be an irreversible commitment of land use resulting from the Project. Land use allocations and encumbrances could be reversed if Project elements were removed in the future. An irretrievable commitment of land would occur in the areas of permanent disturbances during the life of the Project.

There would not be irreversible commitments of range resources resulting from the Project due to the quick recovery of palatable vegetation. However, there would be a small irretrievable commitment of range resources where permanent disturbances occur for the life of the Project and for years following if the Project were abandoned and grazing activities could be reinstated at the same levels prior to Project activities.

#### **4.17.6 Public Health and Safety (Including Noise, Electromagnetic Fields, and Fire)**

There would be no irreversible or irretrievable commitments of human health and safety resources with regard to noise impacts because although construction activities would result in some minor degradation of the noise environment, noise levels would return to baseline conditions following construction. Noise resulting from operations and maintenance activities would be temporary, and would also return to baseline conditions quickly following the activities. These would not constitute irretrievable commitments of public health and safety resources due to their short-term duration.

There would be no irreversible or irretrievable commitments of human health and safety resources with regard to EMFs.

Impacts to human health and safety may be irreversible or irretrievable if a Project-related fire were to cause human injury or death. However, fire-prevention requirements associated with applicant-committed EPMs and regulations regarding equipment and transmission line design would reduce the risk to human health and safety from fire to a low level.

#### **4.17.7 Paleontology**

Paleontological resources would be irreversibly committed if inadvertently discovered vertebrate fossils are removed or destroyed during Project construction activities. However, the potential for this type of impact is reduced to negligible by the unlikely presence of these resources in the Project Area, in addition to implementation of applicant-committed EPMs and BMPs following BLM standards.

#### **4.17.8 Recreation and Special Designations**

There would be no irreversible commitments to recreation or special designations because although construction activities would result in some minor and temporary impacts to at least recreation resources, impacted areas would return to baseline conditions following construction and successful reclamation. The presence of aboveground features associated with the Project would constitute a long-term irretrievable change to the recreation setting and could result in displacement of recreation users or alteration of their experiences or activities for at least the duration of construction activities, and in some cases for the life of the Project, which would constitute irretrievable impacts.

#### **4.17.9 Socioeconomics and Environmental Justice**

The social and economic structure of Maricopa County would be altered by the Project. Once the transmission line is operational, electrical capacity would be increased to some communities, inviting additional development, land conversion, and an increased tax base. These impacts would likely constitute irreversible commitments to socioeconomic resources in the county as the availability of electricity would at least partially induce community growth and new development. Once an area is developed, it is unlikely that electric capacity would be reduced.

Private lands acquired by APS for the Project that change land use and taxes paid on the land would be irreversible and irretrievable commitments of tax resources.

The low-income community within three miles of the Project disproportionately affected aesthetically and economically by the transmission line would be an irretrievable impact of resources.

#### **4.17.10 Soils**

Irreversible and irretrievable commitment of resources includes the disturbance of soil resources with the implementation of the Project, resulting in soil losses and displacement during construction and due to increased erosion. Irretrievable commitments of soils would occur where soil productivity is reduced due to the presence of aboveground facilities. An irretrievable commitment of soils salvaged and utilized in reclamation would initially demonstrate a decrease in infiltration and percolation rates, a decrease in available water holding capacity, and a loss of organic matter. These effects would slowly be restored by natural soil development processes.

#### **4.17.11 Transportation and Traffic**

There would not be any irreversible commitments of transportation and traffic resources. The impact of the transmission line introducing an air hazard to the Thunder Ridge Airpark would be irretrievable commitment of resources, as it would occur for the life of the Project.

#### **4.17.12 Vegetation Resources, Including Noxious and Invasive Weeds and Special Status Plants**

Vegetation communities that would be disturbed within the ROW, access roads, or aboveground facilities would be an irretrievable commitment of vegetation resources as these areas could be restored if Project elements were to change or be removed. Although restoration of perennial and long-lived vegetation could take centuries, it would not constitute an irreversible commitment of resources.

Any infestations of invasive weeds would also be an irretrievable commitment of vegetation resources for as long as the infestations occur in place of native plant communities. Any fires caused by the increased incidence of invasive species would also be considered an irreversible commitment of resources until a native vegetation community was restored or regenerated.

Any loss of special status plant individuals within the disturbance areas would be an irreversible and irretrievable impact on the level of individuals for as long as the area is not able to be colonized by the species. Impacts to the population or species level would not be irreversible or irretrievable as the species could colonize a new or adjacent site. It is not expected that any irreversible or irretrievable impacts to special status plants would occur from the Project because of the limited presence of this resources within the Project Area, in addition to implementation of applicant-committed EPMs and BMPs following BLM standards.

#### **4.17.13 Visual Resources**

The presence of aboveground features and cleared areas associated with the Project would constitute an irretrievable commitment of visual resources wherever the line is visible and contrasts with the surrounding environment, for as long as the line is present. This would not constitute an irreversible commitment of visual resources.

#### **4.17.14 Water Resources**

Temporary impacts to natural drainages, floodplains, and water quality that may occur during construction activities would constitute irretrievable losses of surface water resources for the life of the Project. Properly implemented BMPs and EPMs during construction would reduce the potential for these impacts. The use of water for construction activities would constitute an irretrievable impact as essentially all the water used would be evaporated rather than discharged back to surface and groundwater and thus consumed. No irreversible commitments of water resources are anticipated.

#### **4.17.15 Wildlife Resources, Including Special Status Wildlife and Migratory Birds**

Irreversible and irretrievable commitments of wildlife resources would occur through incidental mortality of individuals, or incidental take in the case of special status species.

Project encroachment on riparian or desert wash habitats may result in short-term displacement of individuals in the vicinity, but would not be considered an irreversible commitment of wildlife resources. Any loss of nesting potential to migratory birds, including special status species, from encroachment into sensitive habitats would be an irretrievable commitment of resources for the nesting season that was affected. A loss of habitat capability for wildlife, including special status species and migratory birds, due to fragmentation of habitat caused by the transmission line would be an irretrievable commitment of resources for the life of the Project.

## **4.18 RELATIONSHIP OF SHORT-TERM USES AND LONG-TERM PRODUCTIVITY OF RESOURCE**

This section discusses the relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity. It describes the effects of the short-term use of the public lands for the transmission line and whether the immediate use under each alternative is likely to adversely affect the productivity of the resource and be sustainable without significant degradation of the environment.

The commercial life of the transmission line would be 30 years or longer. For purposes of this analysis, “short-term” is interpreted to include construction and the commercial life of the Project. Long-term productivity would be the productivity of the resource at the conclusion of the commercial life of the Project. Short-term uses and long-term productivity potential for most resources discussed below would be similar between the Proposed Action and Action Alternatives. The short-term resource uses described below may also be compared to the long-term productivity of increasing the transmission capacity and reliability of electrical power to public and private customers. Any exceptions are noted below as appropriate.

### **4.18.1 Air Quality and Climate Change**

The short-term effects to air quality resources in the Project Area would result mainly from vehicle emissions and fugitive dust. Long-term impacts to air quality would not be expected; future removal of the transmission line at the end of the life of the Project would not preclude the air quality from reverting to its previous state at the end of the operational life of the Project.

The clearing of vegetation within the Project Area and construction activities would contribute to climate change through the short-term generation of GHG emissions, although the long-term productivity of the atmosphere with regard to carbon dynamics from the Project is unknown.

### **4.18.2 Cultural Resources**

The Project could result in physical destruction of National Register-eligible archaeological sites, which would result in a short-term use affecting long-term productivity. Although impacts would be mitigated by recovery and preservation of artifacts and information, the long-term productivity of the archaeological record would be reduced because the sites

would not be available for future investigations, when research methods and procedures might be improved.

#### **4.18.3 Geology and Minerals**

The local and minor alterations of surface topography that would result in some construction areas as a result of the Project would not affect the long-term productivity of geological or mineral resources in the Project Area. There would be no other significant short-term uses of geological or mineral resources during the operational life of the Project.

#### **4.18.4 Hazardous Materials and Hazardous and Solid Waste**

Short-term uses of the Project Area would adversely affect the long-term productivity of the environment if hazardous materials or wastes are released improperly into the environment and remediation efforts are not successful enough to restore the environment back to its baseline condition once the operational life of the Project has ended. Compliance with laws and regulations, applicant-committed EPMs, and following standard protocols for hazardous materials and wastes would reduce the likelihood of any accidental and/or improper releases.

#### **4.18.5 Land Use and Range Resources**

Most short-term effects on land uses in the Project Area would result from the ROWs and easements granted for the Project and the subsequent encumbrance of the lands involved for any other uses. Long-term impacts to land use would not be expected; future removal of the transmission line at the end of the life of the Project would not preclude land use from reverting to previous uses or to be converted to new uses allowable under land use plans at the end of the commercial life of the Project.

Short-term uses of range resources would result from construction activities and permanent Project features. Long-term losses in productivity of range resources would not be expected as forage would be restored with rehabilitation of the ROW at the end of the life of the Project.

#### **4.18.6 Public Health and Safety (Including Noise, Electromagnetic Fields, and Fire)**

There would be no affects to the long-term productivity of the human health and safety environment as a result of short-term noise or EMF changes during the operational life of the Project.

Areas disturbed by construction in the short-term may be subject to an increase in Fire Condition Class I to Fire Condition Class II if sufficient disturbance remains after decommissioning. These areas would be expected to remain at Fire Condition Class II, which would adversely affect the long-term productivity of the area with regard to fire danger and resulting human health and safety.

#### **4.18.7 Paleontology**

In the short term, paleontological resources could be inadvertently damaged or destroyed and could result in the loss of information, if vertebrate fossils are inadvertently discovered during Project activities, primarily through ground disturbance associated with construction activities. These impacts would be mitigated to the extent possible through data recovery or other appropriate treatment. Information and data retrieved through mitigation measures (i.e. data recovery) would represent short-term use of paleontological resources at the expense of future research opportunities. Thus, long-term productivity could be lost.

#### **4.18.8 Recreation and Special Designations**

Visual disturbances created by the removal of vegetation within the ROW would persist for many years beyond the life of the Project, but would fade as the structure and function of the natural vegetation was restored. Ultimately there would be no long-term impacts to the productivity of recreation resources with regard to the natural setting.

An increase in user-defined OHV trails as a result of the short-term uses of the Project Area (e.g., construction of the permanent ROW centerline access road) would conflict with the BLM's management strategy for the area and would create challenges for managing the natural resources and increase user-conflicts. However, APS' ROW authorization would require monitoring the centerline access route for unauthorized recreational use, and should it occur, it would require APS to take steps specified by the BLM to prohibit access and mitigate for adverse impacts resulting from unauthorized access. Even though this measure would help greatly reduce potential impacts, it would still constitute an adverse long-term impact to the productivity of recreation resources in the Project Area as defined by the BLM.

#### **4.18.9 Socioeconomics and Environmental Justice**

The short-term uses of workforce and resources (during construction) provide for short-term economic benefits through employment and purchasing within Maricopa County. These short-term uses would have a neutral effect on the long-term economic and social stability of the area.

The short-term use of the land for the ROW would adversely impact the long-term productivity of the low-income community that is within three miles for the life of the Project. Following the construction of the transmission line, there would also likely be long-term benefits of providing electricity which in turn would provide additional opportunities for development and increased tax bases and future growth within the Study Area, discussed in more detail in **Section 4.19**.

#### **4.18.10 Soils**

Disturbance to soils during construction activities would represent a short-term use of soil resources in the area. Reclamation of the temporarily disturbed areas would return the soils within disturbed sites to long-term productivity by utilizing salvaged topsoil in reseeded areas, while un-reclaimed or permanently disturbed areas would suffer a long-term loss of productivity.

