CHAPTER 5: CUMULATIVE EFFECTS

5.1 INTRODUCTION

Cumulative effects are those effects that would result from incremental impacts of the Proposed Action when added to other past, present and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions (40 CFR 1508.7). Analysis of cumulative effects places project-specific impacts into a broader context that takes into account the full range of impacts of actions taking place over a given space and time. Cumulative effects may be considered a significant impact to the environment, as degradation of important resources may result from the combined, incremental effects of actions. Cumulative effects may result from individually minor or insignificant actions, which collectively may be considered significant as they accumulate over time and space from one or more actions or sources.

Cumulative effects analysis is required under NEPA, and similarly an analysis of cumulative impacts is required under CEQA. The BRRTP cumulative effects/impacts analysis focuses on the natural resources, ecosystems, and social or human communities that could be affected by the incremental impacts of the Project Alternatives. This analysis builds on the direct and indirect effects of the Proposed Action and Alternatives described in Chapter 2 of this Final EIS/EIR. The approach to the cumulative effects analysis follows the principles outlined in the Council on Environmental Quality’s (CEQ) “Considering Cumulative Impacts” (1997), the guidance developed in the U.S. Environmental Protection Agency (EPA), Office of Federal Activities’ “Consideration of Cumulative Impacts in EPA Review of NEPA Documents” (1999), and CEQA Statutes and Guidelines (as amended).

5.1.1 METHODOLOGY

The development of the cumulative effects assessment presented in this Chapter generally followed the methodological steps outlined below:

Step 1: Define alternatives for the EIS/EIR. The Proposed Action and Alternatives are described in Chapter 2 of this Final EIS/EIR.

Step 2: Define Impact Areas. Impact Areas are defined and evaluated with respect to each of the resources. Impact areas vary from one resource to another, as the affected region under each resource is likely to be different in spatial extent. In some cases, the Impact Area corresponds with the impact corridor, generally a 500-foot corridor, as defined for individual resources in Chapter 4.

Step 3: Define Present and Reasonably Foreseeable Actions. A list of present and reasonably foreseeable actions is developed from consultations with government agencies and nongovernmental organizations, through public scoping, and in consultation with knowledgeable private entities. These actions include projects, activities, and trends that could impact the human and environmental resources within each impact area.
In order to understand the contribution of past actions to the cumulative effects of the Proposed Action and Alternatives, this analysis relies on current environmental conditions as a proxy for the impacts of past actions. This is because existing conditions reflect the aggregate impact of all prior human actions and natural events that have affected the environment and might contribute to cumulative effects.

This cumulative effects analysis does not attempt to quantify the effects of past human actions by adding up all prior actions on an action-by-action basis. There are several reasons for not taking this approach. First, a catalog and analysis of all past actions would be impractical to compile and unduly costly to obtain. Current conditions have been impacted by innumerable actions over the last century (and beyond), and trying to isolate the individual actions that continue to have residual impacts would be nearly impossible. Second, providing the details of past actions on an individual basis would not be useful to predict the cumulative effects of the Proposed Action or Alternatives. In fact, focusing on individual actions would be less accurate than looking at existing conditions, because there is limited information on the environmental impacts of individual past actions, and one cannot reasonably identify each and every action over the last century that has contributed to current conditions. Additionally, focusing on the impacts of past human actions risks ignoring the important residual effects of past natural events, which may contribute to cumulative effects just as much as human actions. By looking at current conditions, we are sure to capture all the residual effects of past human actions and natural events, regardless of which particular action or event contributed those effects. Third, public scoping for this Project did not identify any public interest or need for detailed information on individual past actions. For these reasons, the analysis of past actions in this section is based on current environmental conditions, as described for each resource in Chapter 3 of this Final EIS/EIR, and the developed lists of actions are limited to present and reasonably foreseeable future actions.

**Step 4: Incorporate the Direct and Indirect Impacts.** Direct and indirect impacts developed and evaluated elsewhere in this Final EIS/EIR are incorporated into the cumulative effects assessment. Direct impacts are caused by implementing the Proposed Action or an Alternative, and occur at the same time and place as the proposed Project. Indirect impacts are caused by the Proposed Action or an Alternative, but occur later in time or farther removed in distance and are still reasonably foreseeable.

**Step 5: Determine the Potential Impacting Factors of Each Present or Reasonably Foreseeable Action or Activity.** For each action identified in Step 3, a description of the potential impacting factors is developed. Impacting factors are the mechanisms by which an action affects a given resource. Each impacting factor may be a component of more than one action or activity.

**Step 6: Evaluate Cumulative Effects.** An evaluation of the cumulative effects is conducted for each resource. The individual evaluations consider the unique impacting factors for the various resources and the incremental contribution of the Proposed Action to the cumulative effect.

The following factors are used to judge the cumulative impact on a resource:

- Nature of the impact,
- Geographic or spatial extent of the potential impacting factor,
Step 7: Present the Cumulative Effects Analysis. The cumulative effects for each resource are described in Section 5.3 of this Chapter.

Conclusions presented in the cumulative effects analysis discussions regarding the significance of identified impacts are provided for the purposes of CEQA only, as significance conclusions are not required for compliance with NEPA. A “cumulatively considerable” impact would occur when the incremental impacts of an individual project are significant when viewed in connection with the impacts of past, current, and probable future projects pursuant to CEQA.

5.2 CUMULATIVE PROJECT LIST – MAJOR PRESENT AND REASONABLY FORESEEABLE FUTURE ACTIONS

The cumulative projects list is used to provide a general context for the cumulative effects analysis and as a basis for the development of resource-specific lists of present and reasonably foreseeable future actions. This list includes present and reasonably foreseeable future actions in the vicinity of the Project that have the potential to combine with the Proposed Action or Alternatives. April 2008, the commencement of environmental review under CEQA or NEPA, has been utilized as the threshold for a given action to be considered a present or reasonably foreseeable future action. While a distinct impact area for cumulative impacts, and specific present and reasonably foreseeable actions, is determined individually for each resource, as detailed in Section 5.3 of this Final EIS/EIR, collectively, the projects listed below represent the major known and anticipated activities that may occur in the general Project area, and are current as of March 2012. The Cumulative Projects Map (Figure 5-1) illustrates the location of energy infrastructure and other major projects in reference to the Proposed Action and Alternatives.

As the project list comprises projects in various stages of planning and development, it is likely that some of these projects would be completed as currently proposed while others would not. To be conservative, the cumulative analysis assumes that all projects listed would be built and in operation during the operating lifetime of the proposed Project. The list was developed in consultation with the following agencies:

- USFS – Angeles National Forest (ANF)
- BLM – Palm Springs Field Office
- Kern County – Planning Department
- City of California City
- City of Palmdale
- City of Los Angeles
- LADWP
- BLM – Ridgecrest Field Office
- United States Air Force – Edwards Air Force Base
- Los Angeles County – Department of Regional Planning
- City of Lancaster
- City of Santa Clarita
- City of San Fernando
FIGURE 5-1. CUMULATIVE PROJECTS
5.2.1 ENERGY INFRASTRUCTURE PROJECTS

Transmission Projects

Antelope Transmission Project – Construction of Southern California Edison’s (SCE) proposed Antelope Transmission Project is underway and is proceeding in three sequential segments. Construction of Segments 1, 2 and 3A have been completed. Construction of Segment 3B, from Windhub Substation to and including Highwind Substation, has not started and no schedule has been developed by SCE (California Public Utilities – Current Projects).

Segment 1, Antelope – Pardee 500 kV Transmission Line, involved the construction of a new 25.6-mile transmission line between SCE’s existing Antelope Substation in the city of Lancaster and SCE’s existing Pardee Substation in Santa Clarita, with modifications to and/or expansion of the substations. The line was constructed in an existing SCE 66 kV transmission line right-of-way (ROW) for 23 miles, and within a new ROW for 18 miles. The line is initially energized to 220 kV to serve existing energy demand and can be upgraded to 500 kV to accommodate future needs.

Segment 2, Antelope – Vincent 500 kV Transmission Line, consists of a new 17.8 mile transmission line between the Antelope Substation and SCE’s existing Vincent Substation near Acton. Similar to Segment 1, the line would initially be energized at 220 kV and upgraded to meet future needs.

Segment 3, Antelope – Tehachapi Transmission Line, consists of two phases. The first phase, 3A, would involve the construction of a new 26.1-mile 500 kV transmission line between the Antelope Substation and a proposed new substation in the vicinity of the unincorporated community of Mojave (Substation 1). Similar to Segments 1 and 2, this line would be initially energized at 220 kV and upgraded to meet future needs. The second phase, 3B, would involve the construction of a new 9.4-mile 220 kV transmission line from the proposed Substation 1 to a proposed new substation in the Monolith area (Substation 2).

Tehachapi Renewable Transmission Project (TRTP) – SCE is proposing to construct the TRTP, which would involve new and upgraded transmission infrastructure along 173 miles of new and existing rights-of-way, in southern Kern County, portions of Los Angeles County including the ANF, and the southwestern portion of San Bernardino County. Stated objectives for the project include providing the electrical facilities necessary to integrate levels of wind generation in excess of 700 megawatts (MW) and up to 4,500 MW in the Tehachapi Wind Resource Area (California Public Utilities – Current Projects).

The environmental review process for the project is currently underway. Construction began in April 2010 on approved sections. Project construction is estimated to be completed in 2015.

The project is composed of Segments 4 through 11, with Segments 4 through 8 and Segments 10 and 11 being transmission facilities, and Segment 9 being the addition and upgrade of substation facilities. Proposed transmission lines would be constructed primarily within existing rights-of-way. Major project components include:
• Constructing two new single-circuit 220 kV transmission lines within 4 miles of new ROW between the Cottonwood Substation and proposed Whirlwind Substation (Segment 4);

• Constructing a new single-circuit 500 kV transmission line within 16 miles of new ROW between the Antelope Substation and proposed Whirlwind Substation (Segment 4);

• Rebuilding 18 miles of the existing Antelope – Vincent and Antelope – Mesa 220 kV transmission lines to 500 kV standards within existing ROW between the Antelope and Vincent Substations (Segment 5);

• Rebuilding 27 miles of the existing Antelope – Mesa 220 kV transmission line and 5 miles of the existing Rio Hondo – Vincent 220 kV transmission line to 500 kV standards between the Vincent Substation and the southern boundary of the ANF (Segment 6);

• Rebuilding 16 miles of the existing Antelope – Mesa 220 kV transmission line to 500 kV standards between the southern boundary of the ANF and Mesa Substation (Segment 7);

• Rebuilding 33 miles of the existing Chino – Mesa 200 kV transmission line to 500 kV standards between a point 2 miles east of the Mesa Substation and the Mira Loma Substation (Segment 8);

• Rebuilding 7 miles of the existing Chino – Mira Loma No. 1 220 kV transmission line from single-circuit to double-circuit structures (Segment 8);

• Constructing a new 500/220 kV Whirlwind Substation 4 to 5 miles south of the Cottonwood Substation (Segment 9);

• Upgrading the existing Antelope, Vincent, Mesa, Gould, and Mira Loma Substations to accommodate new transmission line construction and system compensation elements (Segment 9);

• Constructing a new single-circuit 500 kV transmission line within 17 miles of new ROW between the Windhub Substation and proposed Whirlwind Substation (Segment 10);

• Rebuilding 19 miles of existing 220 kV transmission line to 500 kV standards in existing ROW between the Vincent and Gould Substations (Segment 11);

• Adding a new 220 kV circuit between the Mesa and Gould Substations on the vacant side of the existing Eagle Rock – Mesa 220 kV transmission line double circuit structures (Segment 11); and

• Installing associated telecommunications infrastructure.

**Generation Projects**

Numerous wind and solar generation projects are in various stages of planning and development within the vicinity of the Project. Projects considered include reasonable foreseeable projects currently undergoing environmental review or recently approved and present projects that are under construction as of March 2012. Table 5-1 below summarizes the major known projects and their current status as of March 2012 (County of Kern Environmental Documents and AV Solar Ranch One).
### TABLE 5-1. PROPOSED GENERATION PROJECTS IN THE VICINITY OF THE PROJECT