#### **4.18.11 Transportation and Traffic**

The local short-term use of the roads and other routes that would provide access to the Project Area and proposed ROW would increase traffic levels during construction activities. However, local public access routes in the Project Area would be restored to conditions equal to or better than existed before the Project and there would be no long-term effects on transportation or traffic.

#### **4.18.12 Vegetation Resources, Including Noxious and Invasive Weeds and Special Status Plants**

Short-term and long-term disturbance of vegetation within the Project footprint would generally have an adverse impact on the long-term productivity of vegetation resources after the operational life of the Project due to the sensitive nature of desert vegetation and the difficulty in successful revegetation of disturbed areas. Upon removal of the transmission line and rehabilitation of the ROW, the structure and function of plant communities may eventually return. However, long-term impacts to vegetation would be apparent for many years after the completion of the life of the Project and whether or not the overall long-term productivity of vegetation would fully recover is unknown.

#### **4.18.13 Visual Resources**

Short-term impacts on viewsheds in the Project Area would be tied to temporary visual intrusions from construction activities and structures. The visual intrusion of the transmission line and the landscape contrast created by the linear disturbances due to the ROW clearing would remain for the operational life of the Project.

#### **4.18.14 Water Resources**

The long-term productivity of water resources would not be affected by any short-term uses of water resources during the operational life of the Project.

#### **4.18.15 Wildlife Resources, Including Special Status Wildlife and Migratory Birds**

Duration of construction activities and the short-term removal of habitat within the disturbance areas would constitute a short-term use. Habitat removal would adversely affect the long-term productivity of wildlife habitat for many species, including special status species and migratory birds, due to the sensitive nature and slow recovery of desert vegetation. Disturbed habitats may or may not return to former productivity, and most would not recover to former productivity within the operational life of the transmission line.

## 4.19 CUMULATIVE IMPACTS

Cumulative effects are those impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions in the Cumulative Impact Areas (CIAs), regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant actions taken over a period of time. Major past and present land uses and disturbances in the area, which are also projected to continue into the future, include: roads, commercial and residential development, wildfires, livestock grazing, agriculture, and mining. Dispersed recreation (including hiking, OHV use, hunting, etc.) also occurs in parts of the CIAs.

### 4.19.1 Cumulative Impacts Area

The sizes of CIAs for this EIS vary by resource. The configuration of the Proposed Action and Action Alternatives provided the foundation for identifying CIAs. Cumulative effects should be evaluated in terms of the specific resource, ecosystem, and human community being impacted. An attempt was made for each environmental resource to determine the extent to which the environmental effect could be reasonably detected and then include the geographic areas of resources that could be impacted by the environmental effect. However, for simplicity, ease of cumulative impact analysis, and in an attempt to avoid having only slightly different CIAs for a number of resources, CIA boundaries were left identical for multiple resources where it seemed reasonable and conservative to do so. The CIA boundaries are reasonably sized to prevent dilution of the cumulative effects over large areas. Guidance from the CEQ, “Considering Cumulative Effects – January 1997,” was used in identifying geographic boundaries and ultimately the CIA for each resource. The CIA for each environmental resource – and the rationale for its boundaries – is described in the **Table 4.19-1**.

**Table 4.19-1 Cumulative Impacts Areas by Resource and Rationale**

RESOURCE	CUMULATIVE IMPACT AREA	RATIONALE
Air Quality and Climate Change	The Maricopa County PM <sub>10</sub> non-attainment area. Although the extreme western portion of the Project Area occurs outside this non-attainment area, it is located within five miles or less of the area boundary. <b>(Figure 4.19-1)</b>	Particulates and fugitive dust from construction activities are not expected to travel farther than several miles before settling to the ground, although incremental impacts overall should be considered for the county non-attainment area.

**Table 4.19-1 Cumulative Impacts Areas by Resource and Rationale (Continued)**

RESOURCE	CUMULATIVE IMPACT AREA	RATIONALE
<p>Cultural Resources                      Geology and Minerals                      Hazardous Materials and Hazardous and Solid Waste                      Land Use and Range Resources                      Public Health &amp; Safety (Noise, EMFs, and Fire)                      Paleontological Resources                      Recreation and Special Designations                      Soils                      Vegetation Resources, including Noxious and Invasive Weeds and Special Status Plants                      Water Resources                      Wildlife Resources, including Special-Status Wildlife and Migratory Birds</p>	<p>Proposed Action and Action Alternatives, plus a two-mile buffer around proposed routes and additional corridors.                      (Figure 4.19-2 for CIA and Figures 3.6-2 and 3.6-3 specific to Future and Existing Land Use)</p>	<p>The direct and indirect effects of the Proposed Action and Action Alternatives on the majority of these resources would be limited to direct disturbance areas, which are confined within the proposed routes and additional corridors for the linear facilities. A two-mile buffer should encompass potential indirect impacts.                      Erosion from wind and water movement in disturbed areas is expected to be minimal and typically would not extend beyond several miles from the disturbance.                      For some of these resources, the CIA boundary was chosen for simplicity purposes, as defined above, and the fact that vantage points from which the Proposed Action and Action Alternative routes and additional corridors, and other past, present, and reasonably foreseeable disturbances that can be discerned are roughly contained within these areas.</p>
<p>Range Resources</p>	<p>The full extent of each Burro Management Area and livestock (sheep and cattle) allotments that the Proposed Action and Action Alternatives cross, and the permitted range uses within these areas that could be impacted.                      (Figure 4.19-3)</p>	<p>The CIA would contain portions of each Burro Management Area, allotments, and permitted range uses that occur within the direct effects area and could be impacted by the Project, as well as other portions of the allotments outside of the direct effects area where livestock displaced by the Project could potentially be moved to.</p>
<p>Socioeconomics                      Environmental Justice</p>	<p>Maricopa County                      (Figure 4.19-4)</p>	<p>The Proposed Action and Action Alternatives occur within this county, and the use of the county for the CIA boundary allows for ease of gathering Socioeconomic data.</p>

**Table 4.19-1 Cumulative Impacts Areas by Resource and Rationale (Continued)**

RESOURCE	CUMULATIVE IMPACT AREA	RATIONALE
Transportation and Traffic	Consists of all the existing transportation routes into the general Project Area including SR 74, US 60, and SR 303. (No Figure)	Transportation into the general Project Area would primarily be on these existing and established access routes. Transportation should not be noticeably affected outside of these major roads.
Visual Resources	Five-mile buffer around Proposed Action and Action Alternative routes and additional corridors. <b>(Figure 4.19-5)</b>	Encompasses the extent of the farthest KOP and the fact that vantage points from which the Proposed Action and Action Alternative routes and additional corridors, and other past, present, and reasonably foreseeable disturbances that can be discerned are roughly contained within this area.

All CIAs for the Project include a mixture of federal, State Trust, and private lands. Public lands managed by the BLM are used for a variety of purposes including dispersed recreation, wildlife, livestock grazing, mining, and transportation and utility corridors. Public lands are also managed for special values, including the Black Canyon SRMA, Castle Hot Springs SRMA, Hassayampa SRMA, Hells Canyon Wilderness Area, Hieroglyphic Mountains Special Management Area, Lake Pleasant HMA, and the Vulture Mountain ACEC. Public lands managed by USBR are managed to operate dams, power plants, and canals providing water and hydroelectric power. State Trust lands are generally managed for commercial uses that generate revenue for the benefit of Arizona's schools, or managed for wildlife (and their habitat), or recreation. State Trust lands are also developed for public purposes such as roads, utilities, and other infrastructure. Private lands have been developed for residential and commercial purposes, agriculture, roads, highways, landfills, airports, etc. The lands included in all of the CIAs contain a mixture of undeveloped lands, agriculture, cities and towns, roads and highways, utilities, commercial and residential development, military facilities, and mining.

**Table 4.19-2** details the land ownership by CIA. The information in **Table 4.19-2** is referred to throughout the discussions by resource topic in the proceeding sections.

**Appendix 4B** provides a list and brief descriptions of past, present, and reasonably foreseeable projects and developments that contribute to cumulative effects. Many of these projects are discussed or referenced under the resource discussions that follow.

**Table 4.19-2 Land Ownership by CIA**

LAND OWNERSHIP	AIR QUALITY		VISUAL RESOURCES		CULTURAL RESOURCES, ETC. <sup>1</sup>		RANGE RESOURCES		SOCIOECON AND EJ	
	ACRES	% OF CIA	ACRES	% OF CIA	ACRES	% OF CIA	ACRES	% OF CIA	ACRES	% OF CIA
Bureau of Land Management	96,817	5.3	30,937	10.4	13,236	10.4	23,200	7.4	1,732,521	29.3
Bureau of Reclamation	11,263	0.6	10,883	3.6	3,624	2.8	15,328	4.9	13,842	0.2
U.S. Fish & Wildlife Service	-	-	-	-	-	-	-	-	1	0.0
U.S. Forest Service	120,726	6.5	-	-	-	-	-	-	655,350	11.1
Total Federal	228,806	(12.4)	41,820	(14.0)	16,860	(13.2)	38,528	(12.3)	2,401,714	(40.7)
Military	3,975	0.2	653	0.2	653	0.5	653	0.2	724,929	12.3
Indian Lands	187,443	10.2	-	-	-	-	-	-	269,927	4.6
Local or State Parks	93,140	5.0	4,332	1.5	-	-	3,643	1.2	100,571	1.7
County	3,265	0.2	2,951	1.0	485	0.4	1,753	0.6	4,113	0.1
Private	1,098,110	59.5	132,026	44.2	55,028	43.3	176,401	56.1	1,749,594	29.6
State Trust Land	229,500	12.4	116,875	39.1	54,162	42.6	93,488	29.7	640,788	10.9
State Wildlife Area	2,105	0.1	-	-	-	-	-	-	10,461	0.2
Total All Owners	1,846,344	100.0	298,657	100.0	127,189	100.0	314,466	100.0	5,902,098	100.0

<sup>1</sup>Includes cultural resources, geology and minerals, hazardous materials & hazardous and solid waste, land use, public health & safety, paleontological resources, recreation and special designations, soils, vegetation resources, water resources, and wildlife resources.

#### 4.19.2 Past, Present, and Reasonably Foreseeable Actions

In 2010, Maricopa County had a population of 3,817,117 or 59.7 percent of the state's population of 6,392,017 (U.S. Census Bureau 2012a). There was a 24 percent population increase in Maricopa County and in the state between 2000 and 2010. Community development in the Project Area has been rapid and much of the past, present, and reasonably foreseeable actions and developments are a result of population increase. Although the Project Area is northwest of the densely populated greater Phoenix area, urban development is encroaching. As noted in **Appendix 4B**, numerous residential developments are planned and thousands of acres will be disturbed as a result (**Table 4.19-3**). For this analysis, it is assumed that essentially all of the private and State Trust land within the CIA will be developed as some type of residential which could include developed open space interspersed within the residential areas. Infrastructure to support that development, including roads, irrigation/water delivery, substations, power lines, and power plants, have been constructed and additional utilities and road projects are planned (**Appendix 4B**). Increased dispersed recreation and developed recreation facilities also contribute disturbances. Traditional activities such as grazing and mining also occur in the CIAs.