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Project Type</th>
<th>Approximate Generation</th>
<th>Area (acres)</th>
<th>Location</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absolutely Solar CUP 11-02</td>
<td>Solar</td>
<td>3.4 MW</td>
<td>18</td>
<td>City of Lancaster</td>
<td>Planning Commission Approved Sept. 2011</td>
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<tr>
<td>Alpine Solar</td>
<td>Solar Photovoltaic</td>
<td>92 MW</td>
<td>800</td>
<td>Los Angeles County</td>
<td>Approved by Los Angeles County Oct. 2011</td>
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<tr>
<td>Alpine Solar Addition</td>
<td>Solar Photovoltaic</td>
<td>No additional MW</td>
<td>35</td>
<td>Los Angeles County</td>
<td>Approved</td>
</tr>
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<td>Alta East Wind Project</td>
<td>Wind</td>
<td>300 MW</td>
<td>3,660</td>
<td>Kern County</td>
<td>Notice of Preparation of Draft EIS/EIR filed July 2011</td>
</tr>
<tr>
<td>Alta Wind Energy Center: Alta-Oak Creek Mojave Project; Alta Addendum I; Alta Addendum II</td>
<td>Wind Turbine</td>
<td>800 MW; No additional MW; 330</td>
<td>9,175; 1; 4,610</td>
<td>Kern County</td>
<td>Approved by Kern County Dec. 2009; Approved by Kern County June 2010; Approved by Kern County Dec 2010</td>
</tr>
<tr>
<td>Alta Wind Infill II Project</td>
<td>Wind</td>
<td>530 MW</td>
<td>5,185</td>
<td>Kern County</td>
<td>Approved by Kern County Oct. 2011</td>
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<tr>
<td>Antelope Solar 1</td>
<td>Solar Photovoltaic</td>
<td>10 MW</td>
<td>111</td>
<td>Los Angeles County</td>
<td>Early Environmental Review</td>
</tr>
<tr>
<td>Antelope Solar 2</td>
<td>Solar Photovoltaic</td>
<td>10 MW</td>
<td>80</td>
<td>Los Angeles County</td>
<td>Early Environmental Review</td>
</tr>
<tr>
<td>Antelope Solar Farm</td>
<td>Solar Photovoltaic</td>
<td>20 MW</td>
<td>320</td>
<td>Los Angeles County</td>
<td>Early Environmental Review</td>
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<tr>
<td>Antelope Valley Solar Project</td>
<td>Solar Photovoltaic</td>
<td>650 MW</td>
<td>4,642</td>
<td>Kern County/ Los Angeles County</td>
<td>Approved March 2012</td>
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<tr>
<td>AV Solar Ranch One</td>
<td>Solar Photovoltaic</td>
<td>230 MW</td>
<td>2,100</td>
<td>Los Angeles County</td>
<td>Approved by Los Angeles County in Sept. 2010</td>
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<tr>
<td>Avalon Wind Project</td>
<td>Wind</td>
<td>255 MW</td>
<td>10,000</td>
<td>Kern County</td>
<td>Application to Kern County deemed complete on July 2010; Request for Proposal underway</td>
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<tr>
<td>Barren Ridge Type II</td>
<td>Wind</td>
<td>Unknown</td>
<td>10,665</td>
<td>T310S R360E &amp; 370E</td>
<td>Project authorized for testing; NEPA Analysis approved; ROW grant issued</td>
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<tr>
<td>Project Name</td>
<td>Project Type</td>
<td>Approximate Generation</td>
<td>Area (acres)</td>
<td>Location</td>
<td>Status</td>
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<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Bent Tree Wind Farm Type II</td>
<td>Wind</td>
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<td>528</td>
<td>Kern County</td>
<td>Project authorized for testing; NEPA Analysis approved; ROW grant issued</td>
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<tr>
<td>Blue Sky Wind Energy</td>
<td>Wind Turbine</td>
<td>225 MW</td>
<td>7,500</td>
<td>Los Angeles County</td>
<td>Notice of Preparation for a Draft EIR filed Sept. 2011</td>
</tr>
<tr>
<td>Clearvista Wind Project</td>
<td>Wind Turbine</td>
<td>20 MW</td>
<td>226</td>
<td>Kern County</td>
<td>Approved by Kern County Sept. 2011</td>
</tr>
<tr>
<td>Del Sur Solar Project CUP 10-22</td>
<td>Solar</td>
<td>39 MW</td>
<td>180</td>
<td>City of Lancaster</td>
<td>Planning Commission Approved February 2011</td>
</tr>
<tr>
<td>Golden Square Type II</td>
<td>Wind</td>
<td>Unknown</td>
<td>584</td>
<td>Kern County</td>
<td>Project authorized for testing; ROW grant issued; Compliance check for tower placement completed</td>
</tr>
<tr>
<td>Lower West Wind Energy Project</td>
<td>Wind Turbine</td>
<td>14 MW</td>
<td>185</td>
<td>Kern County</td>
<td>Final EIR released June 2011</td>
</tr>
<tr>
<td>Monte Vista Solar Array</td>
<td>Solar Photovoltaic</td>
<td>126 MW</td>
<td>1,040</td>
<td>Kern County</td>
<td>Notice of Preparation for a Draft EIR filed March 2010</td>
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<tr>
<td>Morgan Hills Wind Project</td>
<td>Wind</td>
<td>230 MW</td>
<td>3,604</td>
<td>Kern County</td>
<td>Approved by Kern County Oct. 2011</td>
</tr>
<tr>
<td>North Sky River Wind Project</td>
<td>Wind Turbine</td>
<td>300 MW</td>
<td>12,781</td>
<td>Kern County</td>
<td>Approved by Kern County Sept. 2011</td>
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<tr>
<td>Oak Creek/Sun Creek Type II</td>
<td>Wind</td>
<td>Unknown</td>
<td>1,546</td>
<td>T350S R320E</td>
<td>Project authorized for testing; NEPA analysis approved; ROW grant issued</td>
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<td>Project Name</td>
<td>Project Type</td>
<td>Approximate Generation</td>
<td>Area (acres)</td>
<td>Location</td>
<td>Status</td>
</tr>
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<td>--------------</td>
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</tr>
<tr>
<td>Pacific Wind Energy Project; Pacific Wind Addendum</td>
<td>Wind Turbine</td>
<td>151 MW</td>
<td>8,300; 1,325</td>
<td>Kern County</td>
<td>Approved by Kern County Oct. 2010; Approved by Kern County April 2011</td>
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<tr>
<td>PdV Wind Energy Project; PdV Addendum</td>
<td>Wind Turbine</td>
<td>300 MW</td>
<td>5,820; 2,423</td>
<td>Kern County</td>
<td>Approved by Kern County July 2008; Approved by Kern County March 2010</td>
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<tr>
<td>Pine Tree Solar Project</td>
<td>Solar Photovoltaic</td>
<td>10 MW</td>
<td>75</td>
<td>Kern County</td>
<td>Preliminary planning</td>
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<td>Pine Tree Wind &amp; Expansion</td>
<td>Wind Turbine</td>
<td>135 MW</td>
<td>n/a</td>
<td>Kern County</td>
<td>Completed</td>
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<tr>
<td>Power Partners Type II</td>
<td>Wind</td>
<td>Unknown</td>
<td>1,530</td>
<td>T100N R150W</td>
<td>Project authorized for testing; NEPA analysis approved; ROW grant issued</td>
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<tr>
<td>Ridge Rider Solar Park Project</td>
<td>Solar Photovoltaic</td>
<td>38 MW</td>
<td>475</td>
<td>Kern County</td>
<td>Notice of Preparation of a Draft EIR filed March 2010</td>
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<td>Rising Tree Wind Farm</td>
<td>Wind Turbine</td>
<td>285 MW</td>
<td>3,278</td>
<td>Kern County</td>
<td>Notice of Preparation/Notice of Intent of a Draft EIS/EIR filed July 2011</td>
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<td>Rosamond Solar Array</td>
<td>Solar Photovoltaic</td>
<td>155 MW</td>
<td>1,177</td>
<td>Kern County</td>
<td>Notice of Preparation of a Draft EIR filed March 2010</td>
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<tr>
<td>Rosamond Solar Project</td>
<td>Solar Photovoltaic</td>
<td>120 MW</td>
<td>960</td>
<td>Kern County</td>
<td>Approved by Kern County Nov. 2010</td>
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<tr>
<td>Ruby Solar</td>
<td>Solar Photovoltaic</td>
<td>20 MW</td>
<td>160</td>
<td>Los Angeles County</td>
<td>Early Environmental Review</td>
</tr>
<tr>
<td>Silverado Power CUP 11-03</td>
<td>Solar</td>
<td>10 MW</td>
<td>67</td>
<td>City of Lancaster</td>
<td>Planning Commission Approved Sept. 2011</td>
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<td>Silverado Power CUP 11-05</td>
<td>Solar</td>
<td>20 MW</td>
<td>80</td>
<td>City of Lancaster</td>
<td>Planning Commission Approved September 2011</td>
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<tr>
<td>Silverado Power CUP 11-07</td>
<td>Solar</td>
<td>30 MW</td>
<td>160</td>
<td>City of Lancaster</td>
<td>On Hold</td>
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<td>Project Name</td>
<td>Project Type</td>
<td>Approximate Generation</td>
<td>Area (acres)</td>
<td>Location</td>
<td>Status</td>
</tr>
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<td>---------------------------</td>
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<td>Soledad Mountain Wind</td>
<td>Wind</td>
<td>Unknown</td>
<td>1,228</td>
<td>Kern County</td>
<td>Project authorized for testing; NEPA analysis approved; ROW grant issued</td>
</tr>
<tr>
<td>Southwest Type II</td>
<td>Wind</td>
<td>Unknown</td>
<td>7,245</td>
<td>Kern County</td>
<td>Project authorized for testing; NEPA analysis approved; ROW grant issued</td>
</tr>
<tr>
<td>Sunshine Solar</td>
<td>Solar</td>
<td>40 MW</td>
<td>319</td>
<td>Kern County</td>
<td>Application to Kern County deemed complete in Sept. 2010</td>
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<tr>
<td>TUUSS0 Solar Project CUP 10-03</td>
<td>Solar</td>
<td>20 MW</td>
<td>216</td>
<td>City of Lancaster</td>
<td>Planning Commission Approved June 2010</td>
</tr>
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<td>Tylerhorse Wind Project</td>
<td>Wind Turbine</td>
<td>60 MW</td>
<td>1,100</td>
<td>Kern County</td>
<td>Notice of Intent to prepare a EIS filed July 2011</td>
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<td>Willow Springs Solar Array Project</td>
<td>Solar Photovoltaic</td>
<td>160 MW</td>
<td>1,402</td>
<td>Kern County</td>
<td>Notice of Preparation of a Draft EIR filed March 2010</td>
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<tr>
<td>Windstar Wind Energy Project, Windstar Addendum I</td>
<td>Wind Turbine</td>
<td>65 MW</td>
<td>1,007; 1</td>
<td>Kern County</td>
<td>Approved by Kern County April 2009; Approved by Kern County July 2010</td>
</tr>
</tbody>
</table>

There are also plans in various stages of development to establish additional wind and solar energy projects on BLM land in the vicinity of the Project. The submission of an application to BLM is a preliminary step in the project planning process, but not all applications ultimately result in successful project development. Below is a list of current applications for wind and solar energy generation projects in the vicinity of the Project submitted to BLM’s Ridgecrest Field Office as of March 2012 (U.S. Department of the Interior, Bureau of Land Management – Renewable Energy).
Table 5-2. BLM Ridgecrest Office Applications for Wind and Solar Energy Generation Projects in the Vicinity of the Project

<table>
<thead>
<tr>
<th>Serial Number</th>
<th>Applicant</th>
<th>Date Application Received/ROW Grant Issued/Last Amended Date</th>
<th>Approximate Area (Acres)</th>
<th>Project Type</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>CACA 45386</td>
<td>Little Lake South Renewables, LLC</td>
<td>12/11/02</td>
<td>8,835</td>
<td>Wind: Pending for testing</td>
<td>Rose Valley/Little Lake</td>
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<tr>
<td>CACA 46537</td>
<td>Oak Creek Energy Systems, Inc.</td>
<td>6/25/06</td>
<td>9,279</td>
<td>Wind: Pending for testing</td>
<td>Rand Mountain</td>
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<tr>
<td>CACA 49577</td>
<td>Power Partners SW (enXco)</td>
<td>8/10/07; NOD 8/2/10</td>
<td>276</td>
<td>Wind: Pending for testing</td>
<td>Soledad area</td>
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<tr>
<td>CACA 50171</td>
<td>AES Seawest, Inc.</td>
<td>7/3/08</td>
<td>139</td>
<td>Wind: Pending for testing</td>
<td>Kern County</td>
</tr>
<tr>
<td>CACA 51561</td>
<td>Power Partners Southwest, LLC</td>
<td>12/11/09</td>
<td>1,200</td>
<td>Wind: Pending for development</td>
<td>Kern County</td>
</tr>
<tr>
<td>CACA 52309</td>
<td>enXco Development</td>
<td>3/19/10</td>
<td>275</td>
<td>Wind: Pending for testing</td>
<td>Tehachapi area, Kern County</td>
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<tr>
<td>CACA 52362</td>
<td>Rising Tree Wind, LLC</td>
<td>7/31/10</td>
<td>540</td>
<td>Wind: Pending for development</td>
<td>Golden Square</td>
</tr>
<tr>
<td>CACA 52537</td>
<td>Terra Gen</td>
<td>5/11/10</td>
<td>3,200</td>
<td>Wind: Pending for development</td>
<td>SE Kern County</td>
</tr>
<tr>
<td>CACA 52841</td>
<td>Tehachapi Wind Energy, LLC</td>
<td>3/31/11</td>
<td>1,000</td>
<td>Wind: Pending for testing</td>
<td>T270S &amp; 280S R350E, T280S R360E &amp; 370E, T290S R370E</td>
</tr>
<tr>
<td>CACA 52842</td>
<td>Celtic Energy Corp.</td>
<td>5/6/11</td>
<td>5,256</td>
<td>Wind: Pending for testing</td>
<td>T320S R350E, 360E &amp; 370E</td>
</tr>
<tr>
<td>CACA 52843</td>
<td>Ridgeline Power, LLC</td>
<td>3/30/11</td>
<td>1,158</td>
<td>Wind: Pending for testing</td>
<td>T50N R120W &amp; 130W</td>
</tr>
<tr>
<td>CACA 52844</td>
<td>Ridgeline Power, LLC</td>
<td>3/30/11</td>
<td>10,029</td>
<td>Wind: Pending for testing</td>
<td>T50S &amp; 60S R70E</td>
</tr>
<tr>
<td>CACA 52845</td>
<td>Ridgeline Power, LLC</td>
<td>3/30/11</td>
<td>1,444</td>
<td>Wind: Pending for testing</td>
<td>T90N R130w, T100N R130W</td>
</tr>
<tr>
<td>CACA 52848</td>
<td>Pacific Wind Development, LLC</td>
<td>3/20/11</td>
<td>1,000</td>
<td>Wind: Pending for testing</td>
<td>T280S R400E</td>
</tr>
<tr>
<td>CACA 53148</td>
<td>Ridgeline Power, LLC</td>
<td>7/8/11</td>
<td>3,164</td>
<td>Wind: Pending for testing</td>
<td>T270S R390E; T280S R390E</td>
</tr>
<tr>
<td>CACA 53158</td>
<td>Ridgeline Power, LLC</td>
<td>7/11/11</td>
<td>4,500</td>
<td>Wind: Pending for testing</td>
<td>T280S R410E</td>
</tr>
</tbody>
</table>

Note: Projects previously under application, and subsequently authorized, have been moved to Table 5-1.

5.2.2 OTHER MAJOR PROJECTS

Transportation and Public Facilities

California High Speed Rail – This project proposes a ±700-mile high speed rail line from Sacramento to San Diego. The Statewide Programmatic EIS/EIR was completed in 2005, and
the Bay Area to Central Valley High-Speed Train Program EIS/EIR was completed in 2008. Multiple second-tier project-level environmental documents (with preliminary engineering design) are currently underway (California High Speed Rail Authority).

**Pacific Pipeline Storm Relocation Project and Access Road Repairs** – Pacific Pipeline is proposing to relocate several miles of crude oil pipeline to more stable ground within the ANF. Project implementation took place in November 2010 and was completed effective December 2011 (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

**Antelope Valley Water Bank Project** – This project proposes to develop facilities to store and recharge imported surface water and associated delivery and distribution pipelines. The 13,440-acre facility area would be bounded by the Kern/Los Angeles County border line (also known as Avenue A) to the south and Rosamond Boulevard to the north, and between 170th Street West and 100th Street West in unincorporated Kern County (U.S. Department of the Interior, Bureau of Reclamation – Mid-Pacific Region).

**Soledad Canyon Cemex Project** – The Soledad Canyon Cemex project would be a 56-million-ton sand and gravel mining project in the Soledad Canyon area. The BLM approved the project with mitigating measures in 2000, and the Interior Board of Land Appeals affirmed that decision in 2002. A City of Santa Clarita challenge to the US Supreme Court was denied in 2006. This project is pending development with ongoing challenges and delays (Cemex United States).

**Community Development**

**Centennial Project** – The proposed project site consists of 12,000 acres located one mile east of Interstate 5 (I-5) and adjacent to State Highway 138 in Los Angeles County. The project would include a specific plan and subdivision entitlements (i.e., tract maps and conditional use permits) for a master planned community. The specific plan proposes a maximum of 23,000 dwelling units and 14 million total square feet of non-residential development of employment areas (12,233,390 square feet) and retail serving centers (1,986,336 square feet), anticipated to be built over approximately 20 years, with build-out expected in 2030. If the project is approved by Los Angeles County, it is estimated that the non-residential development may generate approximately 31,000 jobs. The draft Specific Plan for the unincorporated community of Centennial was submitted to Los Angeles County in February 2003 and is currently being reviewed by the county (Centennial, California).

**Maintenance and Landscape Management Projects**

**Bouquet Canyon Road Realignment** – Los Angeles County Department of Public Works is proposing to straighten some sections of Bouquet Canyon Road and to raise the road surface by approximately nine feet. A Memorandum of Understanding between ANF and Los Angeles County is currently under development to initiate the project (J. Seastrand personal communication 2010).

**San Francisquito Road Rehabilitation and Sediment Disposal Site** – Los Angeles County Department of Public Works is proposing a road realignment and new bridge along San Francisquito Road within the ANF and to use eight acres of Forest land as a spoils site in support of construction activities. Public Scoping began in June 2007, and a decision was expected in
September 2010, but currently the decision is on hold (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

**Old Ridge Route Storm Damage Repair** – USFS is proposing to repair and provide maintenance to seven storm-damaged locations along the Old Ridge Route in ANF. A decision on the project was expected in late 2010 (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

**Livestock Grazing Allotments** – BLM currently authorizes both cattle and sheep grazing on 11 grazing allotments in and around the project area. The livestock are authorized with 10-year permits/leases and yearly authorizations. These allotments encompass over one half million acres of BLM-managed lands. The number of livestock grazed each year depends upon weather conditions. The majority of the livestock are sheep. The number of sheep average around thirty thousand head. Three of the allotments support several thousand head of cattle (G. Harris personal communication 2010).

**Tule Ridge/South Portal Fuels Reduction Project** – USFS proposes fuels reduction and re-establishment of a fuel break to provide protection to the unincorporated community of Green Valley. The project would also enhance wildlife for mammals and birds. A decision on the project is expected in August, 2011 (Forest Service Schedule of Proposed Actions for the Angeles National Forest).

**Jupiter Fuelbreak Project** – USFS proposes to re-establish an existing fuel break that begins southwest of the unincorporated community of Green Valley and travels east, bisecting Jupiter Mountain, before heading south to Bouquet Reservoir.