About half of the Project is located either parallel to SR 74 or is essentially adjacent at varying distances. This highway is currently a rural two-lane highway. SR 74 serves as a major regional transportation facility connecting I-17 to US 60 northwest of the Phoenix metropolitan area. SR 74 also connects with several regional arterial roadways that are not on the state highway system. Traffic flow is generally stable, but drivers are restricted in their freedom to choose their speed, change lanes, or pass (URS 2010). The majority of land abutting the highway is undeveloped with open desert bordering the roadway; however, future residential development is planned adjacent to the highway, which would increase traffic on SR 74.

**Table 4.19-3 Potential Quantifiable Permanent Disturbance from Reasonably Foreseeable Projects within the Two-Mile CIA<sup>1</sup>**

(Footnotes at end of table.)

PROPOSED PROJECT DISTURBANCE	ACRES	% OF CIA
Agriculture	329.9	0.3
Utilities	18.8	<0.1
Community/Municipal	6,485.6	5.1
Developed Recreation	27,818.0	21.9
Undeveloped	6,775.9	5.3
Water Infrastructure	1,568.3	1.2
Residential	82,403.0	64.8
Lake/Water	1,412.2	1.1

**Table 4.19-3 Potential Quantifiable Permanent Disturbance from Reasonably Foreseeable Projects within the Two-Mile CIA<sup>1</sup> (Continued)**

(Footnotes at end of table.)

PROPOSED PROJECT DISTURBANCE	ACRES	% OF CIA
Mining	54.2	<0.1
Primary Roads	345.2	0.3

<sup>1</sup>Includes cultural resources, geology and minerals, hazardous materials & hazardous and solid waste, land use, public health & safety, paleontological resources, recreation and special designations, soils, vegetation resources, water resources, and wildlife resources.

In the 1997 Maricopa County Transportation System Plan, SR 74 was given a “scenic overlay” and then in 2006, Maricopa County produced the SR 74 Scenic Corridor Guidelines to protect, preserve, and enhance the existing natural environmental qualities along the SR 74 corridor to the maximum extent possible, while providing for economic development opportunities. SR 74 has since been designated as a future Regional Transportation Plan Freeway (MAG 20087).

There are numerous planned community developments within the CIAs which are further detailed in **Section 4.19-7** and **Appendix 4B**. Projected growth will require infrastructure and roadway expansions, developments, and improvements. Due to projected growth, the ultimate concept for SR 74 is an asymmetrical 10-lane divided, controlled access, suburban freeway (URS 2010).

#### 4.19.3 Air Quality and Climate Change

The CIA for air quality is the PM<sub>10</sub> Non-Attainment Area for Maricopa County and totals approximately 1,846,344 acres (**Figure 4.19-1**). Maricopa County is managed to prevent exceedances of NAAQS, and to improve air quality; to date, the county has been unable to meet attainment standards for PM<sub>10</sub> or ozone and therefore is in non-attainment status. However, data from the three monitoring stations (Glendale, Dysart, and Zuni Hills) near the Project Area indicate no exceedances of 24-hour PM<sub>10</sub> standards during 2010.

Past and present disturbances including mining, agriculture, residential and commercial construction activities, industrial activities, and vehicle emissions have contributed to air quality issues. Two vehicle proving grounds near the Project Area (**Appendix 4B**), the former Chrysler Proving Ground and the Arizona Proving Ground (formerly Volvo), have contributed vehicle emissions and particulates within the CIA. The Chrysler Proving Ground is no longer in operation and therefore is not currently a source of emissions, but could be for fugitive dust.

Air pollution sources occur in higher density in and near the greater Phoenix area. Although the Project Area has for the recent past been relatively undeveloped, nearby Phoenix has impacted the air quality and caused the non-attainment status for PM<sub>10</sub> and ozone, and the carbon monoxide attainment with a maintenance plan status.

Existing energy industry sources in the CIA include the Glendale Energy Power Plant, the Cotton Center Solar Plant, Sundance Generating Station (gas-fired), and West Phoenix Power Plant (gas-fired). Numerous substations and transmission lines move this electricity from the plants to the grid. Development of renewable energy sources will result in overall reductions in GHG emissions.

Vehicles are a major contributor of emissions and particulates. Air traffic associated with the LAFB and other small local airstrips have also impacted air quality.

Non-permitted air emissions sources potentially affect historic and current air quality in the CIA. Particulate matter sources of concern include: residential development; ranching; private and public grazing and agriculture; ground clearing in open lands and along utility corridors; road dust; smaller mining and rock crushing operations; recreational activities; transportation construction and maintenance efforts; and exhaust from vehicles.

Reasonably foreseeable new non-permitted emission sources, or changes from current emission patterns, are expected to include:

- Residential development and construction of associated infrastructure,
- Road construction and expansion,
- Growth in general rail traffic on the BNSF,
- Local and regional growth in auto, truck, and air traffic,
- Range improvement and fire management efforts, and
- Increased ground disturbances from:
  - vegetation changes associated with grazing and agricultural activities,
  - vegetation removal under or along utility corridors, along fire breaks, and from construction efforts
  - changes in emissions from non-permitted sources identified as currently existing.

Specific projects are identified in **Appendix 4B**.

Reasonably foreseeable actions in the CIA over the next 30 years would be expected to result in additional emissions to the Maricopa County non-attainment area for PM<sub>10</sub> and the non-attainment area for ozone. Construction and operation of the reasonably foreseeable projects would be permitted and mitigated in accordance with regulation to ensure that they do not cause or contribute to exceedances of NAAQS. The overall cumulative impact of the existing and reasonably foreseeable emissions sources, including the Sun Valley to Morgan 500/230kV Transmission Line, would not be expected to significantly change the current air quality levels in the CIA. The overall impact of all other activity trends identified would be to maintain current air quality levels, possibly but not definitely a minor upward trend over time. Individual projects could have a very localized moderate impact on air quality, though not likely over any extended duration. Development of renewal energy sources, such as solar power, will result in overall reductions in GHG and assist with mitigating climate change and its impacts.

#### 4.19.4 Cultural Resources

The CIA for cultural resources includes the Project components and a two-mile wide buffer surrounding them, a total of 127,189 acres (**Figure 4.19-2**). Land ownership is detailed in **Table 4.19-2** above. **Table 4.19-4** details the existing quantifiable general land uses within this CIA. Approximately 13,236 acres of the CIA are managed by the BLM, 3,624 acres by the USBR, 653 acres are military lands, and an additional 54,162 acres by the ASLD. This equates to 56.4 percent of the CIA under federal or state regulatory oversight. The remaining land includes 485 acres of county land and 55,028 acres of private lands which are generally not subject to Section 106 of NHPA or the Arizona State Historic Preservation Act.

**Table 4.19-4 Existing Quantifiable Land Uses in Two-Mile CIA<sup>1</sup>**

LAND USE DISTURBANCES	ACRES*	% OF CIA
Agriculture	342.9	0.3
Utilities	18.8	<0.1
Community/Municipal	3,074.0	2.4
Developed Recreation	3,000.2	2.4
Undeveloped	114,888.4	90.3
Water Infrastructure	1,568.3	1.2
Residential	3,045.8	2.4
Lake/Water	932.5	0.7
Mining	214.4	0.2
Primary Roads	125.8	<0.1

<sup>1</sup>Includes cultural resources, geology and minerals, hazardous materials & hazardous and solid waste, land use, public health & safety, paleontological resources, recreation and special designations, soils, vegetation resources, water resources, and wildlife resources.

\* Not including Grazing Lands or Burned Areas - To lump all types of disturbances together would not provide an accurate picture of the CIA, some of which, though grazed or burned, is relatively undisturbed, although it acknowledges that some level of modification to the natural condition has occurred. Acreages are not necessarily exclusive and may overlap, therefore acreages may be slightly more than in **Table 4.19-2**.

Past and present disturbances to cultural resources in the CIA have been the result of utility installation, road development, ranching/agriculture, residential and commercial development, archaeological excavation, recreational activities, and likely vandalism and unauthorized artifact collection (**Appendix 4B**). The past and present land uses in the CIA have resulted in the loss, disturbance, theft, and burial of cultural artifacts and sites, as well as the modification and alteration of the setting of cultural sites and resources. The incremental degradation of cultural resources reduces the information and interpretive potential of historic properties. Development on state and federal lands requires that cultural resource surveys be conducted to determine the presence of cultural resource sites eligible for listing on the National Register; there is no such requirement for disturbance on private lands

unless there is a federal or state nexus. As directed by Section 106 of the NHPA, National Register-eligible sites are generally avoided or mitigated if avoidance is not possible for projects with a federal or state nexus. Projects/development disturbances conducted prior to 1966 (i.e., prior to NHPA) and/or those without a federal or state nexus generally did not identify/quantify cultural resource sites or impacts to them.

Sites that have been determined to be ineligible for the National Register did not require avoidance, have been discharged from management, and therefore have likely been impacted by the activities requiring the cultural resource inventory (i.e., development, utility installation, fence projects, road construction, etc.).

The reasonably foreseeable future disturbances in the CIA are quantified for the cultural resources CIA in **Table 4.19-3**, and are detailed in **Appendix 4B**. Changes to state and private undeveloped and agricultural lands within the CIA are likely as some of these lands get converted in the future to more residential, commercial, and recreational utilization. Planned community development constitutes the largest reasonably foreseeable disturbance (64.8 percent of the CIA) on privately owned and State Trust land (to be sold, leased, or developed). On the privately owned there would be no protection for cultural resources on those lands. Construction of proposed utilities and other ROW uses (i.e., roadways, pipelines, substations, power lines) within the CIA could also potentially impact eligible sites; however, if there is a federal or state nexus, avoidance and/or mitigation of impacts to National Register-eligible cultural resources would be required.

Increased disturbance from multiple actions could result in cumulative adverse impacts to as yet unknown cultural resource sites. Increased accessibility created by new roads built in association with projects can cause cumulative impacts related to increased public visitation, recreational impacts, unauthorized artifact collection, and vandalism.

Within the CIA for cultural resources, known quantifiable past and present disturbances total approximately 11,390 acres or 9.7 percent of the CIA. Proposed future disturbances, including the Sun Valley to Morgan Project, would potentially disturb approximately 107,633 acres. These past, present, and reasonably foreseeable disturbances total 119,023 acres, or about 93.6 percent of the CIA.

Current and future development will contribute to the cumulative effects, both direct and indirect, on prehistoric and historic cultural resources in the region. All proposed, reasonably foreseeable developments would be completed under the oversight of Section 106 of NHPA if there were a federal or state nexus and thus, Project impacts would be individually addressed. Development of a multiuse utility corridor (requiring an RMPA), under Action Alternative 1 or Alternative 2, on public lands would provide for additional development within that corridor; however, future developments would be subject to NEPA and under the oversight of Section 106 of the NHPA. Impacts to specific cultural resources would depend on the exact Project location and extent of ground disturbance, as well as land jurisdiction. Section 106 of the NHPA requires avoidance and/or mitigation of impacts to National Register-eligible cultural resources by federal undertakings. However, cumulative impacts to cultural resources from reasonably foreseeable projects would mostly result from ground disturbance related to new residential, commercial, or industrial developments on private lands without regulatory oversight.

Development of the Sun Valley to Morgan Project would result in a 0.1 percent increase in disturbance in the CIA over the next 30 years and could contribute to the loss of site integrity of up to six to nine sites, depending on the Action Alternative selected, if they could not be avoided by project design. This impact, in addition to other reasonably foreseeable future activities on federal or State Trust lands would be minor. Data recovery of NRHP-eligible sites that could not be avoided would expand the regional database and knowledge of prehistoric and historic contexts. The mitigation measures developed to avoid direct impacts to cultural resource would also minimize contributions to cumulative effects. Cumulative impacts to cultural resources from past, present, and reasonably foreseeable future activities would be minor to moderate.