**Santa Clara/Mojave River Rangers District Plantation Maintenance Project** – The proposed project would consist of vegetation maintenance at 13 plantations units located within the ANF in order to reduce wildfire risk, and improve wildlife habitat and the vitality of individual remaining trees. Proposed actions include removal of dead trees, thinning of live trees, pruning, removing weeds, and planting for reforestation where necessary. This action was approved by the District Ranger in January 2010, and project implementation is on-going (T. Hernandez personal communication 2011).

**Lake Hughes Plantation Restoration Project** – The proposed project would restore unauthorized off-highway vehicle trails at the Christian and Taylor Plantations located within the ANF in order to reduce soil erosion, the spread of weeds, destruction of native plants, soil compaction, and wildlife habitat loss. Proposed actions include recontouring and decompacting soils, reseeding with native species, and reinforcing check dams. The project was approved by the District Ranger in 2009 and scheduled for implementation in January 2010. Project implementation has been completed, and the project is being monitored for success (T. Hernandez personal communication 2011).

**Bouquet and San Francisquito Habitat Improvement Project** – The project proposes invasive species removal in Bouquet and San Francisquito Canyons (J. Seastrand personal communication 2010).
5.2.3 LOCAL PROJECTS

In conjunction with the major projects listed above, a summary of local foreseeable projects within the impact area that could contribute to cumulative effects are summarized in the table below. These reasonably foreseeable projects were gathered from applications to the planning departments of the various jurisdictions and have been categorized by project type.

### Table 5-3. Proposed Local Projects in the Vicinity of the Project

<table>
<thead>
<tr>
<th>Project Type</th>
<th>Kern County</th>
<th>Los Angeles County</th>
<th>City of California</th>
<th>City of Palmdale</th>
<th>City of Lancaster</th>
<th>City of Santa Clarita</th>
<th>City of Los Angeles</th>
<th>City of San Fernando</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Family Residential (may include multiple units)</td>
<td>1</td>
<td>96</td>
<td>0</td>
<td>14</td>
<td>93</td>
<td>10</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Multi Family Residential (may include multiple units)</td>
<td>28</td>
<td>9</td>
<td>0</td>
<td>9</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Schools</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>9</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Religious Uses</td>
<td>10</td>
<td>7</td>
<td>0</td>
<td>13</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Recreational Facilities</td>
<td>7</td>
<td>5</td>
<td>0</td>
<td>7</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
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<tr>
<td>Public Facilities – police, fire, library, correctional</td>
<td>2</td>
<td>5</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Commercial/Office Development</td>
<td>40</td>
<td>33</td>
<td>0</td>
<td>96</td>
<td>6</td>
<td>21</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Hotels/Motels</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>9</td>
<td>2</td>
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<tr>
<td>Medical/Care Facilities</td>
<td>4</td>
<td>6</td>
<td>0</td>
<td>16</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Industrial Facilities</td>
<td>20</td>
<td>0</td>
<td>0</td>
<td>17</td>
<td>1</td>
<td>6</td>
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<td>2</td>
</tr>
<tr>
<td>Mining Operations</td>
<td>15</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>RV Facilities</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Animal Facilities</td>
<td>8</td>
<td>6</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Aviation Facilities</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Non-Commercial Energy Facilities</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

1 Projects listed for Los Angeles County include all projects that could contribute to cumulative effects within the following County Districts: Antelope Valley West, Bouquet Canyon, Castaic Canyon, Chatsworth, Lancaster, Leona Valley, Mount Gleason, Newhall, North Palmdale, Palmdale, Quartz Hill, Sand Canyon, Soledad. Some identified projects included may be outside of the impact area.

2 Projects listed for the City of Palmdale include all projects that could contribute to cumulative effects within the City. Some identified projects included may be outside of the impact area.

5.2.4 PLANNING AND ENVIRONMENTAL DOCUMENTS

To supplement the cumulative projects list and the general understanding of the vicinity of the Project, the documents listed below were used to provide insight into longer-term expectations regarding future development and ultimate build-out scenarios and timelines which are used to inform the cumulative analysis.

- Federal
  - USFS – US Forest Service Manual Section 2700
  - USFS – Angeles National Forest Land Management Plan
  - USFS – Pacific Crest Trail Management Plan
  - USFS and BLM – West-wide Energy Corridor Programmatic EIS
o BLM – The California Desert Conservation Area Plan and Amendments, including the West Mojave Plan
o BLM – Wind Energy Development Programmatic EIS
o BLM – Geothermal Leasing Programmatic EIS
o US Department of Energy and BLM – Designation of Energy Corridors on Federal Land in the 11 Western States
o United States Department of Defense – China Lake Naval Air Weapons Station Comprehensive Land Use Management Plan
o United States Department of Defense – Edwards Air Force Base General Plan
o United States Department of Defense – Fort Irwin / National Training Center Real Property Master Plan

• State
  o Renewable Energy Transmission Initiative (RETI)
    ▪ Phase 1A Final Report
    ▪ Phase 1B Final Report
    ▪ Phase 2a Final Report and Appendices
  o California Department of Education – School Site Selection and Approval Guide
  o California Department of Parks and Recreation – Outdoor Recreation Plan
  o California Department of Parks and Recreation – Antelope Valley California Poppy Reserve, Resource Management Plan, General Development Plan and Environmental Report

• Regional/Local
  o Southern California Association of Governments – Regional Comprehensive Plan and Guide
  o Kern County – General Plan
  o Kern County – Airport Land Use Compatibility Plan
  o Los Angeles County – General Plan
  o Los Angeles County – Airport Land Use Compatibility Plan
  o Antelope Valley Areawide General Plan
  o Santa Clarita Valley Area Plan
  o City of Lancaster General Plan
  o City of Los Angeles General Plan
  o City of Palmdale General Plan
  o City of San Fernando General Plan
  o City of Santa Clarita General Plan
  o Mojave Specific Plan
  o Soledad Mountain Specific Plan
  o Ancient Valley Specific Plan
  o Willow Springs Specific Plan
  o Del Sur Ranch Development
  o Joshua Ranch Specific Plan
  o Ritter Ranch Specific Plan
  o City Ranch Specific Plan (Anaverde Specific Plan)
5.2.5 POTENTIAL MITIGATION FOR SIGNIFICANT CUMULATIVE IMPACTS

Reasonably foreseeable wind and solar projects that might transmit power through the BRRTP would have similar impacts, particularly those projects in the Antelope Valley and other locations north of the ANF; as such, the types of impacts that would likely result from construction and operation of such projects and possible mitigation outside the jurisdictions of the lead agencies have been identified.

Wind project impacts would typically occur as follows:

- Avian impacts occur to birds and bats. Of concern are raptors, including golden eagles and bald eagles, a variety of hawks, and other species. Avian studies conducted prior to wind farm construction typically would determine the likely intensity of potential impacts. Bats are also a concern for wind projects.
- Habitat loss occurs when wind projects are constructed. Roads and turbine pads are permanent fixtures on the landscape.
- Visual impacts to nearby residences, communities, roadways, and recreation areas are an issue with a typical 100 MW wind project having between 30 and 75 turbines, each well over 300 feet in height. The moving blades also bring the additional element of movement into view, and this is sometimes exacerbated with shadow flicker, a phenomenon caused from light and shadows crossing sensitive views.
- Land uses are sometimes altered or affected by wind projects. Many wind farms are located in agricultural lands where a certain amount of production is removed by the footprints of the turbine pads, roads, and ancillary facilities.
- Cultural resources, including Native American concerns, can be impacted by wind projects, and the primary form of mitigation is siting to avoid cultural resources.
- Noise and interference can also be impacts from wind farms.

Similarly, solar projects typically would result in the following impacts:

- Large areas of ground disturbance typically result from solar projects. For this summary, we have described the common impacts of a typical photovoltaic solar project. Panels cover hundreds to thousands of acres, and service roads lie between the panel arrays. While ground disturbance is normally limited in solar panel arrays, panels shade the ground below, which changes the way that animals and plants occupy the land. Road areas are permanent loss of vegetation and habitat.
- Habitat loss is an issue, since solar projects cover such enormous acreages of land. How animals use the area changes after construction, and the way that wide-ranging or migrating animals cross through the area changes for the life of the project.
- Visual impacts are a concern both in terms of the amount of natural landscape covered, changed, and seen from sensitive viewpoints, and from potential glint and glare issues from the reflectivity of the sun off the glass panels. This is typically a concern for safety on nearby highways, and can possibly even be a concern for aviation.
- Water use is an issue, since the panels must be cleaned on a regular basis for maximum efficiency in the conversion of sunlight to electricity.

Possible mitigation that may be outside the jurisdiction of the lead agencies could include:
• Phasing project construction schedules,
• Establishing a Multiple Species Habitat Conservation Plan for the region, and
• Promoting smart growth development practices.

5.3 CUMULATIVE EFFECTS ANALYSIS

The cumulative effects analysis was conducted by following the methodological steps outlined above for each resource with the potential to contribute to cumulative effects. The results of this analysis are presented below.

5.3.1 HUMAN ENVIRONMENT

Air Quality and Climate Change

Introduction
In considering cumulative effects on air quality, while one project may not significantly affect air quality, the cumulative effect of numerous smaller projects may. Projects often employ mitigation measures to reduce impacts. A proposed project should be examined within the scope of the existing setting and the examination should take into account new and planned similar and nearby projects.

As with construction and operations and maintenance impacts, the following six significance criteria were considered in evaluating the potential for cumulative impacts:

1. Air Quality Management Plan Conformance (Criterion AIR-1)
2. Regional Emission Thresholds (Criterion AIR-2)
3. Thresholds for Toxic Air Contaminants (Criterion AIR-3)
4. Federal General Conformity (Criterion AIR-4)
5. Odors (Criterion AIR-5)
6. Global Climate Change (AIR-6)

Criterion AIR-1 provides a framework for evaluating whether an individual project is consistent with the applicable Air Quality Management Plan for the air basin in which the project is proposed. From a cumulative standpoint, the Air Quality Management Plan addresses both individual projects and the total air quality impact from all projects within the scope of the Air Quality Management Plan, and the air basin for which the plan applies.

Criterion AIR-2 is typically applied only to direct impacts, rather than cumulative impacts. The regional emission thresholds provide a means to evaluate whether project-specific emissions would have a direct impact on air quality. If, however, the project’s emissions exceed regional emission thresholds, it can be concluded that the project could have a cumulatively considerable impact on air quality as well.

Criterion AIR-3 addresses toxic air contaminants, which are typically addressed on a project-specific basis. The thresholds proposed by the South Coast Air Quality Management District (SCAQMD) for evaluating impacts are based on an individual project’s direct incremental contribution to health risks, rather than cumulative impacts. It should be noted that the
SCAQMD’s MATES-III study (SCAQMD 2008) predicted background risks within the South Coast Air Basin (SCAB) that are above the incremental significance threshold of 10 in a million for excess cancer risks. The Antelope Valley Air Quality Management District (AVAQMD) and the Kern County Air Pollution Control District (KCAPCD) have not established specific thresholds for evaluation of toxic air contaminant impacts.

Criterion AIR-4 provides a means for evaluating a project’s potential for cumulative impacts by identifying both a project-specific emission threshold and a regional threshold. Should a project’s emissions exceed 10 percent of the regional emissions budget in the air basin in which it is proposed, the project would exceed the federal conformity threshold and would have a cumulatively considerable impact on air quality in that region.

Criterion AIR-5 indicates that if a project’s odors, combined with other odor-generating projects, have the potential to affect a substantial number of people, the project would have a cumulatively considerable impact. The evaluation of odors would depend on a combination of similar odor effects.

Criterion AIR-6 is, by nature, a cumulative impact, as a project’s direct impact on the global climate cannot be evaluated.

Impact Area

The BRRTP falls within portions of two different air basins. These are the Mojave Desert Air Basin (MDAB) and the South Coast Air Basin (SCAB). The SCAB is currently classified as a severe nonattainment area for O₃. The SCAB is also classified as a serious nonattainment area for PM₁₀, a nonattainment area for PM₂.₅, and a maintenance area for CO. The MDAB is classified as a nonattainment area for O₃ and PM₁₀. Due to the status of the air basins as nonattainment areas, exceedances of the regional emission thresholds or federal conformity thresholds may indicate that a cumulatively considerable impact would result.

Direct and Indirect Impacts Summary

Direct and indirect impacts were evaluated in the air quality impact analysis for the BRRTP. Based on that analysis, the following impacts were identified as potentially significant:

- Criterion AIR-2: PM₁₀ emissions exceed regional thresholds for all Alternatives in the MDAB and SCAB. PM₁₀ emissions exceed regional thresholds in the SCAB for construction of the new 230 kV circuit, and exceed regional thresholds in the MDAB and SCAB for reconductoring.

- Criterion AIR-4: While emissions from individual Project components would be less than the federal conformity thresholds, should individual Project components occur within the same year, emissions have the potential to exceed the *de minimis* threshold for NOx within the SCAB.
Cumulative Effects Evaluation

With regard to past and present projects, the background ambient air quality, as measured at the monitoring stations, measures the concentrations of pollutants from existing sources. Past and present project impacts are therefore included in the background ambient air quality data.

The projects listed in Section 5.2, Cumulative Projects List, could be under construction, or in operation during the time that the BRRTP is under construction. It would be speculative, however, to determine how many projects, or which projects, could be under construction or in operation during BRRTP construction. It is not possible, therefore, to quantitatively evaluate emissions from each project listed, and to evaluate their cumulative impacts.

As discussed in the construction emissions evaluation for the BRRTP (see Chapter 4 of this Final EIS/EIR), emissions of PM\(_{10}\) would exceed the regional significance criteria for all Alternatives routes, as well as for construction of the new 230 kV circuit within the SCAB, and reconductoring of the existing transmission line within the MDAB and SCAB. Given the proposed construction schedule for the BRRTP as well as other cumulative projects, it is likely that other projects would be under construction and/or operation at the same time as the BRRTP within both the MDAB and the SCAB. Because emissions of PM\(_{10}\) exceed the regional significance thresholds, and because it is likely that cumulative projects would result in air emissions simultaneously with the BRRTP construction activities, construction of the BRRTP would result in cumulatively considerable, but temporary, impacts to air quality due to emissions of PM\(_{10}\). Cumulatively considerable impacts would be mitigated to the extent feasible with implementation of dust control measures during construction.

As discussed above, should construction activities occur simultaneously for the BRRTP within the SCAB, it is possible that emissions of NOx would exceed the federal conformity *de minimis* threshold of 10 tons per year. Construction emissions would not, however, exceed the regional significance threshold of 10 percent of the regional emissions budget. It is therefore unlikely that construction would result in a cumulatively considerable impact for NOx emissions. It should be noted that emissions budgets for the SCAB and the MDAB do consider construction emissions as part of their overall regional emissions. In addition, these regional emissions are included in the modeling that is conducted to demonstrate that the SCAB and MDAB would meet the ambient air quality standards, following implementation of emission strategies and control measures that are included in the SCAB and MDAB air quality management plans. Because NOx emissions associated with construction of the BRRTP are a small fraction of the total construction emissions budget for both air basins, and because the Project would comply with applicable requirements for construction equipment and vehicle emissions, emissions of NOx would not result in a cumulatively considerable impact.

The SCAQMD has not developed a significance threshold for cumulative health risks, nor has it identified a methodology for analyzing cumulative health risks by combining impacts from a cumulative project list. The significance threshold is based on the incremental contribution of a project rather than cumulative impacts. The main toxic air contaminant associated with construction is diesel particulate matter. Diesel particulate matter has been identified by the State of California as a pollutant that has the potential to result in adverse health effects from chronic (i.e., long-term) exposure. Excess cancer risks are calculated based on a lifetime of exposure (70 years). Chronic exposure is defined by the California Office of Environmental...
Health Hazard Assessment as eight years or longer. The BRRTP would be constructed in a shorter time period that would not result in long-term exposure of individuals to diesel particulate matter. Furthermore, construction of the BRRTP would be transient in nature, moving from place to place during construction activities.

Because construction would be temporary, occurring mainly in remote areas that would not affect sensitive receptors such as residences, schools, or hospitals, cumulative construction projects would not contribute to long-term impacts from toxic air contaminants (TACs). The portions of the route that would be within the MDAB and in the northern part of the SCAB have very low residential populations, and there are no schools near any of the construction sites within the MDAB or SCAB. The closest residences to the BRRTP for any Alternative route would be approximately 250 feet from the construction site. It is not anticipated that other temporary construction activities for cumulative projects would contribute to long-term exposure of sensitive populations to TACs, and thus would not contribute to a cumulatively significant impact for TAC emissions due to the temporary nature of construction for the BRRTP.

For this reason, impacts associated with toxic air contaminant emissions would not be cumulatively considerable.

Construction equipment and construction operations would emit pollutants that could be considered to have objectionable odors, such as diesel exhaust and small areas of asphalt paving. These odors would be temporary in nature. To have the potential to combine with odors from the BRRTP, odor-generating activities from other current and reasonably foreseeable projects would have to occur concurrently and very close to the odor-generating activities of the Project. Given the temporary nature of construction, the remote locations of most of the construction sites for the BRRTP, the lack of sensitive receptors in the immediate vicinity of construction activities, and the low likelihood that cumulative projects would contribute substantially to odors in the immediate vicinity of the BRRTP’s activities, odor impacts would not be cumulatively significant.

Global climate impacts are by nature cumulative; therefore, the analysis presented to evaluate the BRRTP’s direct impacts due to greenhouse gas emissions is applicable to cumulative impacts. Because the BRRTP’s emissions would be temporary and below the SCAQMD’s draft significance threshold of 10,000 metric tons, minimal cumulative impacts are anticipated due to construction of the BRRTP.

**Noise**

From a noise perspective, the Proposed Action and Alternatives, when considered together with other reasonably foreseeable projects, have the potential to result in short term cumulative noise effects during the construction phase of the BRRTP in the Project area.

The Proposed Action and Alternative alignments traverse a wide variety of land uses including: BLM public land, forested areas, open areas, residential communities, commercial, and industrial areas. Past development and population growth within the various cities and counties traversed by the BRRTP proposed alignments and in adjacent unincorporated areas have expanded the potential for man-made noise, mainly due to roadway traffic, air traffic, railway transportation and ongoing construction projects. Due to the multiple types of land uses that have developed, a
wide range of noise sources occur in the geographic area and would continue to occur in the cumulative baseline.

Future baseline noise levels within the geographic area are expected to be incrementally higher than the levels in the present regional setting where increased residential and commercial development would be expected. This is particularly true for open areas that currently have relatively low ambient noise levels.

With the addition of the BRRTP 230 kV transmission line, cumulative impacts associated with corona generated audible and radio noise would be additive but are expected to be less than the levels of noise caused by the operation of the existing LADWP +/- 500 kV PDCI transmission line. In Alternative 3, the existing SCE transmission lines (including the TRTP 500 kV transmission line) would produce higher foul weather noise levels than the proposed BRRTP 230 kV transmission line.

Operational phase corona discharge noise from the existing LADWP 500 kV and 230 kV transmission lines as well as noise from the Rinaldi Substation transformers are below State, county, and city noise ordinances at the edge of the ROW.

**Land Use**

**Introduction**

In considering cumulative effects on land uses, while one project may not significantly affect land use, the cumulative effect of numerous smaller projects may. Projects often employ mitigation measures to reduce impacts. A proposed project should be examined within the scope of the existing setting and the examination should take into account new and planned similar and nearby projects.

**Impact Area**

Land uses directly affected by Alternatives 1 through 3 would include those which are located either adjacent to the Alternative study corridors or currently sited in one of the new or expanded switching station sites (Haskell Canyon and Barren Ridge, respectively). Some land uses situated along temporary access roads may experience indirect effects. The cumulative impacts analysis, as it relates to affected land uses by other past or reasonably foreseeable future actions, is located within a geographic area of one-half mile of the Alternative corridors. This is consistent with the spatial parameters set for the land use impact area that was used to inventory the existing and planned land uses (please refer to the Land Use environmental setting described in Chapter 3 of this Final EIS/EIR).

Alternatives 1, 2 and 3 can be characterized by large expanses of undeveloped open space and agriculture with scattered residential development. Numerous land divisions, including subdivisions, are present in the Kern County portion of the impact area. Many of these land divisions were speculative and occurred in the early 1960s. In the Los Angeles County portion of the impact area, several large tracts of undeveloped land have been planned for future development. Specific development sites include the rapidly growing city of Santa Clarita, which has recently experienced residential, commercial, and business development. Alternative 2a is generally characterized by the same land uses as Alternative 2 with the exception of a
seven-mile area on USFS lands in the ANF. In this seven-mile area, management focus is on open space protection and boundary management in anticipation of future adjacent development.

Any past project or activity that would preclude the use, or disturb or diminish the function, of a particular land use within one-half mile of the Alternative corridors would contribute to the cumulative condition of the impact area.

**Reasonably Foreseeable Future Actions**

The land use cumulative effects analysis utilized a list of present and reasonable foreseeable projects within one-half mile radius of each Alternative. The Cumulative Projects Map (Figure 5-1) illustrates the locations of the major cumulative projects in the BRRTP area. The list of projects includes: 1) Electricity Transmission Projects; 2) Power Generation Projects; 3) Transportation and Public Facilities Projects; 4) Community Development Projects; 5) Recreation Projects; 6) Maintenance/Landscaping Projects; and 7) Local Development Projects. Any proposed or future project that would potentially preclude the use of, disturb, or diminish the function of a particular land use within this impact area may contribute to a cumulative effect.

Numerous energy infrastructure, wind and solar generation projects are in various stages of planning and development within the vicinity of the Project. The Transmission Project and Generation Project lists under Section 5.2.1 provide brief descriptions, and Table 5-4 (below) summarizes which Alternative(s) the projects may impact.

**Table 5-4. Energy Infrastructure Projects within 0.5 Mile of Alternative(s)**

<table>
<thead>
<tr>
<th>Energy Infrastructure Project</th>
<th>Alternative(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absolutely Solar</td>
<td>3</td>
</tr>
<tr>
<td>Alta East Wind Project</td>
<td>1, 2, 2a, 3</td>
</tr>
<tr>
<td>Alta Wind Infill Project</td>
<td>1, 2, 2a, 3</td>
</tr>
<tr>
<td>Antelope Solar 1</td>
<td>2, 2a</td>
</tr>
<tr>
<td>Antelope Solar Farm</td>
<td>3</td>
</tr>
<tr>
<td>Antelope Valley Solar</td>
<td>1, 2, 2a, 3</td>
</tr>
<tr>
<td>Avalon Wind Project</td>
<td>1, 2, 2a, 3</td>
</tr>
<tr>
<td>Barren Ridge Type 2</td>
<td>1, 2, 2a, 3</td>
</tr>
<tr>
<td>Bent Tree Wind Farm Type II</td>
<td>1</td>
</tr>
<tr>
<td>Catalina Renewable Project</td>
<td>1</td>
</tr>
<tr>
<td>Lower West Wind</td>
<td>1</td>
</tr>
<tr>
<td>Oak Creek - Sun Creek Type II</td>
<td>1, 2, 2a, 3</td>
</tr>
<tr>
<td>Pacific Wind Addendum</td>
<td>1</td>
</tr>
<tr>
<td>RE Distributed Solar - Barren Ridge 1</td>
<td>1, 2, 2a, 3</td>
</tr>
<tr>
<td>Ridge Rider Solar Park</td>
<td>1, 2, 2a, 3</td>
</tr>
<tr>
<td>Rising Tree Wind</td>
<td>1, 2, 2a, 3</td>
</tr>
<tr>
<td>Rosamond Solar Array</td>
<td>2, 2a, 3</td>
</tr>
<tr>
<td>TUUSSO (TA High Desert)</td>
<td>3</td>
</tr>
<tr>
<td>Willow Springs Solar Array</td>
<td>2, 2a, 3</td>
</tr>
<tr>
<td><strong>Transmission</strong></td>
<td></td>
</tr>
<tr>
<td>Antelope Transmission Project (ATP) Segment 3</td>
<td>1, 2, 2a, 3</td>
</tr>
<tr>
<td>Tehachapi Renewable Transmission Project (TRTP) Segment 4</td>
<td>1, 2, 2a, 3</td>
</tr>
<tr>
<td>Tehachapi Renewable Transmission Project (TRTP) Segment 5</td>
<td>3</td>
</tr>
<tr>
<td>Tehachapi Renewable Transmission Project (TRTP) Segment 10</td>
<td>1</td>
</tr>
</tbody>
</table>
Residential development includes large-scale projects that are existing (Ritter Ranch Specific Plan) or planned (Centennial Specific Plan and North Lake Specific Plan). Planned and reasonably foreseeable projects also occur on USFS lands, which include the Santa Clara/Mojave Rivers District of the ANF. However, no specific projects have been identified that would contribute to a cumulative impact on residential or non-residential land uses. These projects on USFS lands may potentially preclude the use of, disturb, or diminish the function of a particular land use and may contribute to a cumulative effect.

Additionally, relevant planning and environmental documents were considered when identifying activities that could potentially contribute to cumulative land use impacts. These documents guide the location and types of development in the context of long-term physical development.

**Cumulative Effects Evaluation**

Land use impacts associated with each Alternative would result from: a preclusion, disruption, or division of planned and permitted land uses; short- or long-term conflicts with surrounding land uses; or inconsistencies with federal, State or local land use policies or regulations. Potential land use impacts that would arise from either construction, operational or maintenance activities would be cumulatively considerable if they combined with similar effects of other projects. The cumulative effects evaluation generally follows the format of analyzing the applicable individual land use impacts identified in Chapter 4.

**Alternative 1**

Impact LU-1 (*Construction, operation or maintenance of the Project would conflict with applicable federal, State or local land use plans, goals, or policies*) would not contribute to a cumulatively considerable effect. With the exception of the Project crossing a Back Country Non Motorized (BCNM) land use zone, Alternative 1 would be consistent with USFS and BLM land use policies as well as local land use plans and policies as they relate to transmission lines and associated facilities. Authorization by the USFS through its permitting and ANF Land Management Plan amendment process, along with the BLM’s granting/authorization of a ROW, would be required prior to construction.

In addition, general plans for local agencies have been adopted to govern the allowable uses and development in the vicinity of Alternative 1. As discussed above, numerous reasonably foreseeable projects are in the area surrounding Alternative 1. Each new development proposed within the area would be subject to the land use controls and development standards in effect at the time of project submittal. Furthermore, most individual projects would be subject to their own environmental review and would be conditioned to incorporate mitigation measures to reduce potential impacts, to the extent feasible. Compliance with the applicable land use controls and development standards would ensure that most potential land use impacts would remain less than significant.

Furthermore, implementation of General Practice (GP)-50 would require LADWP to further coordinate with applicable agencies to ensure that no conflicts with their respective land use plans and policies would occur. Therefore, impacts related to potential conflicts with applicable land use plans, goals, or policies would be less than significant.
Impact LU-2 (Construction of the Project would temporarily disrupt, displace or preclude existing residential land uses) and Impact LU-3 (Construction of the Project would temporarily disrupt, displace or preclude existing non-residential land uses) would not contribute to a cumulatively considerable effect. Residential, commercial, and public facility/utility developments have been proposed or are currently under construction adjacent to and/or would be traversed by Alternative 1. As previously discussed in Chapter 4, Section 4.2.3, Land Use, construction activities could cause direct effects on existing residential and non-residential land uses within approximately 1,000 feet of a construction site. Project construction occurring at the same time as Alternative 1 and affecting residential or non-residential land uses within 1,000 feet of Alternative 1 is unknown.

Construction of the proposed Project, however, would likely occur during the year 2012. A definitive construction schedule is not currently available for all of the planned/proposed residential and commercial/public facility projects listed in Chapter 3 (see Section 3.2.3, Land Use). It is assumed, however, that construction of some of these projects would overlap with construction of Alternative 1. The construction of multiple projects within the same area could create a potentially significant impact to adjacent residential and non-residential land uses in the form of noise, dust, traffic and general neighborhood disruption as a result of heavy construction equipment and moving building materials to and from construction staging areas. Also, commercial land uses would be impacted if access to a business was affected or precluded during construction activities from the projects occurring simultaneously close to Alternative 1.

The proposed Project would be designed and constructed such that transmission structures would be located to maximize avoidance of sensitive land uses. In addition, GPs (see Chapter 2) and mitigation measures (see Chapter 4) that would reduce noise, traffic, and air quality impacts would be implemented, but these measures would not eliminate the disturbance to land use. While this disturbance would be short-term and temporary, given the existing cumulative land use impact that would occur from the construction of multiple projects, the impact would be significant if construction is not carefully managed and area users kept informed. Implementation of GP-50 and GP-59 would cause the Alternative 1 contribution to this impact to be less than cumulatively considerable, because affected property and business owners would be informed of potential disturbances.

Impact LU-4 (Operation and maintenance of the Project would cause long-term disruption of existing and planned residential land uses) would create an incremental effect that is cumulatively considerable. Portions of Alternative 1 would be constructed within the development boundaries of the approved Mojave and Willow Springs Specific Plans. Alternative 1 would also abut existing residential properties in Los Angeles County. The proposed PDV Wind Energy Project would occupy land within the Willow Springs Specific Plan area, which may preclude future residential development. Construction of both Segment 3 of the proposed Antelope Transmission Project and Segments 4 and 10 of the TRTP would cross or generally parallel Alternative 1 in Kern County. However, prior to the construction of transmission projects, the applicant must obtain regulatory approvals and the rights to construct and operate the projects that affect private property owners. Since the utilities would secure new ROWs with existing property owners, the Alternative 1 cumulative impact would be less than significant.
Impact LU-5 (*Operation and maintenance of the Project would cause long-term disruption of existing and planned non-residential land uses*) would create an incremental effect that is cumulative in nature. Non-residential land uses within one-half mile of Alternative 1 would include utilities, resource management, transportation, and light industrial uses (see Chapter 3, Section 3.2.3, Land Use). These land uses are under the jurisdiction of federal land agencies that include the California Department of Water Resources (DWR), California Department of Parks and Recreation, California Department of Transportation, USFS, BLM, and Department of Defense (DoD). Local jurisdictions would also be traversed by Alternative 1. As described above for Impact LU-4, energy projects have been proposed within one-half mile of the proposed Project. The Alta-Oak Creek Mojave Wind Energy Project may conflict with existing or proposed non-residential land uses in Kern County. The impacts of these projects in combination with Alternative 1 would result in a potentially significant cumulative effect on non-residential land uses. However, GP-50 would reduce the incremental effect of Alternative 1. This practice would allow the affected agencies to address and reconcile any future potential conflicts that Alternative 1 may pose to the management and use of non-residential lands. With implementation of GP-50, the Alternative 1 cumulative impact would be less than significant.

**Alternative 2**

Impact LU-1 (*Construction, operation or maintenance of the Project would conflict with applicable federal, State or local land use plans, goals, or policies*) would not contribute to a cumulatively considerable effect. Alternative 2 would be consistent with USFS and BLM land use policies as well as local land use plans and policies as they relate to transmission lines and associated facilities. Authorization by the USFS through its permitting and ANF Land Management Plan amendment process, along with the BLM’s granting/authorization of a ROW, would be required prior to construction.

In addition, general plans for local agencies have been adopted to govern the allowable uses and development in the vicinity of the Alternative 2 area. As discussed, numerous projects proposed or under development are in the area surrounding Alternative 2. Each new development proposed within the area would be subject to the land use controls and development standards in effect at the time of project submittal. Furthermore, most individual projects would be subject to their own environmental review and would be conditioned to incorporate mitigation measures to reduce potential impacts, to the extent feasible. Compliance with the applicable land use controls and development standards would ensure that potential land use impacts would remain less than significant.