#### **4.19.5 Geology and Minerals**

Potential effects to the geology and mineral resources consist of mineral resource depletion, removal of mineral resources from availability for development, and topographic changes. **Sections 3.4** and **4.4** discuss in detail the geology of the Project Area and the Project's likely affect on geology and mineral resources, respectively. The CIA for geology and minerals encompasses 127,189 acres (**Figure 4.19-2**). The past and present activities, such as road building, mineral extraction, and other infrastructure projects (**Appendix 4B**), have impacted the geology of the area due to terrain modifications and extraction of minerals.

Although there has been mining activity in the CIA in the past and active mining claims are present, there are no active mines in the CIA. Mining has disturbed approximately 214.4 acres within the CIA. There are twelve mine sites, two known to be for metallic minerals and one for non-metallic minerals within the CIA (USGS 2012). No active sand and gravel operations occur within the CIA.

Transmission lines and associated facilities overlap with mining claims where mining could have occurred in the past. As described in **Section 3.4**, several abandoned mine sites are found throughout the CIA. As commodity prices fluctuate and new uses are found for specific metals and other mineral products, some of these abandoned resources may become economically viable in the future and reopened. Since a substantial portion of the Project is located on alluvial fans and basin-fill material, it is highly unlikely that construction and operation of the Project would preclude development of any metallic mineral resources in the area.

The Project would have a long-term disturbance of between 130 to 142 acres, depending on the Action Alternative selected. Use of mineral products for the construction of roads, railroads, buildings and other facilities would likely occur in the future. Impacts from use of licensed gravel pits and other borrow sources are regulated and minimal. Construction of utilities, roads, and residential developments could alter surface topography. Mines for various mineral commodities would likely be developed if their economic value increases.

Under Action Alternatives 1 or 2, the designation of a multiuse utility corridor (requiring an RMPA) for future ROWs could alter or limit future access to mineral resources potentially encumbered by future linear ROWs.

Within the CIA, known quantifiable past and present disturbances total approximately 11,390 acres. The Proposed Action, or any of the Action Alternatives, when combined with

reasonably foreseeable actions and disturbances would contribute disturbance to geology and minerals and thus a cumulative impact. When combined, past, present, and reasonably foreseeable future developments/disturbances, as presented in **Table 4.19-3**, total 119,023 acres. This equates to disturbance of 93.6 percent of the CIA. However, much of this would be surficial and would not affect geology or minerals. The cumulative effects of the Project, when combined with past, present, and reasonably foreseeable disturbances, on mineral and geological resources would be minor and its effect on topography would be negligible to minor.

#### **4.19.6 Hazardous Materials and Hazardous and Solid Waste**

The CIA for hazardous materials and hazardous and solid waste includes a two-mile buffer surrounding the Proposed Action and Alternatives, a total of 127,189 acres (**Figure 4.19-2**). Past and present activities that generate hazardous materials and/or hazardous and solid waste have included mining, residential development, road and utility development, energy development (i.e., substations), two vehicle proving grounds, and military installments. **Section 3.5** summarizes known hazardous materials sites and facilities within and near the Project and CIA.

Reasonably foreseeable generators of solid and/or hazardous waste in the CIA include the construction/development of the proposed LAFB Solar Project, the Sun Valley to Trilby Wash to Palm Valley Double Circuit 230kV Line, the Trilby Wash Substation, and several transportation projects, among others (**Appendix 4B**). All construction projects would be required to comply with all state, federal, and local regulations relevant to the handling and disposal of all wastes.

All solid and hazardous wastes generated during the construction phase and during the operations phase of the Project would be transported to licensed facilities off-site for treatment and disposal. In the context of existing and reasonably foreseeable solid and hazardous waste generation locally and regionally, the Project would constitute a minor increase in waste generation and management, well within existing capacities and infrastructure.

Given the existing capacity and regulatory framework for generators, transporters, and TSD facilities, the Project in combination with the other reasonably foreseeable projects and activities would have minor cumulative effects on solid and hazardous waste generation and management. The Project would comply with all local, state, and federal regulatory requirements.

#### **4.19.7 Land Use and Range Resources**

##### **4.19.7.1 Land Use**

The CIA for land use includes a two-mile buffer surrounding the Proposed Action and Alternatives (**Figure 4.19-2**). As noted in **Table 4.19-2**, 13.2 percent of the CIA is under federal jurisdiction while another 42.6 percent is State Trust lands. There are also 653 acres of military lands which make up 0.5 percent of the CIA. The remaining 43.3 and 0.4 percent are private and county lands, respectively. Federal or public lands are managed for a variety

of purposes, primarily related to preservation, recreation, and development of natural resources. State Trust lands are not public lands, but are instead managed as a public Trust created to support the education of children which is accomplished in a number of ways, including the sale and lease of State Trust lands for grazing, agriculture, municipal, school site, residential, commercial and open space purposes.

Past and present developments and disturbances related to land use were presented in **Section 3.6** and are listed in **Appendix 4B**. The majority of land in the CIA is currently undeveloped (**Figure 3.6-2**; 115,821 acres or 91.0 percent) with open desert and areas identified as future residential development areas (**Figure 3.6-2**). The USBR manages the Waddell Canal, the Maricopa Water District manages the Beardsley Canal and the New Waddell Dam/Reservoir, and the CAWCD manages the CAP Canal. There are existing and planned recreational trails within the CIA, most on BLM-managed public lands and some owned and maintained by Maricopa County. The Lake Pleasant Regional Park is located in the northeast portion of the CIA, north of SR 74, and relies on SR 74 for access to entrances and marinas. The cities of Peoria and Surprise have annexed some of the CIA surrounding SR 74 to the north and south. In general the CIA is characterized by open desert, lands used for grazing, mining, utilities, recreation, and widely dispersed residential development. In some areas, open desert has been converted to residential, commercial, and industrial uses (e.g., military, railroad, electrical substations).

State Trust lands south of SR 74 and just west of the Morgan Substation would be directly impacted by visual effects and ground disturbing activities, adding to a landscape already impacted by multiple transmission lines (pers. comm. ASLD May 23, 2013).

Future and planned land uses in the CIA include residential, mixed use, commercial development, and parks and open space (see **Figure 3.6-2**). These future uses are defined under the general plans for the area (Maricopa County 2002; City of Peoria 2010; City of Surprise 2008a; Town of Buckeye 2008). Approximately 51,343 acres, or 94.8 percent, of the State Trust lands within the CIA are included in future residential/community developments.

Planned residential developments in the Town of Buckeye, unincorporated Maricopa County, and the cities of Surprise and Peoria that are located within two miles of the Proposed Action route, ACC-certificated route, and all other Action Alternative routes are listed in **Table 4.19-5**.

**Table 4.19-5 Planned Residential Developments within the CIA**

<b>TOWN OF BUCKEYE</b>	<b>CITY OF SURPRISE</b>
Douglas Ranch Festival by Lyle Anderson Sun Valley Villages I and II Spurlock Ranch	Grand Vista Marisol Ranch
<b>UNINCORPORATED MARICOPA COUNTY</b>	<b>CITY OF PEORIA</b>
Coyote Trails Asante West Broadstone Ranch Warrick Properties Roesner Ranch Lake Pleasant Grande Oasis Peak View Estates Unit 2 and 3 Trail of Light Walden Ranch Rancho Cabrillo Rancho Maria	Saddleback Heights Quintero Vistancia <u>Cholla Hills</u> Lake Pleasant Heights

Source: Maricopa County 2012

The full development of the Lake Pleasant Heights, Saddleback Heights, and Vistancia communities in conjunction with the Project and planned future expansion of SR 74 would significantly change the land use in this portion of the CIA. Community development including residential, commercial, and business components would transform the existing rural land uses to urban/suburban. This would be a major land use cumulative effect in this portion of the CIA.

In order to accommodate the planned development, additional utilities would be required. Future utilities would include fiber optic, water, sewer, gas, and power lines. Main trunk lines as well as distribution systems for each of these facilities would be necessary to service the developing communities.

The future SR 74 expansion would require new ROW along the entire length of the highway between US 60 and I 17. The existing ADOT ROW corridor is 200 feet wide centered on the roadway. The widening would require an additional 200-225 feet of ROW for the majority of the corridor. The total ROW needed from each agency is as follows: State Trust lands – 421.5 acres (55.8 percent), BLM – 244.0 acres (32.3 percent), USBR – 29.5 acres (3.9 percent) and from private owners – 60.7 acres (8.0 percent).

Of the 54,162 acres of State Trust lands in the CIA, currently 53,545 acres are undeveloped; this changes drastically in the foreseeable future with 51,343 potentially sold or leased for developments (residential, municipal, recreation/open space, etc.); this equates to 94.8 percent of State Trust lands within the CIA being developed.

The Project would have a long-term disturbance of between 130 to 142 acres, depending on the Action Alternative selected. Reasonably foreseeable projects and development would convert an additional 107,633 acres of the CIA for development of master planned communities, recreation facilities, community/municipal infrastructure, roads, and utilities. These developments when combined with past and present disturbances would total 119,023 acres or 93.6 percent of the land use CIA and would result in further changes to the types of land uses and would continue to alter the landscape. Under either Action Alternative 1 or Alternative 2, the designation of a multiuse utility corridor (requiring an RMPA) on public lands would provide for additional development, however future developments would be subject to NEPA.

In general, an increase in developments would contribute to the modification of the character of the CIA. As development occurs, the rural environment would become increasingly more residential, commercial, and industrial. Large developments that require many employees would spur other commercial and residential growth, causing the need for improved transportation corridors and other infrastructure. If populations increase as a result of large developments, the use of designated recreation areas and dispersed recreation within the CIA also could increase. In addition, the quality of the recreational setting could be degraded by the loss of a wilderness aesthetic, visual intrusions upon the landscape, and potentially increased regional haze due to the cumulative increase in development. This would further reduce the amount of open space in which to recreate, but would increase the ability to meet the energy needs of developing and nearby communities. The cumulative effects of past, present, and reasonably foreseeable projects to land use would be major, although this Project would contribute only negligibly to this overall cumulative effect.

#### **4.19.7.2 Range Resources**

The CIA for range resources encompasses the livestock allotments intersected by the Project (**Figure 4.19-3**) and totals 314,466 acres.

Livestock grazing is permitted on approximately 39,802 acres of BLM-managed public land and 85,308 acres of State Trust land within the CIA (39.8 percent). The past and present activities discussed above in land use have had a direct effect on the extent of grazing and the amount of forage available in the CIA. Residential and commercial development has encroached on lands used for grazing and reduced the amount of land and forage available in the Douglas, Lower Bo Nine, Bo Nine, West Wing Mountain, Ridgeway-Kong, Lockett, and Desert Hills BLM allotments and Douglas, Lockett, Desert Hills, Maughn, Durban, Sheep Springs, Widow Snell, and four unknown name State Trust land allotments.

Reasonably foreseeable projects, as discussed above under Land Use, would result in further changes to the vegetation communities that are used as forage for cattle grazing in the CIA. State Trust lands sold or leased for developments would no longer be available for grazing. Commercial development would result in the removal of vegetation communities and forage. The growth of master planned communities would convert more lands to structures and urban landscaping. Further, construction of roads and freeways would result in the removal and transformation of native vegetation communities to roadways, with a mixture of urban and native vegetation reclamation in the ROWs.

The Project would convert an additional 130 to 142 acres of land from generally open desert to utility ROW depending upon the Action Alternative selected. This would represent less than 0.1 percent of the CIA. This would further reduce the amount of open space in which to graze cattle. This effect when combined with past, present, and reasonably foreseeable projects would constitute only a negligible amount to the moderate to major cumulative impact on range resources.