Furthermore, implementation of GP-50 would require LADWP to further coordinate with applicable agencies to ensure that no conflicts with their respective land use plans and policies would occur. Therefore, impacts related to potential conflicts with applicable land use plans, goals, or policies would be less than significant.

Impact LU-2 (*Construction of the Project would temporarily disrupt, displace or preclude existing residential land uses*) and Impact LU-3 (*Construction of the Project would temporarily disrupt, displace or preclude existing non-residential land uses*) would not contribute to a cumulatively considerable effect. Residential, commercial, and public facility/utility developments have been proposed or are currently under construction adjacent to and/or would
be traversed by Alternative 2. Project construction occurring at the same time as Alternative 2 and affecting residential or non-residential land uses within 1,000 feet of Alternative 2 is unknown.

Construction of the proposed Project, however, would likely occur during the year 2012. A definitive construction schedule is not currently available for all of the planned/proposed residential and commercial/public facility projects listed in Chapter 3 (see Section 3.2.3, Land Use). It is assumed, however, that construction of some of these projects would overlap with construction of Alternative 2. The construction of multiple projects within the same area could create a potentially significant impact to adjacent residential and non-residential land uses in the form of noise, dust, traffic and general neighborhood disruption as a result of heavy construction equipment and moving building materials to and from construction staging areas. Also, commercial land uses would be impacted if access to a business was affected or precluded during construction activities from the projects occurring simultaneously in close proximity to Alternative 2.

The proposed Project would be designed and constructed so that transmission structures would maximize avoidance of sensitive land uses. In addition, GPs (see Chapter 2) and mitigation measures (see Chapter 4) to reduce noise, traffic, and air quality impacts would be implemented, but these measures would not eliminate the disturbance to land use. While this disturbance would be short-term and temporary, given the existing cumulative land use impact that would occur from the construction of multiple projects, the impact would be significant if construction is not carefully managed and area users kept informed. Implementation of GP-50 and GP-59 would cause the Alternative 2 contribution to this impact to be less than cumulatively considerable, because affected property and business owners would be informed of potential disturbances.

Impact LU-4 (Operation and maintenance of the Project would cause long-term disruption of existing and planned residential land uses) would create an incremental effect that is cumulatively considerable. Portions of Alternative 2 would be constructed within the development boundaries of the approved Mojave, Soledad Mountain-Elephant Butte, and Willow Springs Specific Plans. Alternative 2 would also abut existing residential properties in Los Angeles County. The proposed Alta-Oak Creek Mojave Wind Energy Project would occupy land within the Soledad Mountain-Elephant Butte Specific Plan area, which may preclude future residential development. Segment 3 of the proposed Antelope Transmission Project would be constructed generally parallel to Alternative 2, southwest of the Willow Springs area. However, prior to the construction of transmission projects, LADWP must obtain regulatory approvals and the rights to construct and operate the projects that affect private property owners. Since the utilities would secure new ROWs with existing property owners, incremental contribution to the cumulative impact associated with Alternative 2 would be less than significant.

Impact LU-5 (Operation and maintenance of the Project would cause long-term disruption of existing and planned non-residential land uses) would create an incremental effect that is cumulative in nature. Non-residential land uses within one-half mile of Alternative 2 would include utilities, resource management, transportation, and light industrial uses (see Chapter 3, Section 3.2.3, Land Use). These land uses are under the jurisdiction of federal and State agencies that include the California DWR, California Department of Parks and Recreation,
California Department of Transportation, USFS, BLM, and DoD. Local jurisdictions would also be traversed by Alternative 2. As described above for Impact LU-4, energy projects have been proposed within one-half mile of Alternative 2. The Alta-Oak Creek Mojave Wind Energy Project may conflict with existing or proposed non-residential land uses in Kern County. The impacts of these projects in combination with Alternative 2 would result in a potentially significant cumulative effect on non-residential land uses. However, GP-50 would reduce the incremental effect of Alternative 2. This practice would allow the affected agencies to address and reconcile any future potential conflicts that Alternative 2 may pose to the management and use of non-residential lands. With implementation of GP-50, cumulative impacts associated with Alternative 2 would be less than significant.

Alternative 2a
Impact LU-1 (Construction, operation or maintenance of the Project would conflict with applicable federal, State or local land use plans, goals, or policies): Alternative 2a traverses the following land use zones designated in the ANF Land Management Plan (LMP): Back Country Non-Motorized (BCNM) and Back Country (BC). Development of facilities, roads, and major utility corridors in the BCNM land use zone would be inconsistent with the LMP.

Impact LU-3 (Construction of the Project would temporarily disrupt, displace or preclude existing non-residential land uses) would be the same for Alternative 2a as for the Proposed Action, and would not contribute to a cumulatively considerable effect. With implementation of GP-21, GP-34, GP-37, and GP-50, as well as pre-construction and construction phase measures provided in Sections 4.2.1 (Air Quality and Climate Change) and 4.2.8 (Traffic and Transportation), construction-related impacts to non-residential land uses would be less than cumulatively considerable for Alternative 2a. With implementation of these measures, cumulative impacts associated with Alternative 2a would be less than significant.

Impact LU-5 (Operation and maintenance of the Project would cause long-term disruption of existing and planned non-residential land uses) would be the same for Alternative 2a as for the Proposed Action, and would create an incremental effect that is cumulative in nature. With implementation of GP-50, as well as pre-construction and construction phase measures provided in Sections 4.2.1 (Air Quality and Climate Change) and 4.2.8 (Traffic and Transportation), Alternative 2a cumulative impacts would be less than significant.

Alternative 3
Impact LU-1 (Construction, operation or maintenance of the Project would conflict with applicable federal, State or local land use plans, goals, or policies) would not contribute to a cumulatively considerable effect. Alternative 3 would be consistent with USFS and BLM land use policies as well as local land use plans and policies as they relate to transmission lines and associated facilities. Authorization by the USFS through its permitting and ANF Land Management Plan amendment process, along with the BLM’s granting/authorization of a ROW, would be required prior to construction.

In addition, general plans for local agencies have been adopted to govern the allowable uses and development in the vicinity of Alternative 3. As discussed, numerous projects proposed or under development are in the area surrounding Alternative 3. Each new development proposed within
the area would be subject to the land use controls and development standards in effect at the time of project submittal. Furthermore, most individual projects would be subject to their own environmental review and would be conditioned to incorporate mitigation measures to reduce potential impacts, to the extent feasible. Compliance with the applicable land use controls and development standards would ensure that potential land use impacts would remain less than significant.

Furthermore, implementation of GP-50 would require LADWP to further coordinate with applicable agencies to ensure that no conflicts with their respective land use plans and policies would occur. Therefore, impacts related to potential conflicts with applicable land use plans, goals, or policies would be less than significant.

Impact LU-2 (Construction of the Project would temporarily disrupt, displace or preclude existing residential land uses) and Impact LU-3 (Construction of the Project would temporarily disrupt, displace or preclude existing non-residential land uses) would not contribute to a cumulatively considerable effect. Residential, commercial, and public facility/utility developments have been proposed or are currently under construction adjacent to and/or would be traversed by Alternative 3. Project construction occurring at the same time as Alternative 3 and affecting residential or non-residential land uses within 1,000 feet of Alternative 3 is unknown.

Construction of the proposed Project, however, would likely occur during the year 2012. A definitive construction schedule is not currently available for all of the planned/proposed residential and commercial/public facility projects listed in Chapter 3 (see Section 3.2.3, Land Use). It is assumed, however, that construction of some of these projects would overlap with construction of Alternative 3. The construction of multiple projects within the same area could create a potentially significant impact to adjacent residential and non-residential land uses in the form of noise, dust, traffic and general neighborhood disruption as a result of heavy construction equipment and moving building materials to and from construction staging areas. Also, commercial land uses would be impacted if access to a business was affected or precluded during construction activities from the projects occurring simultaneously close to Alternative 3.

The proposed Project would be designed and constructed such that transmission structures would be located to maximize avoidance of sensitive land uses. In addition, GPs (see Chapter 2) and mitigation measures (see Chapter 4) that would reduce noise, traffic, and air quality impacts would be implemented, but these measures would not eliminate the disturbance to land use. While this disturbance would be short-term and temporary, given the existing cumulative land use impact that would occur from the construction of multiple projects, the impact would be significant if construction is not carefully managed and area users kept informed. Implementation of GP-50 and GP-59 would reduce the Alternative 3 contribution to this impact, to less than cumulatively considerable, because affected property and business owners would be informed of potential disturbances.

Impact LU-4 (Operation and maintenance of the Project would cause long-term disruption of existing and planned residential land uses) would create an incremental effect that is cumulatively considerable. Portions of Alternative 3 would be constructed within the planned residential development boundaries of the Mojave, Soledad Mountain-Elephant Butte, Willow
Springs, Ritter Ranch, and City Ranch Specific Plans. Alternative 3 would also abut existing residential properties in Los Angeles County. The proposed Alta-Oak Creek Mojave Wind Energy Project would occupy land within the Soledad Mountain-Elephant Butte Specific Plan area, which may preclude future residential development. Segment 3 of the Antelope Transmission Project would be constructed generally parallel to Alternative 3, southwest of the Willow Springs area. However, prior to the construction of transmission projects, regulatory approvals and the rights to construct and operate the projects with affected private property owners would need to be obtained. Since the utilities would secure new ROWs with existing property owners, the Alternative 3 incremental contribution to the cumulative impact would be less than significant.

Impact LU-5 (Operation and maintenance of the Project would cause long-term disruption of existing and planned non-residential land uses) would create an incremental effect that is cumulative in nature. Non-residential land uses within one-half mile of Alternative 3 would include mineral extraction, utilities, resource management, transportation, and light industrial uses (please refer to Chapter 3, Section 3.2.3, Land Use). These land uses are under the jurisdiction of federal and agencies that include the California DWR, California Department of Parks and Recreation, California Department of Transportation, USFS, BLM, and DoD. A number of county and city jurisdictions would also be traversed by Alternative 3. As described above for Impact LU-4, energy projects have been proposed within one-half mile of Alternative 3. The Alta-Oak Creek Mojave Wind Energy Project may conflict with existing or proposed non-residential land uses in Kern County. The impacts of these projects in combination with Alternative 3 would result in a potentially significant cumulative effect on non-residential land uses. However, GP-50 would reduce the incremental effect of Alternative 3. This practice would allow the affected agencies to address and reconcile any future potential conflicts that Alternative 3 may pose to the management and use of non-residential lands. With implementation of GP-50, the Alternative 3 cumulative impact would be less than significant.

**Agricultural Resources**

**Introduction**

In considering cumulative effects on agricultural resources, while one project may not significantly affect agriculture, the cumulative effect of numerous smaller projects may. Projects often employ mitigation measures to reduce impacts. A proposed project should be examined within the scope of the existing setting and the examination should take into account new and planned similar and nearby projects.

**Impact Area**

Although the data on Farmland and lands under Williamson Act contract are collected and analyzed by county, because of the large geographic extent of the counties affected by the Proposed Action and Alternatives and limited geographic scope of associated agricultural impacts, analysis of the cumulative effects at a county-wide level would not yield valuable results. Consequently, the geographic scope of this cumulative effects analysis is limited to the area in the vicinity of the Proposed Action and Alternatives, a corridor of 0.5 mile on either side of each Alternative in southern Kern County and northern Los Angeles County.
Present and Reasonably Foreseeable Actions

Existing cumulative conditions for agricultural resources are defined by past and present use and conversion of agricultural lands.

Alternative 1

Alternative 1 would traverse 2.8 linear miles of agricultural land (cropland). Of the 2.8 linear miles of agricultural land, 1.6 miles are Williamson Act lands. No lands were identified as Department of Conservation (DOC) Farmlands.

The trend in residential development is representative of reasonably foreseeable future actions in the cumulative effects area, as supported by the population growth forecasted throughout the Alternative 1 area. Due to the relatively limited extent of agricultural resources compared to the total area that would be traversed by Alternative 1, a list approach is used to identify foreseeable projects in the vicinity of agricultural resources affected by Alternative 1. Reasonably foreseeable future actions within the Alternative 1 area are expected to be characteristic of past and ongoing projects.

The portion of Kern County in the vicinity of Alternative 1 is largely characterized by open space, active or fallow agricultural land, and rural residences. Agricultural lands in the more urban parts of Kern County are being converted for residential development.

Kern County has experienced increased population growth and development, particularly in and surrounding Bakersfield and Rosedale. According to the Kern County General Plan (2007), the County’s population is expected to exceed 1,088,600 people by the year 2020. Similar to the statewide trend, the county’s agriculture areas are facing increasing pressure to convert productive farmland to housing, industrial, and commercial development.

The northern portion of Alternative 1 in Los Angeles County from Kern County to the ANF is characterized by open space and agricultural areas (e.g., unincorporated community of Neenach); however, areas near the city of Santa Clarita are experiencing growth, which in turn is driving the expansion of residential development into open spaces.

While some agricultural production occurs within the ANF, this is characterized by tree plantations rather than by irrigated agricultural lands. These plantations are not threatened by development, but rather by fire, insects, and disease. Consequently, these plantations receive fuel management and vegetation management treatments to ensure the continued health of the plantations through projects like the Santa Clara/Mojave River Rangers District Plantation Maintenance Project as described in Section 5.2.2.

Little agricultural land remains in northern Los Angeles County, particularly in the vicinity of Alternative 1. Residential development continues to expand in open space areas. Because of the lack of agricultural land in this area, there are few agricultural resources to be affected.

The population in Los Angeles County is expected to increase by varying degrees, depending on the city, with the city of Santa Clarita experiencing a high growth rate. Development and
urbanization in Los Angeles County is expected to continue and increase substantially to accommodate the growing population.

While fuel and vegetation management treatments are being performed on plantations within the ANF, it is foreseeable that projects like the Santa Clara/Mojave River Rangers District Plantation Maintenance Project would continue on a regular basis to ensure the continued health of the plantations. It is anticipated that these areas would continue to be protected from development and that plantations could potentially be expanded within ANF.

**Alternative 2 and Alternative 2a**

Alternative 2 and Alternative 2a would both traverse 4.5 linear miles of agricultural land (cropland). Of the 4.5 linear miles of agricultural land, 3.7 miles are DOC Farmlands. No lands were identified as Williamson Act lands.

As discussed above, ongoing development throughout the cumulative effects area for agricultural resources is typically characterized by the conversion of Farmland to grazing land, and grazing land to residential developments, clustered in and around community developments on non-USFS lands. This trend in residential development is also representative of reasonably foreseeable future actions in the cumulative effects area, as supported by the population growth forecasted throughout the Alternative 2 and Alternative 2a area. Due to the relatively limited extent of agricultural resources compared to the total area that would be traversed by Alternative 2 or Alternative 2a, a list approach is used to identify foreseeable projects in the vicinity. Reasonably foreseeable future actions within the area are expected to be characteristic of past and ongoing projects.

The portion of Kern County in the vicinity of Alternative 2 and Alternative 2a is largely characterized by open space, active or fallow agricultural land, and rural residences. While in more urban parts of Kern County agricultural lands are being converted for residential development, in the rural area around Alternative 2 and Alternative 2a, conversion of irrigated Farmland is usually a result of taking it out of production to allow for grazing.

Kern County has experienced increased population growth and development, particularly in and surrounding Bakersfield and Rosedale. According to the Kern County General Plan (2007), the county’s population is expected to exceed 1,088,600 people by the year 2020. Similar to the statewide trend, the County’s agriculture areas are facing increasing pressure to convert productive farmland to housing, industrial, and commercial development.

The northern portion of Alternative 2 and Alternative 2a from Kern County to the ANF is characterized by open space and agricultural areas, although the cities of Lancaster and Palmdale are experiencing growth that is driving the expansion of residential development into open spaces, such as with Ritter Ranch, City Ranch, Joshua Ranch, and other developments. While little irrigated Farmland has been converted for residential development, as in Kern County, this land is being taken out of production for use as grazing land.