#### **4.19.8 Public Health and Safety (Including Noise, Electromagnetic Fields, and Fire)**

The CIA for Public Health and Safety is the same as Cultural Resources (**Figure 4.19-2**). The following subsections provide information on the cumulative impacts of noise, EMFs, and fire and fuels management as the topics relate to public health and safety.

##### **4.19.8.1 Noise**

The current land ownership (**Table 4.19-2**) and uses within the CIA (**Table 4.19-4** and **Appendix 4B**) indicate dominant and/or likely noise sources. The ambient sound environment within the CIA would generally be expected to vary with proximity to the major transportation routes and developed areas.

Air traffic impacts are generally restricted to near the vicinity of the few isolated small and/or private air strips in or adjacent to the CIA. Takeoffs and landings generate brief but loud local impacts. Military aircraft utilize a portion of the CIA when flying to/from the LAFB Auxiliary Field #1. The F-35 aircraft pilot training center will be coming to LAFB, which could result in additional noise impacts if the aircraft uses the Auxiliary Field #1 during training. Commercial and industrial activities in the CIA can produce localized noise but these are few in number. The most prominent noise impacts in the CIA result from transportation sources and ranch, residential, or small development sounds generated in areas of comparably higher population density. Rail traffic associated with the BNSF currently generates noise impacts through the central portion of the CIA, with the railroad traversing northwest-southeast through the CIA. Sound generated by current rail traffic along the BNSF elevates current noise levels within 0.25-mile of those tracks.

Development of the numerous planned communities, as discussed in **Section 4.19.7**, would generate increased noise as the residences and associated infrastructure (i.e., roads) are constructed and recreation areas are developed. Additional residential development could increase the air traffic noise impacts and lead to noticeable increases in noise levels along approaching and departing flight paths. Use of helicopters in construction of the transmission lines would produce noise impacts along their flight paths, but only during construction in localized areas of the Project after transmission structures have been installed. The development of the various power facilities (**Appendix 4B**) would likely result in moderate short-term noise impacts during construction and long-term minor noise impacts in the CIA, approaching moderate impact levels at only the closest residences.

Increases in commercial activity in and near the CIA would include construction and operation of electrical generation facilities. These would increase noise levels in the immediate vicinities of these activities. Increases in area population due to planned

community developments would increase noise generated by vehicular traffic and recreational vehicles. Expansion and construction of roadways associated with residential developments would increase noise as well. Noise caused by the construction of the Proposed Action or Action Alternatives combined with present and reasonably foreseeable noise effects from air, vehicle, and rail traffic in and near the CIA would be minor.

#### **4.19.8.2 EMFs**

There are several existing sources of EMFs in the CIA including the Humbug Substation, Lakeside Substation, Morgan Substation, Morristown Substation, Oberlin Substation, Raceway Substation, and various portions of 69kV, 230kV, and 500kV transmission lines.

Reasonably foreseeable future sources of EMFs include the Sun Valley Substation, the Sun Valley to Trilby Wash to Palm Valley Double-circuit 230kV transmission line, and other sources likely to increase as development continues within the CIA.

Once operational, the EMFs associated with the Project would not combine with the impacts of other projects because the impact would only occur in the immediate area of this Project. The addition of other new lines (e.g., Sun Valley to Trilby Wash to Palm Valley double-circuit 230kV transmission line) would not change the level of effect at any specific location. Similarly, negligible impacts associated with EMF exposure from transmission lines would only occur in the immediate vicinity of the lines. The Project is not anticipated to contribute any more than negligible to minor cumulative public health impacts associated with EMF due to its distance away from any potential receptors.

#### **4.19.8.3 Fire**

Past, present, and reasonably foreseeable projects and disturbances (**Appendix 4B**) increase the cumulative level of human influence adjacent to wildlands and potentially increase the number of human-caused wildfire ignitions. The Project's contribution to increased probability of human-caused wildfire ignitions would be minor based on the short duration of construction activity. The presence of the overhead transmission line would create an ongoing source of potential wildfire ignitions for the life of the Project. Ignitions can be caused by such unpredictable events as lightning strikes, conductor contact by flying debris, mechanical malfunction or failure of transmission line components, and miscellaneous collisions (i.e. birds, helicopters, planes). These events are rare but would be unavoidable. When considered in combination with other reasonably foreseeable projects in the CIA, the potential for wildfire ignitions would be a minor cumulative impact.

In summary, cumulative impacts from reasonably foreseeable projects would be expected if construction and operation of the projects resulted in an increase in the risk of wildfires or an increase in ambient noise or EMFs. However, fire protection measures and project design features would mitigate and/or minimize potential risks. Therefore, the cumulative fire hazards and cumulative effects from potential noise and EMFs associated with these projects would be minor.

#### 4.19.9 Paleontology

South-central Arizona has yielded paleontological resources that have contributed to the understanding of the development and history of life on earth. Paleontological resources are subject to cumulative impacts via loss through both natural processes of erosion and weathering, and man-made disturbances. Cumulative effects to paleontological resources occur through the incremental degradation of the resources from various impacts, which reduce the information and scientific research potential of the resources.

The current land ownership and uses for (thus disturbances within) the paleontological resources CIA (**Figure 4.19-2**) can be found in **Tables 4.19-2** and **4.19-3** above.

Natural processes such as soil erosion and rock weathering have exposed fossils.

As discussed in **Section 3.4**, there are mining districts within or near the CIA. Also noted in **Section 3.4**, there are active sand and gravel operations in the CIA. All of these endeavors include ground disturbing activities related to exploration, development, and extraction that could encounter paleontological resources. Further, roads, power lines, pipelines, utility construction, and residential development can impact near surface deposits of paleontological resources in general and possibly deeper deposits in areas that required excavation through landforms.

Vertebrate fossils such as dinosaurs, mammals, fishes, reptiles, and uncommon invertebrate fossils are collected by trained researchers under BLM permit. These remain public property and are placed in museums or other public institutions after they are studied. Although the resources are removed from their original context, the documentation adds to the body of knowledge about paleontological resources in the region. However, casual use and unpermitted collection of fossils has contributed to the loss of the resource and its research potential and interpretation.

The reasonably foreseeable future actions applicable to the CIA all have the potential to impact paleontological resources. However, as some of the land in the CIA is publicly administered, projects on these lands would be subject to NEPA and federal and state regulations protecting paleontological resources. Any future mining development on public lands would require an inventory of paleontological resources, as well as documentation or collection of specimens uncovered during operations.

Community development projects have the potential to impact paleontological resources as well. Private development does not afford the same protections and standard operating procedures as activities under federal administration.

Geological formations with exposures containing paleontological resources would continue to be impacted by natural agents (e.g., erosion, rock weathering, surface water drainage).

Within the CIA for paleontological resources, known quantifiable past and present disturbances total approximately 11,390 acres. Reasonably foreseeable developments and projects would increase this to 119,023 acres (**Table 4.19-3**) of disturbance.

Encountering paleontological resources during development/disturbance has the potential to destroy and/or lose the resource. However, it also has the potential of providing additional data and rare or previously unknown specimens which can further scientific knowledge.

Additional impacts to paleontological resources in conjunction with the Project would not be known until discovered and evaluated. Impacts to paleontological resources associated with federal land management decisions/actions would be minimized or reduced in accordance with federal legislation and existing standard operating procedures. Cumulative impacts to paleontological resources would be negligible to minor.

#### **4.19.10 Recreation and Special Designations**

The CIA for recreation and special designations is the two-mile buffer as described in **Table 4.19-1** and shown on **Figure 4.19-2**. Special designations provide opportunities for solitude and primitive, unconfined recreation and protect natural or undeveloped landscapes and resources. A portion of the Castle Hot Springs SRMA is within the CIA. The Castle Hot Springs SRMA, as described in **Section 3.9**, is managed for motorized and non-motorized recreation and provides opportunities for developed camping, OHV use with single- and two-track routes for general motorized recreation use, and organized OHV events, horseback riding, bicycling, hiking, and picnicking. Other lands within the CIA provide opportunities for dispersed and developed recreation. Dispersed recreation includes camping, hunting, wildlife observation, photography, backpacking, horseback riding, hiking, and backcountry driving. Developed recreation includes city and regional parks, OHV trails, and a raceway. A portion of the Maricopa Trail which is part of the Maricopa County Regional Trail Plan is located within the CIA. The trail begins at the Agua Fria trailhead located approximately 1.5 miles south of Lake Pleasant.

Residential and commercial developments have lead to surface disturbances and converted native vegetation communities to urban landscaping. Population growth has increased traffic and pressure in recreational areas. The mixture of land use development in the CIA has altered the land, its character, and the viewshed.

The past and present land uses in the CIA total 11,390 acres which equates to development of approximately 9.7 percent of the CIA. Developed recreation includes about 3,000 acres (2.4 percent) and is expected to increase to 27,818 acres or 21.9 percent of the CIA (**Table 4.19-3**).

The Project would have a long-term disturbance of between 130 to 142 acres, depending on the Action Alternative selected. Reasonably foreseeable projects in the CIA would disturb another 107,633 acres which includes planned communities, community/municipal infrastructure, utility development, recreation facilities, and roadway expansion/construction. Reasonably foreseeable activities also include the BLM's Travel Management and Recreation Activity Plan/EA for the Castle Hot Springs Management. This plan would designate routes and guide recreation management north of SR 74.

| The Project could increase the level of difficulty or expense of managing access and public use around this new linear disturbance. Converting the transportation corridor to the north of SR 74 or the BLM-managed public lands south of SR 74 to a multiuse utility corridor, should the corridor be developed with additional utilities, would result in further degradation of the natural feel of the area, and would create several construction routes or potential long-term centerline access routes that would make it difficult to prohibit recreation use. The area would be difficult to manage to prevent route proliferation. Extensive use of the area by four-

wheel OHVs would likely convert all single-track routes to two-track, eliminating this recreational resource. Extensive use of two-track routes in this area could generate dust in violation of county regulations and ultimately result in closure of the area to OHV recreation.

Maricopa County has proposed four future trails that would be located within the CIA. These trails have been approved by the Maricopa County Board of Supervisors, but their exact locations could shift.

Except for construction of trails, developments on public, State Trust lands, and private land would result in a loss of opportunities for dispersed recreation and would impact opportunities for solitude and primitive recreation by affecting the viewshed of the recreation setting which affects the recreation experience. The growth of cities and towns would convert more lands to structures and urban landscaping. Construction and expansion of highways and roadways would result in the removal of native vegetation, increased noise, and increased visitation.

The population in the CIA is expected to grow substantially as indicated by the reasonably foreseeable planned community development projects. Conversion of land from undeveloped open desert to residences/communities and the associated infrastructure (i.e., transmission lines, roadways, etc) would decrease the opportunity for dispersed recreation and solitude. The most likely cumulative effects to parks and special designation areas (such as Castle Hot Springs SRMA) would be related to changes in visitation levels. Cumulative impacts would include intensified use in certain areas, especially for motorized activities, as recreation increases and growth and development occur near recreation areas. General plans for the Maricopa County and area communities include provisions for open space, which is usually for parks or non-motorized recreation, further concentrating motorized activities on public lands.

The expansion of SR 74 from two to ten lanes is planned for lands to the north of the present SR 74 alignment on BLM-managed public lands. This expansion would remove a portion of public lands currently used for OHV recreation from the recreation land base, and obliterate a number of BLM-designated OHV trails just north of SR 74. Reconstruction of SR 74 could enhance or restrict access to adjacent areas. A wider highway would create negative visual impacts as seen from the Castle Hot Springs SRMA and other areas. Overall cumulative impacts to recreation would be moderate.

#### **4.19.11 Socioeconomics and Environmental Justice**

The CIA for Socioeconomics is Maricopa County, a total of 5,902,098 acres (**Figure 4.19-4**). This is identical to the Study Area discussed in **Sections 3.10** and **4.10**. All data on socioeconomic conditions, fiscal conditions, public services and utilities, and environmental justice apply to the CIA analysis. The past and present land uses in the CIA have had a direct effect on socioeconomics of Maricopa County through changes to employment (both type and amount), changes to the landscape which effect sense of place, increased housing availability, and changes to the overall population. Past and present actions have resulted in the current socioeconomic conditions in the CIA, as described in **Section 3.10**.

Reasonably foreseeable projects include numerous master planned communities/housing developments, four solar power generating facilities, substations and power lines, highway

and road construction/improvements projects, and other utility/infrastructure projects (**Appendix 4B**). In addition, the Saddleback Heights master planned community includes extensive plans for commercial, business and employment, and resort development. Construction of the reasonably foreseeable projects within Maricopa County would create positive, temporary impacts on local economies and increased employment opportunities, drawing on the large regional construction workforce in the Phoenix area, where there is currently a considerable supply of qualified workers. Concurrent construction of similar projects could result in a demand for labor that cannot be met by the region's labor pool, which could lead to an influx of nonlocal workers. This population increase could impact socioeconomic conditions and public services and utility.

Construction of the proposed transmission line in conjunction with renewable energy generation projects (such as solar generating stations) would facilitate the transmission of energy to consumers, and may encourage additional development of renewable energy sources.

Master planned communities would increase the housing availability within the CIA and would put additional demands on public services and utilities. The Project 500kV circuit line would be installed for a proposed 2016 in-service date and the 230kV circuit would be strung on the same structures in the future when necessitated by load growth, currently projected beyond 2021. The Project in conjunction with reasonably foreseeable energy, utility, and other infrastructure projects would support the population increases for the foreseeable future.

Lots within master planned communities that adjoin transmission line ROWs are typically designed to be larger than other lots to make them attractive and compensate for the presence of the transmission line. The cumulative effect of development of the master planned communities with the transmission line would be home sites or new homes adjoining the ROW that are larger than other lots, and yet experience a delay in sales of these properties (compared to properties that don't adjoin ROWs). This delay is referred to as the "cost to carry;" an economic cost to the owner/developer during the period of time that the investment or asset remains in inventory. Lots adjoining the ROW would be expected to have a greater cost to carry.

As stated in **Section 4.14**, the presence of the transmission line may delay or inhibit the extent of the planned full build-out of the master planned community. If the presence of the transmission line reduces the number of home sites or residences in the community, or reduces the value of the home sites or residences, there could be cumulative impacts to tax revenue and other economic drivers. A reduced number of home sites or residences, or a reduction in the value of those with the presence of the transmission line would result in lower tax revenue than what would have been generated without the transmission line. Fewer home sites or residences would mean fewer property owners constructing new homes or making local purchases to improve their property than would have otherwise occurred without the transmission line.

In cases where bonds are issued to fund infrastructure development within the master planned communities, delay or inhibiting of full development, delay in lot sales, or delay in residential construction could adversely impact bond repayment.

From a lifestyle perspective, further development within the CIA would change the landscape characteristics, existing landforms, and vegetation in the area which would contribute to an overall change in the sense of place for residents of the county. With the exception of the urban developed areas, the CIA has a rural, moderately developed landscape. Reasonably foreseeable projects such as power lines, substations, solar facilities, extensive master planned communities with business and commercial services aspects; freeways and parkways; and other utilities would shift the landscape to a more developed, urban landscape and would adversely impact local residents and visitors to the area who are seeking a rural residential community or a semi-primitive view or recreation experience. The initial wave of new residents to the area may purchase property and establish residences for the sense of connection to the natural environment and spacious natural views, and find that those qualities transitioned to a suburban setting at full community development. Past, present, and reasonably foreseeable projects would constitute moderate cumulative effects to socioeconomics within the CIA.

#### **4.19.12 Soils**

The CIA for soils is the Project's Action Alternatives with a two-mile buffer (**Figure 4.19-2**) encompassing 127,189 acres. Disturbed soil loses its structure and porosity when disturbed through displacement or compaction by heavy equipment. Consequently, the soil is more prone to erosion by water or wind and may be less able to support some kinds of vegetation (loss of productivity).

The primary source of impacts to soils is surface disturbance which is directly tied to land use. The types of past and present disturbances that may affect soils in the CIA are the same as those described for land use in **Section 4.19.7**, including road construction, livestock grazing, agricultural activities, master planned communities/residential housing development, energy development, recreational use, utility corridors, and mining activity. Specific projects, legislation, and disturbances that have affected soils are described in **Appendix 4B**. Existing quantifiable land use within the soils CIA totals 11,390 acres (**Table 4.19-4**).

The Project would have a long-term disturbance of between 130 to 142 acres, depending on the Action Alternative selected. In addition, the reasonably foreseeable future disturbances in the CIA that may affect soils would include the numerous master planned housing developments, utility and road construction, and developed recreation. Future disturbances are quantified in **Table 4.19-3**. The cumulative disturbances (past, present, and reasonably foreseeable future disturbances) comprise 119,023 acres, or 93.6 percent of the CIA.

Under the Proposed Action or Action Alternatives, use of BMPs during construction, and prompt post-construction reclamation, assures that temporary soil disturbance would be of short duration and minor impact. The Project would create a minor potential for erosion due to construction grading and disturbance; and during long-term maintenance activities (e.g., due to vehicle usage of the access roads). The same can be said of all reasonably foreseeable projects in or adjacent to the CIA, individually and cumulatively, based on current regulatory requirements for storm water permitting. Therefore, only negligible to minor cumulative impacts related to erosion are anticipated. The most likely source of moderate to severe impacts to soils in the CIA is from wildfires, abandoned mines, and unrestricted use of OHVs.

Under Action Alternatives 1 or 2, a multiuse utility corridor (requiring an RMPA) would be designated on BLM-managed public lands. This corridor would provide for additional utility development that could contribute to soil disturbance. However, any future proposal would be subject to federal and state regulations pertaining to surface disturbance and storm water permitting.

#### 4.19.13 Transportation and Traffic

The CIA for transportation includes existing regional highways SR 74, SR 303, and US 60 (**no figure**). The existing transportation system in the CIA includes these highways, as well as local arterial and collector roads, the BNSF railroad, and six airports or airstrips (**Section 3.12**). Past and present land uses in the CIA have impacted transportation. Residential, industrial, and commercial development, as well as recreational use, have added traffic to existing roadways and increased the need for additional roads.

MAG models future transportation patterns throughout Maricopa County based on current traffic conditions and anticipated future growth. The projected ADT for identified regional highways in the CIA is listed in **Table 4.19-6**.

**Table 4.19-6 Regional Highways Annual Average Daily Traffic within the CIA**

ROADWAY	SEGMENT	EXISTING LANES <sup>(1)</sup>	2031 PROJECTED AVERAGE DAILY TRIPS <sup>(6)</sup> (# VEHICLES)
SR 74	East of US 60	2 <sup>(2)</sup>	20,600
	West of Castle Hot Springs Rd.		25,800
	Between Castle Hot Springs Rd and New River Road		29,000
	Between New River Road and I-17		26,800
SR 303	East of US 60	4 <sup>(3)</sup>	75,600
	Between Lake Pleasant Parkway and I-17		73,000
US 60	Between Dove Valley Road and 163 <sup>rd</sup> Avenue	4-6 <sup>(4)</sup>	49,300
	Between 163 <sup>rd</sup> Avenue and SR 303		70,600
	South of SR 303		60,300

- (1) Through lanes only. Does not include auxiliary lanes, on-ramps or off-ramps.
- (2) ROW preservation is planned to accommodate a 10-Lane facility.
- (3) SR 303 will be expanded to a 6-lane facility.
- (4) US 60 reduces from 6 to 4-lanes North of SR 303.
- (5) Existing ADT – Counts range in years from 2005 to 2011. Source: MAG
- (6) MAG 2031 traffic forecast.

Reasonably foreseeable projects and activities include residential development, utility projects, and roadway/highway construction. These activities would increase traffic volume on the majority of roads in the CIA.

Since the majority of the CIA is projected to experience a significant increase in population in the future, several transportation studies have been completed that have evaluated the transportation systems needs to accommodate the anticipated growth. The Interstate 10/Hassayampa Valley Transportation Framework Study was completed by MAG in 2008. This study identified a transportation system that includes arterials, Arizona parkways, and the future Interstate 11 (I-11). Several Arizona Parkways identified in the MAG study are planned or are under study in the Project Study Area. The transportation framework identified in the MAG I-10/Hassayampa Valley Transportation Framework Study was accepted by the MAG Regional Council and is included in the MAG RTP. Many of the unimproved dirt and two lane roads are identified for future expansion based on the level of future residential and commercial development in the area.

Local arterial and collector roads in the CIA are a combination of dirt and paved with primary access coming from regional highways, including US 60, SR 74, SR 303 and I 17. The majority of the local arterial and collector roads in the CIA, specifically north and south of SR 74 are either unimproved dirt or consist of only two lanes. Many of these roads are identified for future expansion based on the level of future residential and commercial development in the area. Future transportation projects identified and funded through the MAG Regional Transportation Plan (RTP) Arterial Life Cycle Program include capacity and intersection improvements along Sun Valley Parkway, Lake Pleasant Parkway, and Happy Valley Road.

The largest expected increase in traffic throughout the CIA is located along US 60 and SR 74 and is due to planned future development in the area. Plans for future development in the area are discussed in Land Use (**Sections 3.6 and 4.19.7**). Future regional highway projects are identified in the MAG RTP for US 60, SR 74, and SR 303. The BLM has established a Transportation Corridor in the Bradshaw-Harquahala RMP along SR 74 (**Figure 3.12-1**) for future highway projects. Funded projects located throughout the CIA include:

- US 60 – Planned projects along US 60 throughout the CIA include widening efforts to expand the roadway in the vicinity of SR 303 from four general purpose lanes to six. These improvements are identified in Phase III of the MAG RTP (FY2016 – 2020).
- SR 303 - The SR 303 corridor will be continuously developed as a new freeway facility throughout the CIA. SR 303 will eventually include three general purpose lanes in each direction. New highway construction and capacity improvements in the CIA are identified in the MAG RTP Phase II, III, IV, and V.

In January 2010, ADOT prepared a final feasibility report (ADOT 2011) for SR 74 ROW preservation. The purpose of this project is to establish a design concept and footprint for the future expansion of SR 74 to a controlled access freeway. This early planning would enable ROW and access control to be preserved and provide a basis for guiding future development along the corridor. The recommended alternative for the ultimate SR 74 concept would include:

- Ten general purpose lane rural controlled access facility with a 60-foot wide open median.

- From MP 0.5 to MP 11.5 and MP 18.2 to MP 21.7 (mileposts shown on Figure 4.19-2), 3 new lanes would be added to the south side of the existing SR 74 roadway, for a total of five new west bound lanes. Five new eastbound lanes would be added south of the new west bound lanes. The two construction centerlines would be separated by 144 feet.
- From MP 0.5 to MP 11.5 and MP 18.2 to MP 21.7, 200 feet of additional ROW would be required to the south of the existing 200-foot ROW with a few exceptions where additional ROW would be required to accommodate the cut and fill slopes.
- From MP 11.5 to MP 18.2, the new west bound SR 74 construction centerline would be realigned 24 feet to the north of the existing SR 74 construction centerline. The new east and west bound construction centerlines continue to be separated by approximately 144 feet. This realignment would require approximately 225 feet of additional ROW north of the existing SR 74 ROW with a few exceptions and approximately 50 feet of additional ROW south of the existing SR 74 ROW. The realignment of SR 74 is necessary to utilize the proposed 1,000-foot BLM Transportation Corridor within these MP limits as defined in the BLM Bradshaw-Harquahala RMP (BLM 2010). Utilizing this corridor would result in substantially less ROW from the private parcels south of SR 74 in this area.