While some agricultural production occurs within the ANF, this is characterized by tree plantations rather than by irrigated agricultural lands. These plantations are not threatened by development, but rather by fire, insects, and disease. Consequently, these plantations receive
fuel management and vegetation management treatments to ensure the continued health of the plantations through projects like the Santa Clara/Mojave River Rangers District Plantation Maintenance Project as described in Section 5.2.2.

Little agricultural land remains in northern Los Angeles County, particularly in the vicinity of the Proposed Action. Residential development continues to expand in open space areas. Because of the lack of agricultural land in this area, there are few agricultural resources to be affected.

The population in Los Angeles County is expected to increase by varying degrees, depending on the city, with the cities of Lancaster and Palmdale both experiencing high growth rates. As such, development and urbanization in Los Angeles County is expected to continue and increase substantially to accommodate the growing population. Accommodation of this population growth requires infrastructure projects, such as the Antelope Transmission Project Segment 3, TRTP Segment 4, the Antelope Valley Water Bank Project, the California High Speed Rail, and the Orangeline High Speed Maglev Project, all of which are in the vicinity of agricultural lands. As with Kern County, Farmland is typically taken out of production and converted to grazing land, which is then later converted for residential development.

While fuel and vegetation management treatments are being performed on plantations within the ANF, it is foreseeable that projects like the Santa Clara/Mojave River Rangers District Plantation Maintenance Project would continue on a regular basis to ensure the continued health of the plantations. It is anticipated that these areas would continue to be protected from development and that plantations could potentially be expanded within ANF.

Alternative 3
Alternative 3 would traverse 4.5 linear miles of agricultural land (cropland). Of the 4.5 linear miles of agricultural land, 4.7 miles are DOC Farmlands. No lands were identified as Williamson Act lands.

As discussed above, ongoing development throughout the cumulative effects area for agricultural resources is typically characterized by the conversion of Farmland to grazing land, and grazing land to residential developments, clustered in and around community developments on non-USFS lands. This trend in residential development is also representative of reasonably foreseeable future actions in the cumulative effects area, as supported by the population growth forecasted throughout the Alternative 3 area. Due to the relatively limited extent of agricultural resources compared to the total area that would be traversed by Alternative 3, a list approach is used to identify foreseeable projects in the vicinity of agricultural resources affected by Alternative 3. Reasonably foreseeable future actions within the Alternative 3 area are expected to be characteristic of past and ongoing projects.

The portion of Kern County in the vicinity of Alternative 3 is largely characterized by open space, active or fallow agricultural land, and rural residences. While in more urban parts of Kern County agricultural lands are being converted for residential development, in the rural area around Alternative 3, conversion of irrigated Farmland is usually a result of taking it out of production to allow for grazing.
Kern County has experienced increased population growth and development, particularly in and surrounding Bakersfield and Rosedale. According to the Kern County General Plan (2007) the County’s population is expected to exceed 1,088,600 people by the year 2020. Similar to the statewide trend, the County’s agriculture areas are facing increasing pressure to convert productive farmland to housing, industrial, and commercial development.

The northern portion of Alternative 3 in Los Angeles County from Kern County to the ANF is characterized by open space and agricultural areas, although the cities of Lancaster and Palmdale are experiencing growth that is driving the expansion of residential development into open spaces, such as with Ritter Ranch, City Ranch, Joshua Ranch, and other developments. While little irrigated Farmland has been converted for residential development, as in Kern County, this land is being taken out of production for use as grazing land.

While some agricultural production occurs within the ANF, this is characterized by tree plantations rather than by irrigated agricultural lands. These plantations are not threatened by development, but rather by fire, insects, and disease. Consequently, these plantations receive fuel management and vegetation management treatments to ensure the continued health of the plantations through projects like the Santa Clara/Mojave River Rangers District Plantation Maintenance Project as described in Section 5.2.2.

Little agricultural land remains in northern Los Angeles County, particularly in the vicinity of Alternative 3. Residential development continues to expand in open space areas. Because of the lack of agricultural land in this area, there are few agricultural resources to be affected.

The population in Los Angeles County is expected to increase by varying degrees, depending on the city, with the cities of Lancaster and Palmdale both experiencing high growth rates. As such, development and urbanization in Los Angeles County is expected to continue and increase substantially to accommodate the growing population. Accommodation of this population growth requires infrastructure projects, such as the Antelope Transmission Project Segments 1-3, TRTP Segments 4-11, the Antelope Valley Water Bank Project, the California High Speed Rail, and the Orangeline High Speed Maglev Project, all of which are in the vicinity of agricultural lands. As with Kern County, Important Farmland is typically taken out of production and converted to grazing land, which is then later converted for residential development.

While fuel and vegetation management treatments are being performed on plantations within the ANF, it is foreseeable that projects like the Santa Clara/Mojave River Rangers District Plantation Maintenance Project would continue on a regular basis to ensure the continued health of the plantations. It is anticipated that these areas would continue to be protected from development and that plantations could potentially be expanded within ANF.

**Cumulative Effects Evaluation**

**Alternative 1**

Impacts AG-3 and AG-4, as described and analyzed below, would combine with the similar effects of other projects. The potential for Agricultural Resources impacts of Alternative 1 to combine with similar impacts of other projects within the geographic scope of the cumulative analysis is described below.
Construction activities would interfere with agricultural operations (Impact AG-3). Alternative 1 would temporarily interfere with active agricultural operations by impeding access to certain fields or plots of land, obstructing farm vehicles and equipment, and disrupting grazing activities, all of which could result in the temporary reduction of agricultural productivity. Alternative 1 impacts would be significant when combined with impacts of current and future projects if those projects would interfere with operations to the same agricultural lands at the same time as Alternative 1. However, based on the locations of the current and reasonably foreseeable projects listed in Chapter 3 (see Section 3.2.3, Land Use) and the relatively small number of agricultural lands that would be affected by them or Alternative 1, it is unlikely any of those projects would impact the same agricultural land at the same time as Alternative 1. Therefore, Alternative 1 impacts would not combine with impacts from other current and reasonably foreseeable projects to result in a cumulative impact (No Impact).

Operation would interfere with agricultural operations (Impact AG-4). The operation of Alternative 1 across 2.8 miles of agricultural land would interfere with agricultural operations by dividing farm properties, creating irregularly shaped fields, disrupting drainage and irrigation systems, affecting the efficacy of windbreaks, fragmenting farms, and allowing for the introduction of invasive weeds within and around disturbed areas. Although it is currently unknown whether any of the reasonably foreseeable projects would convert agricultural land to non-agricultural uses, given the large number of energy infrastructure projects, it is reasonable to assume that some agricultural land would be permanently converted. The effects of the operation of these other planned projects on agricultural operations would be cumulatively significant. VIS-17 would minimize impacts to Agricultural Operations by matching existing and proposed transmission structure locations and spans, and GP-37 would require the restoration of disturbed land to pre-determined or approximate pre-construction conditions. Both practices would help to reduce the Alternative 1 incremental contribution to the cumulative significance of Impact AG-4. However, despite implementation of these practices for Alternative 1, Impact AG-4 would have the potential to combine with other similar impacts of other projects; as such, Impact AG-4 would be cumulatively significant and unavoidable under CEQA.

Alternative 2 and Alternative 2a

Impacts AG-1, AG-3, and AG-4, as described and analyzed below, would combine with the similar effects of other projects. The potential for Agricultural Resources impacts of Alternative 2 or Alternative 2a to combine with similar impacts of other projects within the geographic scope of the cumulative analysis is described below.

Construction activities would temporarily preclude the agricultural use of Farmland (Impact AG-1). Alternative 2 or Alternative 2a would result in the temporary conversion of 224 acres of Farmland due to construction activities. In these areas, construction of solar generation projects in Kern County would result in areas of Farmland being converted to non-agricultural uses. The effects of the construction of these planned projects would be cumulatively significant. The following would be implemented for Alternative 2 or Alternative 2a and would help to reduce the incremental contribution to the cumulative significance of Impact AG-1: VIS-17 and GP-37. However, despite implementation of these practices for Alternative 2 or Alternative 2a, Impact
AG-1 would have the potential to combine with other, similar impacts of other projects; as such, Impact AG-1 would be cumulatively significant and unavoidable under CEQA.

Construction activities would interfere with agricultural operations (Impact AG-3). Alternative 2 and Alternative 2a would both traverse 4.5 miles of agricultural land, and construction activities across these lands would interfere with agricultural operations in these areas. Construction of solar generation projects, Antelope Transmission Project Segment 3, and the Antelope Valley Water Bank Project would disrupt agricultural operations both through the disruption of agricultural land and through construction activities on and adjacent to agricultural lands. The effects of the construction of these other planned projects on agricultural operations would be cumulatively significant. VIS-17 and GP-37 would be implemented for Alternative 2 or Alternative 2a and would help to reduce the incremental contribution to the cumulative significance of Impact AG-3. However, despite implementation of these practices, Impact AG-3 would have the potential to combine with other similar impacts of other projects; as such, Impact AG-3 would be cumulatively significant and unavoidable under CEQA.

Operation would interfere with agricultural operations (Impact AG-4). The operation of Alternative 2 or Alternative 2a across 4.5 miles of agricultural land would interfere with agricultural operations by dividing farm properties, creating irregularly shaped fields, disrupting drainage and irrigation systems, affecting the efficacy of windbreaks, fragmenting farms, and allowing for the introduction of invasive weeds within and around disturbed areas. The projects listed above for Impact AG-3 would also result in these similar impacts, although on a larger scale, and cumulatively interfere with a substantial number of agricultural operations. The effects of the operation of these other planned projects on agricultural operations would be cumulatively significant. VIS-17 would minimize impacts to Agricultural Operations by matching existing and proposed transmission structure locations and spans, and GP-37 would require the restoration of disturbed land to pre-determined or approximate pre-construction conditions. Both practices would be implemented for Alternative 2 or Alternative 2a and would help to reduce the incremental contribution to the cumulative significance of Impact AG-4. However, despite implementation of these practices for the Proposed Action, Impact AG-4 would have the potential to combine with other, similar impacts of other projects; as such, Impact AG-4 would be cumulatively significant and unavoidable under CEQA.

Alternative 3
Impacts AG-1, AG-3, and AG-4, as described and analyzed below, would combine with the similar effects of other projects. The potential for Agricultural Resources impacts of Alternative 3 to combine with similar impacts of other projects within the geographic scope of the cumulative analysis is described below.

Construction activities would temporarily preclude the agricultural use of Farmland (Impact AG-1). Alternative 3 would result in the temporary conversion of 224 acres of Farmland due to construction activities. In these areas, construction of solar generation projects in Kern County would result in areas of Farmland being converted to non-agricultural uses. The effects of the construction of these planned projects would be cumulatively significant. The following would be implemented for Alternative 3 and would help to reduce the Alternative 3 incremental contribution to the cumulative significance of Impact AG-1: VIS-17 and GP-37. However, despite implementation of these practices for Alternative 3, Impact AG-1 would have the
potential to combine with other similar impacts of other projects; as such, Impact AG-1 would be cumulatively significant and unavoidable under CEQA.

Construction activities would interfere with agricultural operations (Impact AG-3). Alternative 3 would traverse 4.5 miles of agricultural land, and construction activities across these lands would interfere with agricultural operations in these areas. Construction of solar generation projects, Antelope Transmission Project Segment 3, and the Antelope Valley Water Bank Project would disrupt agricultural operations both through the disruption of agricultural land as well as through construction activities on and adjacent to agricultural lands. The effects of the construction of these other planned projects on agricultural operations would be cumulatively significant. The following would be implemented for Alternative 3 and would help to reduce the Alternative 3 incremental contribution to the cumulative significance of Impact AG-3: VIS-17 and GP-37. However, despite implementation of these practices for Alternative 3, Impact AG-3 would have the potential to combine with other similar impacts of other projects; as such, Impact AG-3 would be cumulatively significant and unavoidable under CEQA.

Operation would interfere with agricultural operations (Impact AG-4). The operation of Alternative 3 across 4.5 miles of agricultural land would interfere with agricultural operations by dividing farm properties, creating irregularly shaped fields, disrupting drainage and irrigation systems, affecting the efficacy of windbreaks, fragmenting farms, and allowing for the introduction of invasive weeds within and around disturbed areas. The projects listed above for Impact AG-3 would also result in these similar impacts, although on a larger scale, and cumulatively interfere with a substantial number of agricultural operations. The effects of the operation of these other planned projects on agricultural operations would be cumulatively significant. VIS-17 would minimize impacts to Agricultural Operations by matching existing and proposed transmission structure locations and spans, and GP-37 would require the restoration of disturbed land to pre-determined or approximate pre-construction conditions. Both practices would be implemented for Alternative 3 and would help to reduce the Alternative 3 incremental contribution to the cumulative significance of Impact AG-4. However, despite implementation of these practices for Alternative 3, Impact AG-4 would have the potential to combine with other similar impacts of other projects; as such, Impact AG-4 would be cumulatively significant and unavoidable under CEQA.

Recreation

Introduction

In considering cumulative effects on recreation, while one project may not significantly affect recreation, the cumulative effect of numerous smaller projects may. Projects often employ mitigation measures to reduce impacts. A proposed project should be examined within the scope of the existing setting and the examination should take into account new and planned similar and nearby projects.

Impact Area

The geographic extent of the cumulative effects analysis is the same as the extent of the Project area setting described in Chapter 3, Section 3.2.5 (Recreation). As such, the cumulative effects analysis is presented in two separate geographic regions: Kern County, which includes parts of southern Kern County, and Los Angeles County, which encompasses the ANF and portions of
northern Los Angeles County. This geographic scope is appropriate for the issue area of recreation because impacts of the proposed Project would not be expected to combine with similar impacts of other projects beyond this area.

**Present and Reasonably Foreseeable Actions**

Existing cumulative conditions for recreation are defined by past and present designation and development of recreational resources. Ongoing development throughout the cumulative effects area for recreation is dominated by residential developments, clustered in and around communities located on non-NFS lands. This trend in residential development is also representative of reasonably foreseeable future actions in the cumulative effects area, as supported by population growth forecasted throughout the area. Reasonably foreseeable future actions within the area are expected to be characteristic of past and ongoing projects.

The impact area within in Kern County is largely characterized by open space and agricultural areas, with small concentrations of residential development. Recreational resources are primarily in the form of open space, OHV (off-highway vehicle) roads, and walking trails. Developed recreation facilities can be found in or near the unincorporated communities of Mojave and Rosamond. BLM public lands, located north of the unincorporated community of Mojave, offer dispersed recreational opportunities.

It is expected that open space areas which are currently used by recreationists for OHV use, hiking, and general outdoor enjoyment, would be utilized for the construction of residential developments and energy infrastructure. With regard to recreation, it is also reasonably foreseeable that additional facilities and resources such as sporting fields and park areas would be established to meet the needs of an increasing population (especially in or near communities). However, this type of development is commonly located on former open space or agricultural areas and therefore, as such development continues, less open space would be available for recreational purposes such as hiking and OHV use.

Within Los Angeles County, existing cumulative conditions include efforts by the USFS to manage the ANF. From a recreation perspective, past and present projects within the ANF are characterized by USFS activities to improve and maintain developed recreation resources such as campgrounds and picnic areas, manage trails and OHV networks, and prevent construction within or degradation of designated wilderness areas. Chapter 3, Section 3.2.5 (Recreation) provides a detailed description of recreational resources in the ANF which have resulted from past and present projects and make up the existing cumulative conditions. In addition to projects across the ANF, an increase in the developmental density surrounding the ANF has strained the capacity of the recreational resources on National Forest System (NFS) lands. Recreational facilities such as roads, trails, campgrounds, and day use areas have been constructed to meet the demands of increased visitation to the ANF.

Outside the ANF within Los Angeles County, rapid development and population growth has occurred within and surrounding the incorporated cities of Santa Clarita, Lancaster and Palmdale. Some of this population growth has been situated in open space areas in northern Los Angeles County. For example, the Ritter Ranch and City Ranch developments that are currently under construction, in addition to the approved Agua Dulce Residential Project (TR 50385), are located in former open space areas.
As with the future non-NFS projects, the past and ongoing NFS projects are representative of future NFS projects. It is expected that most of these projects are focused on repairs, re-establishment, or rehabilitation of existing facilities. As presented in Section 5.2.2 above, some of the USFS projects which are planned or underway in the ANF include plantation maintenance, restoration, and habitat improvement projects as well as a variety of “fuels reduction” activities, which include fire prevention measures throughout the Forest. These projects indicate a persistence of past and present USFS activities to preserve natural resources within the Forest while providing recreational opportunities for the public. Reasonably foreseeable changes to recreational resources in the Forest may include improvements to and expansion of existing resources, as well as establishment of additional resources or facilities. It is expected that existing wilderness areas in the Forest would continue to be protected from development and expanded if possible (for instance, through the conversion of an Inventoried Roadless Area under consideration for wilderness designation to a designated Wilderness Area).

As previously discussed, northern Los Angeles County is currently undergoing rapid population growth and development, particularly in and surrounding the cities of Santa Clarita, Lancaster and Palmdale. This trend is expected to continue and increase substantially to accommodate the growing population. With regards to recreation, it is also reasonably foreseeable that additional facilities and resources such as sporting fields and park areas would be established to meet the needs of the growing population. However, development in this region is commonly located on former open space areas; therefore, as such development continues, less open space would be available for recreational purposes. It is assumed that the Los Angeles County Riding and Hiking Trails network, which is described in Chapter 3, Section 3.2.5 (Recreation), would continue to be managed and protected by the LA County Department of Parks and Recreation.

**Cumulative Effects Evaluation**

**Alternative 1**

Recreation impacts would be cumulatively considerable, if they would have the potential to combine with similar impacts of other past, present, or reasonably foreseeable projects. The following recreation impacts would have an incremental effect on the cumulative scenario. The potential for cumulatively considerable recreation impacts of Alternative 1 to combine with similar impacts of other projects within the geographic scope of the cumulative analysis is described below.

*Construction activities would restrict access to or disrupt activities within established recreational areas (Impact R-1).* Construction activities associated with Alternative 1 would result in temporary access restrictions and/or disruption of existing activities associated with established recreational areas. If construction activities for other projects in the Alternative 1 impact area result in similar impacts to established recreational resources or opportunities, and such impacts would occur at the same time as those associated with Alternative 1 construction activities, the resulting impacts would be cumulatively considerable to recreational resources. Due to the rapid growth that is current and ongoing in northern Los Angeles County, in addition to the history of Forest maintenance activities and other projects that are expected to continue into the future, it is reasonably foreseeable that Impact R-1 would be cumulatively considerable.
Due to the likely potential for this impact to affect the same recreational resource(s) at the same time, Impact R-1 would be significant and unavoidable.

Operation and maintenance activities would restrict access to or disrupt activities within established recreational areas (Impact R-2). Operation and maintenance of Alternative 1 would have the potential to temporarily restrict access to or disrupt activities within some recreational areas and recreation resources as a result of site-specific activities needed to operate and maintain the transmission line. Recreational resources and opportunities located within the Alternative 1 ROW would be particularly susceptible to Impact R-2. Alternative 1 would not result in permanent loss or degradation of recreational resources in the Alternative 1 impact area. If operation and maintenance activities associated with other projects in the geographic scope of this cumulative analysis would also result in temporary access restriction or disruption of existing activities within established recreational areas, and such effects of the operation and maintenance of other projects occur at the same time as they would for Alternative 1, the resulting impacts would be cumulatively considerable to recreational resources in the Alternative 1 area. However, it is highly unlikely that operation and maintenance activities for multiple projects would result in similar impacts to the same recreational resources at the same time. Furthermore, mitigation measures that would be implemented for Alternative 1 would ensure that Project activities would be coordinated with recreation officers, thereby allowing for the planning of operation and maintenance activities so that similar impacts of Alternative 1 and other cumulative projects would not affect the same recreational resources at the same time. Cumulative impacts would not be significant.

The Proposed Action would cause or contribute to degradation of the Pacific Crest National Scenic Trail (PCT) (Impact R-3). The Alternative 1 route would cross over the PCT in two locations. If other projects, such as those listed in Section 5.2, introduce new infrastructure along the PCT or introduce construction impacts similar to Alternative 1 along the PCT and at the same time as those of Alternative 1, it would be possible for such impacts to combine with impacts of Alternative 1 and result in significant cumulative impacts. It is unlikely that the construction of other projects would occur at the same time as Alternative 1 and near the same locations where Alternative 1 would cross the PCT. However, long-term loss or degradation of the PCT could occur through effects to the unique recreational experience available to hikers along the PCT, as well as physical loss of trail access. Such effects to the recreational experience of the PCT could include the following: installation of infrastructure which would contrast substantially with natural aesthetics currently existing along the PCT; introduction of noise levels that would be substantially greater or have substantially different characteristics than those which currently exist along the PCT; any other Project-related activity that would substantially contrast with the existing backcountry experience of the PCT. As such, any past or reasonably foreseeable project that could affect the recreational experience for PCT users and could combine with this impact of Alternative 1 would be considered cumulatively significant. Given the fact that urbanization is rapidly expanding within northern Los Angeles County, as demonstrated through the existing cumulative scenario, it is reasonable to conclude that projects related to such urban expansion could affect the PCT and potentially lead to the long-term loss or degradation of the trail. Although mitigation measures required for Alternative 1 would help to reduce the Alternative 1 incremental contribution to the cumulative significance of Impact R-3, this impact would still have the potential to combine with other, similar impacts of projects in the cumulative scenario. Because the PCT is considered to be particularly valuable and a unique...
recreational resource, any combination of similar impacts that would affect the PCT in the Alternative 1 impact area would result in a significant cumulative impact.

The Project would contribute to degradation of Off-Highway Vehicle (OHV) trails or would result in a loss of recreational opportunity for OHV users (Impact R-4). This impact is not expected to occur outside of the ANF. Alternative 1 would contribute to the temporary loss of recreational opportunities for OHV users in the ANF. Reasonably foreseeable projects identified in Section 5.2, however, would not contribute to this loss. As such, Impact R-4 would not have the potential to combine with impacts of other ANF projects to result in a cumulative impact.

The Project would facilitate unmanaged recreational uses that would contribute to the long-term loss or degradation of recreational opportunities (Impact R-5). Roadways that are improved or installed to facilitate Alternative 1 construction or operation and maintenance activities could potentially be used by recreationists to gain unauthorized access to areas that are not designated or intended for certain recreational purposes. From a cumulative perspective, past projects throughout the Alternative 1 area, particularly in the ANF, have included the installation of roadways that facilitate unmanaged recreational uses. In addition, in light of expanding residential developments, particularly in Los Angeles County, new roadways are expected to be installed throughout the region and it is reasonably assumed that such roads could be used for unauthorized recreational purposes in the future. Impact R-5 would be cumulatively significant and unavoidable under CEQA.

Alternative 2 and Alternative 2a

Recreation impacts would be cumulatively considerable, if they would have the potential to combine with similar impacts of other past, present, or reasonably foreseeable projects. The following recreation impacts would have an incremental effect on the cumulative scenario. The potential for cumulatively considerable recreation impacts of Alternative 2 or Alternative 2a to combine with similar impacts of other projects within the geographic scope of the cumulative analysis is described below.

Construction activities would restrict access to or disrupt activities within established recreational areas (Impact R-1). Construction activities associated with Alternative 2 and Alternative 2a would result in temporary access restrictions and/or disruption of existing activities associated with established recreational areas. If construction activities for other projects in the Alternative 2 or Alternative 2a impact areas result in similar impacts to established recreational resources or opportunities, and such impacts would occur at the same time as those associated with construction activities associated with Alternative 2 or Alternative 2a, the resulting impacts would be cumulatively considerable to recreational resources. Due to the rapid growth that is current and ongoing in northern Los Angeles County, in addition to the history of Forest maintenance activities and other projects that are expected to continue into the future, it is reasonably foreseeable that Impact R-1 would be cumulatively considerable. Due to the likely potential for this impact to affect the same recreational resource(s) at the same time, Impact R-1 would be significant and unavoidable.

Operation and maintenance activities would restrict access to or disrupt activities within established recreational areas (Impact R-2). Operation and maintenance of Alternative 2 or Alternative 2a would have the potential to temporarily restrict access to or disrupt activities
within some recreational areas and recreation resources as a result of site-specific activities needed to operate and maintain the transmission line. Recreational resources and opportunities located within the Alternative 2 ROW would be particularly susceptible to Impact R-2. Both Alternative 2 and Alternative 2a would not result in permanent loss or degradation of recreational resources in the impact area. If operation and maintenance activities associated with other projects in the geographic scope of this cumulative analysis would also result in temporary access restriction or disruption of existing activities within established recreational areas, and such effects of the operation and maintenance of other projects occur at the same time as they would for Alternative 2 or Alternative 2a, the resulting impacts would be cumulatively considerable to recreational resources in the area. However, it is highly unlikely that operation and maintenance activities for multiple projects would result in similar impacts to the same recreational resources at the same time. Furthermore, mitigation measures that would be implemented for Alternative 2 and Alternative 2a would ensure that Project activities would be coordinated with recreation officers, thereby allowing for the planning of operation and maintenance activities so that similar impacts of Alternative 2 or Alternative 2a and other cumulative projects would not affect the same recreational resources at the same time. Cumulative impacts would not be significant.

The Project would cause or contribute to degradation of the Pacific Crest National Scenic Trail (PCT) (Impact R-3). The Alternative 2 and Alternative 2a routes would each cross over the PCT in one location. If other projects, such as those listed in Section 5.2, introduce new infrastructure along the PCT or introduce construction impacts similar to Alternative 2 or Alternative 2a along the PCT and at the same time as those of Alternative 2 or Alternative 2a, it would be possible for such impacts to combine with impacts of Alternative 2 or Alternative 2a and result in significant cumulative impacts. It is unlikely that the construction of other projects would occur at the same time as Alternative 2 or Alternative 2a and near the same PCT crossing. However, long-term loss or degradation of the PCT could occur through effects to the unique recreational experience available to hikers along the PCT, as well as physical loss of trail access. Such effects to the recreational experience of the PCT could include the following: installation of infrastructure which would contrast substantially with natural aesthetics currently existing along the PCT; introduction of noise levels that would be substantially greater or have substantially different characteristics than those which currently exist along the PCT; any other Project-related activity that would substantially contrast with the existing backcountry experience of the PCT. As such, any past or reasonably foreseeable project that could affect the recreational experience for PCT users and could combine with this impact of Alternative 2 or Alternative 2a would be considered cumulatively significant. Given the fact that urbanization is rapidly expanding within northern Los Angeles County, as demonstrated through the existing cumulative scenario, it is reasonable to conclude that projects related to such urban expansion could affect the PCT and potentially lead to the long-term loss or degradation of the trail. Although mitigation measures required for Alternative 2 or Alternative 2a would help to reduce the incremental contribution to the cumulative significance of Impact R-3, this impact would still have the potential to combine with other, similar impacts of projects in the cumulative scenario. Because the PCT is considered to be particularly valuable and a unique recreational resource, any combination of similar impacts that would affect the PCT in the impact area would result in a significant cumulative impact.

The Project would contribute to degradation of Off-Highway Vehicle (OHV) trails or would result in a loss of recreational opportunity for OHV users (Impact R-4). This impact is not
expected to occur outside of the ANF. Alternative 2 or Alternative 2a would contribute to the temporary loss of recreational opportunities for OHV users in the ANF. Reasonably foreseeable projects identified in Section 5.2, however, would not contribute to this loss. As such, Impact R-4 would not have the potential to combine with impacts of other ANF projects to result in a cumulative impact.

The Project would facilitate unmanaged recreational uses that would contribute to the long-term loss or degradation of recreational opportunities (Impact R-5). Roadways that are improved or installed to facilitate Alternative 2 or Alternative 2a construction or operation and maintenance activities could potentially be used by recreationists to gain unauthorized access to areas that are not designated or intended for certain recreational purposes. From a cumulative perspective, past projects throughout the area, particularly in the ANF, have included the installation of roadways that facilitate unmanaged recreational uses. In addition, in light of expanding residential developments, particularly in Los Angeles County, new roadways are expected to be installed throughout the region and it is reasonably assumed that such roads could be used for unauthorized recreational purposes in the future. Impact R-5 would be cumulatively significant and unavoidable under CEQA.

Alternative 3
Recreation impacts would be cumulatively considerable, if they would have the potential to combine with similar impacts of other past, present, or reasonably foreseeable projects. The following recreation impacts would have an incremental effect on the cumulative scenario. The potential for cumulatively considerable recreation impacts of Alternative 3 to combine with similar impacts of other projects within the geographic scope of the cumulative analysis is described below.

Construction activities would restrict access to or disrupt activities within established recreational areas (Impact R-1). Construction activities associated with Alternative 3 would result in temporary access restrictions and/or disruption of existing activities associated with established recreational areas. If construction activities for other projects in the Alternative 3 impact area result in similar impacts to established recreational resources or opportunities, and such impacts would occur at the same time as those associated with Alternative 3 construction activities, the resulting impacts would be cumulatively considerable to recreational resources. Due to the rapid growth that is current and ongoing in northern Los Angeles County, in addition to the history of Forest maintenance activities and other projects that are expected to continue into the future, it is reasonably foreseeable that Impact R-1 would be cumulatively considerable. Due to the likely potential for this impact to affect the same recreational resource(s) at the same time, Impact R-1 would be significant and unavoidable.

Operation and maintenance activities would restrict access to or disrupt activities within established recreational areas (Impact R-2). Operation and maintenance of Alternative 3 would have the potential to temporarily restrict access to or disrupt activities within some recreational areas and recreation resources as a result of site-specific activities needed to operate and maintain the transmission line. Recreational resources and opportunities located within the Alternative 3 ROW would be particularly susceptible to Impact R-2. Alternative 3 would not result in permanent loss or degradation of recreational resources in the Alternative 3 impact area. If operation and maintenance activities associated with other projects in the geographic scope of
this cumulative analysis would also result in temporary access restriction or disruption of existing activities within established recreational areas, and such effects of the operation and maintenance of other projects occur at the same time as they would for Alternative 3, the resulting impacts would be cumulatively considerable to recreational resources in the Alternative 3 area. However, it is highly unlikely that operation and maintenance activities for multiple projects would result in similar impacts to the same recreational resources at the same time. Furthermore, mitigation measures that would be implemented for Alternative 3 would ensure that Project activities would be coordinated with recreation officers, thereby allowing for the planning of operation and maintenance activities so that similar impacts of Alternative 3 and other cumulative projects would not affect the same recreational resources at the same time. Cumulative impacts would not be significant.

The Project would cause or contribute to degradation of the Pacific Crest National Scenic Trail (PCT) (Impact R-3). The Alternative 3 route would cross over the PCT in two locations. If other projects, such as those listed in Section 5.2, introduce new infrastructure along the PCT or introduce construction impacts similar to Alternative 3 along the PCT and at the same time as those of Alternative 3, it would be possible for such impacts to combine with impacts of Alternative 3 and result in significant cumulative impacts. It is unlikely that the construction of other projects would occur at the same time as Alternative 3 and near the same locations where Alternative 3 would cross the PCT. However, long-term loss or degradation of the PCT could occur through effects to the unique recreational experience available to hikers along the PCT, as well as physical loss of trail access. Such effects to the recreational experience of the PCT could include the following: installation of infrastructure which would contrast substantially with natural aesthetics currently existing along the PCT; introduction of noise levels that would be substantially greater or have substantially different characteristics than those which currently exist along the PCT; any other Project-related activity that would substantially contrast with the existing backcountry experience of the PCT. As such, any past or reasonably foreseeable project that could affect the recreational experience for PCT users and could combine with this impact of Alternative 3 would be considered cumulatively significant. Given the fact that urbanization is rapidly expanding within northern Los Angeles County, as demonstrated through the existing cumulative scenario, it is reasonable to conclude that projects related to such urban expansion could affect the PCT and potentially lead to the long-term loss or degradation of the trail. Although mitigation measures required for Alternative 3 would help to reduce the Alternative 3 incremental contribution to the cumulative significance of Impact R-3, this impact would still have the potential to combine with other, similar impacts of projects in the cumulative scenario. Because the PCT is considered to be particularly valuable and a unique recreational resource, any combination of similar impacts that would affect the PCT in the Alternative 3 impact area would result in a significant cumulative impact.