When planning future projects in the designated SR 74 transportation corridor, coordination with the ADOT and the MAG is critical in order to preserve the future ROW requirements for the SR 74 expansion, which will include frontage roads, and interchanges.

There is one future BNSF facility planned to be located within the CIA in Surprise. The future Surprise Logistics Center would be located near Dove Valley Road and US 60 and is expected to house a serving yard, a 200-acre auto center, and 350 acres of direct served uses, including manufacturing, warehousing, storage, and general industrial land uses (URS 2009). This development would increase traffic on local roads as well as traffic on the BNSF railroad.

A fourth major transportation corridor, I-11, was recently designated as part of a federal transportation bill and would extend from Phoenix to Las Vegas, Nevada. I-11 would include a 152-mile section west and south of Phoenix that interconnects Casa Grande to Wickenburg (MAG 2012).

Improvements throughout the CIA would consist of expanding the majority of arterial streets to four- and six-lane roadways (MAG 2010). These projects would increase capacity and reduce potential congestion due to reasonably foreseeable future development.

Cumulative impacts to existing traffic conditions could occur if the Project were constructed at the same time as any of the other projects considered in this analysis, particularly the SR 74 expansion, Sun Valley and Trilby Substations, or the numerous planned community projects. The timing of construction of the individual projects is difficult to predict. The

Project contributions to cumulative transportation impacts during construction would be minor. Following completion of construction activity, the Project would not contribute to cumulative transportation impacts; therefore, no long-term cumulative transportation and traffic impacts are expected.

Because the proposed transmission line ROW would be sighted along the northern boundary of the ACC-certificated route where the transmission line would be north of SR 74, the ROW for the transmission line would not conflict with the potential future ROW for the SR 74 expansion. Where the transmission line would be south of SR 74, it appears that it would be outside of the proposed SR 74 expansion areas. However, under the Proposed Action, the transmission line is proposed to cross SR 74 in two locations. This crossing is designed for the existing condition along SR 74, and not to accommodate future expansion proposals; therefore cumulative impacts to transportation may occur at the time of final design and construction of the potential SR 74 expansion.

#### **4.19.14 Vegetation Resources, Including Noxious and Invasive Weeds and Special Status Plants**

The CIA for vegetation resources is the Project's Action Alternatives with a two-mile buffer (**Figure 4.19-2**). Existing vegetation in undeveloped areas within the CIA generally consists of Sonora-Mojave creosotebush-white bursage desert scrub and Sonoran palo verde-mixed cacti desert scrub. Vegetation typical of residential or commercial properties is characterized by urban landscaping, both native and non-native species. The small amount of agricultural land in the CIA is characterized by crops, pastureland, or fallow fields. In the 127,189-acre CIA, the main vegetation types include Sonora-Mojave creosotebush-white bursage desert scrub, Sonoran palo verde-mixed cacti desert scrub, and urban landscape. Riparian forest/woodland occurs along the Agua Fria River in the CIA.

Past and present land uses have altered the extent and composition of native vegetation communities in the CIA. Commercial and residential developments include clearing of vegetation and subsequent planting of urban vegetation species which may include both native and non-native species. Undeveloped lands generally retain their native vegetation communities with some noxious and invasive weed species taking root. Grazing has also affected native vegetation and the spread of noxious and invasive species.

The Project would have a long-term disturbance of between 130 to 142 acres, depending on the Action Alternative selected. Other reasonably foreseeable projects in the CIA would result in the development of 79,357 acres of residential development, up to 756 acres associated with the SR 74 expansion, and associated electrical infrastructure. These developments would result in further changes to the vegetation communities in the CIA. Commercial and master planned communities development would convert more lands to structures with urban landscaping and pavement. Road construction and/or expansion would result in the initial removal and transformation of native vegetation to roadway with a mixture of native and urban vegetation restoration in the road ROWs. Reasonably foreseeable projects when combined with past and present developments and disturbances would represent 119,023 acres of surface disturbance within the CIA; this represents 93.6 percent of the CIA.

Construction of the Project under the Proposed Action or Alternatives would contribute to the removal of native vegetation in the CIA, further reducing vegetation cover. This would represent less than 0.1 percent of the CIA. This effect when combined with past, present, and reasonably foreseeable projects would constitute only a negligible amount to the moderate to major cumulative impact on native vegetation resources within the CIA.

Development of a multiuse utility corridor (requiring an RMPA) under Action Alternative 1 or Alternative 2, on public lands would provide for additional development on those lands, however future developments would be subject to NEPA and their specific impacts would be addressed.

#### **4.19.15 Visual Resources**

The CIA for visual resources is a five-mile buffer surrounding the Project's Action Alternatives (**Figure 4.19-5**). The types of past and present disturbances that may affect visual resources in the CIA include road construction, agricultural activities, master planned communities/residential housing development, energy development, utility corridors, and mining activity. Specific projects and disturbances that have affected visual resources are described in **Appendix 4B**.

Reasonably foreseeable future projects and activities within the CIA include numerous planned community developments, a fiber optic project, the Sun Valley Substation, Trilby Substation, the Sun Valley to Trilby 230kV Transmission Line, and the SR 74, US 60, and Loop 303 highway expansions.

The combined Project and the SR 74 expansion would be visible from surrounding lands within the CIA, including BLM recreational areas (Castle Hot Springs SRMA, Hieroglyphic Mountains Special Management Area, Lake Pleasant HMA). To the extent that distant views of the surrounding landscape are a valuable component of recreational use of the CIA, diminishment of this character could be considered a potentially minor to major cumulative impact. At greater distances (four to five miles or more away) the Project structures in and of themselves combined with the SR 74 expansion would not substantially change the character of views from these areas due to the tendency of the structures to blend with the surrounding desert landscape when viewed from a distance and from a viewer superior position.

Construction and operation of the Project would contribute to the development of the CIA and the continued alteration of the landscape. Population growth in the CIA and the region is expected to continue which increases the amount of infrastructure needed to support these communities. As the population increases, the undeveloped character of the CIA would continue to shift from undeveloped open desert and native vegetation to urban structures and altered landscape. The Project would have a minor, but permanent, contribution to this cumulative change. Cumulative impacts from past, present, and reasonably foreseeable future activities to visual resources would be major.

##### **4.19.15.1 Visual Resources Focus Area**

Within the visual resources focus area (defined in **Section 4.14**), there would be major modifications to the visual resources of the area based on the reasonably foreseeable projects that are planned for the area. The cumulative effect to this area would be the impact of the

Project combined with other proposed developments, as viewed by a new group of sensitive viewers – residents of the new developments - that would be in the area as a result of the proposed developments, along with existing sensitive viewers.

As described previously, there are plans for acquisition and preservation of additional future ROW along SR 74 for a potential 10-lane freeway (URS 2010). This acquisition is scheduled between fiscal years 2026 – 2031.

In December 2011, the Saddleback Heights Specific Area Plan was amended; these changes postdate the data available to create **Figure 3.6-2**, Future Land Use. The amended plan indicates that the decision to plan for widening of SR 74 to 10 lanes partially drove the Saddleback Heights Specific Area Plan amendment. The amended plan envisions at least one interchange on the widened SR 74 providing access to the Saddleback Heights development. According to the plan amendment, the changes in SR 74 provide a unique opportunity for a 220-acre employment village near the intersection. Under the amended plan, the frontage along SR 74 east of the westernmost crossing would be developed to include a mixed use business park (employment center), an area identified as community commercial (town center), varying densities of residential development, and, to a much lesser extent, open space. Just south of the business park would be an area of community commercial development, and south of that is an area identified as resort overlay. An area of mixed use would be developed west of the westernmost SR 74 crossing for the Project.

The mixed use business park area is planned to include offices, research and development, light manufacturing, hotels, and eating establishments. The community commercial area is intended to provide for neighborhood shopping needs, employment, and entertainment needs. The resort overlay is planned to include time shares, a resort hotel, and supporting commercial services. The mixed use area west of the westernmost SR 74 crossing for the Project is envisioned to include residential, commercial, employment, and business park uses. In addition, the plan indicates that all residential land use categories may include limited commercial development, such as supermarkets, bakeries, drug stores, video stores, and restaurants, as appropriate (Diamond Ventures 2011).

The development of the Saddleback Heights residential community south of SR 74 would create a new group of sensitive viewers in the area. The plan emphasizes the natural views of the area that would be had by residents of the development, stating, “The subject property is characterized as “high” Arizona desert with sufficient topographical relief to provide virtually every potential homesite with a dramatic view of desert terrain, with one or more mountains of the Hieroglyphic Range as a backdrop.” This presentation of the visual resource presumes viewers would be looking from south to north, as the Hieroglyphic Mountains lie north of SR 74.

Given the plans outlined in the Saddleback Heights Amended Specific Area Plan, the majority of the SR 74 frontage within the Saddleback Heights development could be developed into business or commercial uses, as the most likely “appropriate” location for commercial services meeting residential community needs would be fronting the major transportation corridor. In addition, those business and commercial uses would extend south through the central part of the development. While one or more of the Hieroglyphic Mountains may be the view in the background, the foreground views of residents looking

north would be other residences and middle ground views would be business and commercial development.

The kinds of business and commercial development described in the plan would include vertical visual elements such as light poles in parking lots and signs. Given the numbers of people that would be associated with the development of employment, commercial, and residential uses, additional cell towers would be needed to support demand for communications. Finally, the plan is not of sufficient detail to specify building covenants that would govern the height of business, commercial, or residential structures, although this may be addressed by local zoning. Building design and height would also add vertical elements to landscape that is largely dominated by flat to undulating horizontal lines in the foreground to middle ground regions.

Under the Proposed Action, the transmission line would be located north of SR 74 directly north of the Saddleback Heights development, while under Alternative 2 the line would be directly south of SR 74 within the northern extent of the Saddleback Heights development. Comparing **Figures 4.14-6** and **4.14-21**, the areas where structures would be visible and the numbers of monopoles visible within the Saddleback Heights development would be very similar under the Proposed Action and Alternative 2. Under the Proposed Action, the monopoles would be further away from the residences than under Alternative 2, where they would be closer and would appear larger in the landscape relative to the surroundings.

However, intervening development between the new residential viewers and the transmission line would affect how it is perceived by residents looking to the north. Similar to the description in **Section 4.14**, in many cases topography would limit the visibility of the structures to some portion including the top. Intervening development in the foreground and middle ground would have the same effect – residents would see the upper portion of the structures above other developments, such as buildings. In some cases those developments may block a portion of the view of the transmission line, but from any point, a portion of it would be visible.

In general, development changes the context in which the transmission line is viewed as compared to viewing it in a relatively natural environment; the transmission line would tend to blend with other development. The structures would repeat the other vertical elements in the foreground and middle ground of the landscape, such as light poles, cell towers, or the vertical lines of buildings, which would reduce the contrast of the transmission line with its surroundings. Under the Proposed Action, the structures would be further away, north of SR 74, and would appear smaller in the landscape, against a backdrop of the Hieroglyphic Mountains, as viewed by the new group of sensitive viewers within Saddleback Heights. The appearance of the structures would vary with lighting conditions, but in general the land form as a back drop would minimize contrast.

Under Alternative 2, when the structures would be on the south side of SR 74, they would appear larger in the landscape than under the Proposed Action. Within an estimated 800 feet of the transmission line the structures would dominate the views. However, beyond 800 feet, similar to the Proposed Action, the structures would repeat the other vertical elements in the foreground and middle ground of the landscape, which would reduce the contrast of the

transmission line with its surroundings; and would be against a backdrop of the Hieroglyphic Mountains, which would also minimize contrast.

Under the Proposed Action, when the transmission line would be north of SR 74, the transmission line would be in a natural setting. Development as viewed by travelers on SR 74 would be on both the north and south side of SR 74. There are no other anticipated developments north of SR 74 in the foreground and middle ground of the landscape, particularly on the BLM-managed public lands; therefore, the cumulative impact would be the same as the direct and indirect impacts described in **Section 4.14**. The transmission line would stand in contrast to its natural surroundings. Under Alternative 2, development, including the transmission line, would be concentrated south of SR 74. Viewers from SR 74 would be looking to the south at the transmission line with a backdrop of Saddleback Heights development as previously described in this section. The transmission line would repeat the other vertical elements in the foreground and middle ground of the landscape, which would reduce the contrast of the transmission line with its surroundings. The simple presence of development would affect the expectations of viewers along SR 74; people expect to see transmission and distribution infrastructure in developed settings, which would reduce its noticeability, as compared to the Proposed Action. Sensitive viewers on SR 74 looking north under SR 74 would have an uninterrupted natural view.

Another cumulative effect to the visual resources focus area would be the expansion of SR 74 from two to ten lanes. Within the area between the proposed easternmost and westernmost crossings of the Project, the majority of the expansion area is planned for north of SR 74 within the BLM-designated transportation corridor. In conjunction with the Proposed Action, the addition of multiple lanes of SR 74 would obliterate existing topography between SR 74 and the transmission line to the north. In some cases, this topography limits the number of structures or the amount of any one structure that can be seen from SR 74. Topography may be eliminated that had been used as mitigation for visual impacts through micro-siting. Therefore the cumulative effect of the SR 74 widening with the Proposed Action would be greater visibility of the Project by travelers on SR 74, as well as the portion of new sensitive viewers in Saddleback Heights that would be in closer proximity to SR 74. There would probably be little change in the views of new sensitive viewers in the further southern reaches of Saddleback Heights as a result of the widening of SR 74.

The cumulative effects of the transmission line along with the Saddleback Heights development and the widening of SR 74 to recreationists in the SRMA would be similar under the Proposed Action and Alternative 2. Recreationists with southern views would be able to discern that the transmission line would be north of SR 74 under the Proposed Action versus south of SR 74 under Alternative 2; however those differences would be minimal. Viewers from the SRMA are higher in elevation than the Project and are looking down on the Project with land forms behind it. Under the Proposed Action, the expanded SR 74 would be behind the transmission line. Under Alternative 2 the Saddleback Heights development would be behind the transmission line. The transmission line would blend with either development. The combination of the SR 74 widening with the Saddleback Heights and other community developments to the south would have a major cumulative impact on visual resources as viewed by recreationists in the SRMA as the development would be extensive.

Under Alternative 1, the transportation corridor north and south of SR 74 would also be designated a multiuse utility corridor. Development of multiple utility lines in the corridor would contribute to cumulative impacts; however, the number of lines that could be developed in the corridor would be limited by ROW requirements for the planned SR 74 expansion. The presence of additional utility lines north of SR 74 would repeat the vertical and horizontal lines of the Project, and amplify the sense of development north of SR 74 for travelers on SR 74, and residents south of SR 74.

Under Alternative 3, the Project would dominate the views of residents within an estimated 800 feet of the line as it crosses or borders the Lake Pleasant Heights, Saddleback Heights, and Vistancia developments. Combined with the community developments, Alternative 3 would have similar cumulative visual impacts to the new group of sensitive viewers as Alternative 2, with a few notable differences. Regardless of whether residents would be north or south of the transmission line, they would be viewing the transmission line with community development in the foreground, middle ground, and background, which would place the transmission line in the context of urban development where people expect to see transmission and distribution lines, and therefore it would be less noticeable. At this distance and with development and topography, the widened SR 74 may not be visible, and if it is, viewers would likely see only overpasses, minimizing the contribution to cumulative impacts to visual resources. Travelers on SR 74 and within the SRMA looking south may be able to catch glimpses of the transmission line, depending on topography, but the view would be dominated by development minimizing the contribution of the transmission line to cumulative impacts to visual resources.

In summary, the totality of planned community development would have a major contribution to cumulative effects to visual resources as viewed by travelers on SR 74 and recreationists in the SRMA, and likely residents within the newly developed communities. The transmission line would blend with the vertical elements associated with development, and the development itself would reduce the noticeability of the transmission line under Alternatives 2 and 3, leaving natural views to the north of SR 74 largely intact. The Proposed Action would extend the sense of development north of SR 74, and the expansion of SR 74 within the transportation corridor to the north would likely remove topography, making the Project even more visible. Alternative 1 would intensify that sense of development north of SR 74 with the addition of multiple utility lines within a multiuse utility corridor.

#### **4.19.16 Water Resources**

There would be negligible if any affects to groundwater by the Proposed Action or Action Alternatives, as described in **Section 4.15**, thus the Project would not contribute cumulative impacts to groundwater resources. Therefore, no additional consideration of groundwater resources is included in this section.

Various types of land conversion including residential/community development, roads, agriculture, mines, range improvement projects, and other similar activities, as well as wildfires and grazing, have impacted surface water resources and wetlands in the CIA (**Table 4.19-4** and **Figure 4.19-2**). Some activities such as grazing and mining have changed over time to more resource-conscious management and extraction techniques which have lessened impacts and/or improved conditions.

#### **4.19.16.1 Surface Water**

The primary source of impacts to surface water resources is surface disturbance, which is directly affected by land use (**Appendix 4B**). Impacts can be to water quality or water quantity, which are interrelated in many cases. Types of development that might affect surface water resources would include residential development, energy development, road construction and maintenance, livestock grazing, agricultural activities, recreational trails/facilities, and mining activities. Point-source wastewater and storm drain discharges from urbanization and industrial development are regulated under NPDES permitting, which minimizes their impact on receiving surface water quality. Non-point storm water runoff from land uses such as transportation corridors and livestock grazing are less easily regulated and have the potential to affect surface water quality as well as the timing and volume of surface water flows. Events such as wildfires or failed culverts can have impacts on water quality.

Under the Proposed Action or Action Alternatives, cumulative effects to surface water resources in the surface water CIA would be negligible. Best management practices and storm water management during construction and operation would prevent any significant storm water runoff or wastewater from disturbed or hardscaped areas from reaching surface water features, groundwater, or wetlands. During operations of the Project, permitting requirements would ensure that water quality standards are met.

#### **4.19.16.2 Wetlands**

Under the Proposed Action or Action Alternatives, cumulative impacts to wetland resources in the CIA would be minor, if any. The past disturbance to wetlands has occurred primarily from conversion to urban landscapes, cropland, or similar activities. Although essentially non-existent, wetlands along the Action Alternative routes would be avoided by spanning.

#### **4.19.17 Wildlife Resources, Including Special Status Wildlife and Migratory Birds**

The CIA for wildlife resources is a two-mile buffer surrounding the Project which encompasses 127,189 acres (**Figure 4.19-2**). Lands in these CIAs include a mixture of undeveloped state, federal, and private lands, residential development, and lands utilized for mining, utilities, roads, agriculture, and other purposes. Sonora-Mojave creosotebush-white bursage desert scrub and Sonoran palo verde-mixed cacti desert scrub are the two dominant vegetation types within the CIA. Riparian areas and other vegetation communities also occur throughout the CIA in lesser amounts. This diversity in habitat types allows for many wildlife species to utilize the area. Types of wildlife species and their habitat found within the CIA would be very similar to those described in the affected environment for the Proposed Action, in **Section 3.16**.

Past and present actions in the wildlife CIA have likely resulted in both beneficial and negative impacts, at various levels, on wildlife. The primary impact to wildlife resources within the area has been habitat changes associated with past and present community development, grazing, and utility development (electric, water, gas, etc.). Negative impacts include loss of habitat, displacement, and fragmentation as a result of grazing, utility

developments, roads, community development, agriculture, recreation, and mining activity. Other impacts include noise disturbance/displacement to wildlife inhabiting areas within the CIA.

Past impacts to smaller less mobile wildlife species from direct crushing and mortality by livestock, large wild ungulates, and vehicles has likely also occurred within the CIA. In addition, grazing can contribute to impacts by increasing competition for forage, facilitating the spread of noxious and non-native, invasive weeds, changing the structure or composition of native plant communities, and degrading water quality and bank stability. Conditions in some wildlife habitat could be improved through revised grazing allotment management.

While the Project and other reasonably foreseeable future projects requiring federal and state permits and approvals would be permitted in a manner that minimizes impacts to important habitats, private projects may not have this oversight.

Specifically, planned community development would have large adverse effects on wildlife resources. Ultimately, approximately 82,403 acres of disturbance would result from community development, thus reducing habitat and forage area. Any area within these developments planned for parks, open space, and multi-species habitat would provide habitat, enhancing habitability. While provisions for open space would preserve some wildlife habitat, these changes would likely result in shifts in the kinds and the population levels of wildlife found as the ecosystem of the immediate area would be permanently altered and differ from the native ecosystem.

Another result of the community development would be increased traffic on roadways, including SR 74. Increased traffic in this area surrounded by public lands managed for wildlife values would likely result in increased collisions between wildlife and vehicles, increasing mortality.

Increased population in the CIA would likely increase recreational pressure on surrounding public lands. Increased human activity, hunting, and potential increased poaching would all lead to impacts to wildlife.

Overhead power lines and other underground utilities would result in permanent long-term impacts to wildlife through placement of structures for such facilities, creating perches as well as hazards for birds of prey, and construction of temporary maintenance roads that fragment habitat. Roadway and highway construction and expansion would result in loss of wildlife habitat and habitat fragmentation.

The introduction of a new transmission line increases the likelihood of avian wildlife and waterfowl experiencing in-flight collisions with structures and lines. Development of a multiuse utility corridor (requiring an RMPA) under Alternative 1 or 2 could increase the number of linear facility structures, increasing the potential incidence of collision. In areas where high-density migration takes place across the utility corridors, including design features intended to reduce collisions by making structures more visible to avian wildlife and waterfowl would be considered. Transmission structures would be designed to reduce electrocutions, roosting, perching, and nesting to the extent practicable. These measures would mitigate most adverse effects.

The general wildlife resources CIA totals 127,189 acres. Within this CIA, known quantifiable past and present disturbances total 11,390 acres (9.7 percent). Proposed future disturbances, including the Project, would potentially disturb another 107,633 acres. When combined with past, present, and reasonably foreseeable developments/disturbances this would total 119,023 acres or 93.6 percent of the CIA.

Overall, the Project would make a very small contribution to the total past, present, and reasonably foreseeable future disturbance in the CIA. While many cumulative impacts to wildlife are foreseeable, the addition of the Project itself would not be the cause of a significant degradation of wildlife resources or affect the potential for wildlife resources, including special status species, to sustain current population levels. The Project does not make a large enough contribution to the cumulative effects occurring or anticipated to occur to wildlife resources within the CIA due to its relatively short duration and generally minor effects (i.e., limited to individuals in a localized area), although the reasonably foreseeable developments/disturbances would have a large impact within the CIA.

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