The Project would contribute to degradation of Off-Highway Vehicle (OHV) trails or would result in a loss of recreational opportunity for OHV users (Impact R-4). This impact is not expected to occur outside of the ANF. Alternative 3 would contribute to the temporary loss of recreational opportunities for OHV users in the ANF. Reasonably foreseeable projects identified in Section 5.2, however, would not contribute to this loss. As such, Impact R-4 would not have the potential to combine with impacts of other ANF projects to result in a cumulative impact.
The Project would facilitate unmanaged recreational uses that would contribute to the long-term loss or degradation of recreational opportunities (Impact R-5). Roadways that are improved or installed to facilitate Alternative 3 construction or operation and maintenance activities could potentially be used by recreationists to gain unauthorized access to areas that are not designated or intended for certain recreational purposes. From a cumulative perspective, past projects throughout the Alternative 3 area, particularly in the ANF, have included the installation of roadways that facilitate unmanaged recreational uses. In addition, in light of expanding residential developments, particularly in Los Angeles County, new roadways are expected to be installed throughout the region and it is reasonably assumed that such roads could be used for unauthorized recreational purposes in the future. Impact R-5 would be cumulatively significant and unavoidable under CEQA.

Public Services and Utilities

Introduction

In considering cumulative effects to public services and utilities, while one project may not significantly affect public services and utilities, the cumulative effect of numerous smaller projects may. Projects often employ mitigation measures to reduce impacts. A proposed project should be examined within the scope of the existing setting and the examination should take into account new and planned similar and nearby projects.

Impact Area

The geographic extent for the analysis of cumulative impacts on public services and utilities would be both Kern and Los Angeles Counties as a whole. This is defined as the geographic extent of the cumulative impact area because public services are provided by county fire and police services to both incorporated and unincorporated areas of the Counties, and because utilities and service systems are provided predominantly by service providers to both incorporated and unincorporated areas of the Counties.

The Project area includes portions of southern Kern County and northern Los Angeles County. The southern portion of Kern County is primarily characterized by open space, agricultural land, and rural residences. The area has changed in recent years due to the development of a number of wind energy projects. A number of additional projects have been approved and/or are under review. Because of the low population of the Project area in this location, the demand for public service and utility systems has not been significantly affected. Public services and utility systems in the Project area are provided by county services that are established in neighboring communities.

The Project area in northern Los Angeles County includes the cities of Lancaster and Palmdale, as well as unincorporated communities. The area has also experienced intense population growth and development within the last two decades. This trend is expected to continue and would impact the capacities of public service and utility providers, through indirect and direct influences of development. As a result, public services and utilities would need to expand to serve the growing population.

The Project area also encompasses the ANF. Development within the ANF is generally limited to recreational facilities and a few private inholdings. There are existing public service and
utility systems on NFS lands, including LADWP and SCE transmission lines and water pipelines.

Communities south of the ANF are generally characterized by urban development, and increased population growth is anticipated throughout the region. Available utility resources serving this region include local and county service providers. It is expected that other public service and utility systems would need to expand as development continues to expand in the region.

Present and Reasonably Foreseeable Actions

Southern Kern County is likely to experience considerable changes in the reasonably foreseeable future. Numerous solar and wind projects are proposed for development and/or are currently under review. Within northern Los Angeles County, population growth in the cities of Lancaster and Palmdale and the surrounding unincorporated communities has led to numerous housing developments. Public services and utility providers and facilities are expected to expand substantially in order to continue the provision of services to the existing population while also accommodating the future population growth indicated by the expansion of the residential developments described above.

Existing cumulative conditions in the ANF are defined by management efforts of the USFS, which includes maintenance plans such as hazardous fuels reduction, watershed management, recreation management and road management. From a public services and utilities perspective, past and present projects within the ANF are characterized by USFS efforts to protect ANF resources while providing for utility development in established areas. As described above, some existing utilities and service systems are on NFS lands, such as LADWP and SCE transmission lines, water pipelines, and other utility infrastructure built to accommodate new recreation facilities. It is reasonably foreseeable that similar projects and changes would continue into the future.

The area south of the ANF is generally characterized as urban. Commercial and industrial development is also prevalent. Public services and utility providers and facilities are expected to expand in order to continue the provision of services to the existing population while also accommodating the future population growth.

As the projects listed in Section 5.2 would likely share the same public services and utility providers, all of those identified cumulative projects could impact the same public services and utility providers as the Proposed Action and Alternatives, and are included cumulatively in this analysis.

Cumulative Effects Evaluation

Impacts of the Proposed Action or Alternatives would contribute to cumulative impacts if they would have the potential to combine with similar impacts of other past, present, or reasonably foreseeable projects. The potential for public services and utility system impacts of the Proposed Action or Alternatives to combine with similar effects of other projects within the geographic scope of the cumulative analysis is described below. Impacts that are not found to be cumulative in nature would not have an incremental effect on the cumulative scenario.
Project construction could temporarily increase the demand of fire protection and emergency medical services (Impact PSU-1): Construction of the Proposed Action or Alternatives could result in potentially hazardous conditions that would require emergency services. If construction activities for other projects in the area also result in potentially hazardous conditions that require emergency services, and such potentially hazardous conditions are introduced in the same general area and timeframe as such conditions under the Proposed Action or Alternatives, the resulting impacts could be cumulatively considerable relative to emergency service providers. However, due to the implementation of GPs for the Proposed Action or Alternatives, the likelihood of the need for emergency response teams as a result of construction accidents would be low. To minimize fire potential and unnecessary burden on firefighters, GPs would limit the idling of construction vehicles to 10 minutes or less, and small gas-operated machinery would be turned off when not in use. Implementation of GPs and mitigation measures identified for Wildfire and Fuels would be implemented to reduce the potential for accidental ignition in hazardous areas and to ensure that additional firefighting provisions would not need to be drawn from other critical firefighting areas. In addition, to minimize the potential for construction-related injuries and the need for emergency medical services, LADWP would implement GPs as part of the Proposed Action or Alternatives. Impact PSU-1 would be cumulatively less than significant.

Project operation could increase the demand for fire protection and emergency medical services (Impact PSU-2): Implementation of GPs and mitigation measures identified for Wildfire and Fuels would minimize the potential for Project-related brushfires and worker injury, ensuring that reinforcement of firefighting and emergency response resources would not need to be drawn from other critical firefighting areas to serve the Proposed Action or Alternatives. Impact PSU-2 would be cumulatively less than significant.

Project construction activities could temporarily increase the demand for police protection services (Impact PSU-3): Construction of the Proposed Action may require minimal use of local law enforcement agencies in Kern and Los Angeles Counties and in the ANF. In some areas, the Proposed Action or Alternatives would require the installation of transmission towers adjacent to existing road ROWs. During this time, the placement of safety barriers and the temporary or single-lane closure of roadways may be required during the transport of oversized equipment and stringing of the conducting wires. The aid of local policing units is typically solicited for coordination of these activities. PSU-3 would be cumulatively less than significant.

Project construction activities could temporarily increase the demand for schools, parks, or other public facilities (Impact PSU-4): The construction of new or augmentation of existing schools, parks, or other public facilities would not be required to serve the Proposed Action or Alternatives. Impact PSU-4 would not be cumulatively considerable.

Temporary or single-lane closure during Project construction would interfere with emergency vehicle response times (Impact PSU-5): Construction of the Proposed Action or Alternatives would interfere with the regular flow of traffic due to temporary lane closures. From a cumulative impacts perspective, emergency vehicles would be adversely affected if construction of other projects listed in Section 5.2 were to occur proximate to the Proposed Action or Alternatives. To avoid interference with emergency response and evacuation pathways, LADWP would implement GPs. The Traffic Control Plan would identify the locations of all
roads scheduled for temporary closure as well as feasible diversion routes. Closure activities would be coordinated with relevant agencies (i.e., police, fire, ambulance, and paramedic services) at least one month prior to each closure event, and would be scheduled to take place during off-peak commute hours. In an emergency situation, construction crews would immediately cease work in order to accommodate emergency vehicles passing through the area. Impact PSU-5 would be cumulatively considerable but less than significant.

*Project activities (i.e., helicopter construction, transmission line operation) would interfere with emergency aircraft response services (Impact PSU-6):* Construction and operation of the Proposed Action or Alternatives could interfere with emergency aircraft services. Construction of other projects in the vicinity of the Proposed Action or Alternatives could also cause interruptions for emergency response operations. Although it is unlikely that interferences would occur at the same time, all flight operations would be restricted by FAA rules on temporary flight restrictions from flying in designated areas. Impact PSU-6 would be cumulatively considerable but less than significant.

*Project construction would temporarily increase water use and Project operation would contribute to increased long-term water consumption (Impact PSU-7):* Water would be required for dust suppression during the entire construction period. Each jurisdiction along the proposed route would contribute to the water required by Project construction, which is reasonably expected to be a small fraction of the available water supply. From a cumulative perspective, the majority of planned and reasonably foreseeable projects included in Section 5.2 are residential developments, which require substantially more water and water infrastructure during construction than the Proposed Action or Alternatives. In particular, the cities of Lancaster and Palmdale are characterized by a desert environment and have been experiencing a surge of housing development in previously undeveloped land. However, the existing water supply, which is listed in Chapter 3, Section 3.3.3 (Water Resources), shows that multiple water allocations are available along the entire length of the Proposed Action or Alternatives.

While the Proposed Action or Alternatives and the present and reasonably foreseeable future projects would require a portion of the available water supply for construction activities, the potential impact would be cumulatively considerable but less than significant.

*Additional wastewater would be generated during Project construction and operation (Impact PSU-8):* The generation of wastewater from the construction and operation of the Proposed Action or Alternatives would not exceed the capabilities of wastewater facilities. Construction of present and reasonably foreseeable future projects in the vicinity of the proposed route would contribute to wastewater generation. However, wastewater from construction personnel and that of construction from surrounding developments is not expected to generate an amount of wastewater that would exceed the capabilities of wastewater facilities. Therefore, while the Proposed Action or Alternatives and the present and reasonably foreseeable future projects would incrementally increase cumulative impacts, this would not significantly impact the capabilities of waste management.

*Additional solid waste would be generated during Project construction and operation (Impact PSU-9):* Waste generated by the Proposed Action or Alternatives would be disposed of (including through recycling) over the construction period and is not expected to exceed the
available capacity of the local landfills. In the cities of Lancaster and Palmdale, the Proposed Action or Alternatives and other present and reasonably foreseeable future projects are generally located west of the established development, in previously undeveloped land. However, waste management services are abundant and there are numerous disposal facilities with available space. Therefore, while the Proposed Action or Alternatives and the present and reasonably foreseeable future projects would require waste capabilities during construction, such waste is not expected to exceed the capabilities of existing waste disposal facilities and recycling facilities. Although impacts on waste management facilities would not be significant and mitigation is not required, implementation of PSU-1 is recommended to maximize the quantity of Project waste diverted from landfill disposal.

*Project would conflict with applicable statutes and standards related to solid waste (Impact PSU-10):* The Proposed Action or Alternatives would be in full compliance with the Integrated Waste Management Act of 1989, which requires all local and county governments to adopt a Source Reduction and Recycling Element to identify means of reducing the amount of solid waste sent to landfills. PSU-9 would ensure such compliance. In addition, projects included in Section 5.2 are also subject to the Integrated Waste Management Act of 1989 and must therefore incorporate maximum recycling efforts during construction activities. Impact PSU-9 would not be cumulatively considerable.

*Project construction would temporarily disrupt the flow of services provided by underground or overhead utilities (Impact PSU-11):* Disruptions in the flow of utility services for co-located utilities are likely to occur during the construction period, and would require the implementation of PSU-4 in order to reduce the impacts of the Proposed Action or Alternatives to a less than significant level. LADWP would notify the Underground Service Alert at least two working days prior to any Project excavation activities, in accordance with the requirements of California Government Code Section 4216-4216.9, “Protection of Underground Infrastructure.”

Construction of other projects in the vicinity of the Proposed Action or Alternatives may also cause temporary utility disruptions. It is unlikely that utility disruptions would occur at the same time; however, if a disruption is known to be unavoidable, LADWP would coordinate with the affected jurisdiction(s) and service provider(s) in order to avoid multiple or extended disruptions, in accordance with PSU-4. Impact PSU-4 would be cumulatively considerable but less than significant.

**Mitigation to Reduce the Project’s Contribution to Significant Cumulative Effects**

Mitigation measures introduced for the Proposed Action or Alternatives would help to reduce the Proposed Action’s incremental contribution to cumulative impacts. All potential cumulative impacts that could occur as a result of the Proposed Action or Alternatives would be expected to be less than significant without additional mitigation. No further mitigation is necessary.

**Hazardous Waste/Materials**

**Introduction**

In considering cumulative effects to hazardous waste/materials, while one project may not significantly affect hazardous waste/materials, the cumulative effect of numerous smaller projects may. Projects often employ mitigation measures to reduce impacts. A proposed project...
should be examined within the scope of the existing setting and the examination should take into account new and planned similar and nearby projects.

Impact Area
The geographic extent for the analysis of cumulative impacts related to environmental contamination is limited to the immediate vicinity surrounding the Project components. Impacts would have the potential to occur during construction and operation and would be limited to the areas where concurrent construction or maintenance would occur.

The area along the route of the Proposed Action or Alternatives alignment consists primarily of open space land, scattered rural residences, residential developments, and agricultural and commercial properties. Within the open space land and residential areas there is little likelihood of significant soil or groundwater contamination, based on a lack of uses that would involve hazardous materials. Sites with known environmental contamination would be required by law to be investigated and remediated in accordance with regulatory agency standards prior to redevelopment. In addition, areas with previously unknown contamination would likely be discovered during planning, followed by the required reporting and cleanup.

Present and Reasonably Foreseeable Actions
Foreseeable future actions identified for this analysis include major energy and transmission projects, as well as residential development projects located in the jurisdictions that would be traversed by the Proposed Action. The list was reviewed to identify cumulative projects that are planned in areas with known significant soil or groundwater contamination based on prior land use. Although localized areas of soil contamination could be encountered by some of these projects, most are new developments in open areas or expansions of existing residential areas.

Cumulative Effects Evaluation
With regard to cumulative environmental contamination impacts, the contribution of the Proposed Action or Alternatives to a cumulative impact would only be considered significant if it combined with other projects to result in substantial volumes of contaminated soil that require off-site treatment and that, as a combined volume, exceeded the capacity of available treatment facilities or resulted in substantial exposure of hazardous materials to the public. For the reasons discussed below, the contribution to cumulative impacts would not be cumulatively considerable.

Impact HAZ-1 (Improper handling and/or storage of hazardous materials could result in soil or groundwater contamination during Project construction). As part of the design of the Proposed Action or Alternatives, LADWP would implement several environmental-related project plans to minimize the likelihood of Project-related spills, and would ensure proper waste handling procedures, spill contingencies, and Treatment, Storage and Disposal Facility training in accordance with the OSHA Hazard Communication Standard and 22 CCR.

During the construction period, the storage and use (i.e., refueling or changing) of vehicle/equipment fluids and oils would be confined to approved staging and construction yards, and all construction vehicles would be equipped with a hazardous materials spill kit.
HAZ-1 would be implemented as part of the Proposed Action or Alternatives to decrease the potential for accidental releases to occur and to clean up potentially harmful materials in the unlikely event of a release. Therefore, since any spills of contaminated material would be cleaned, soil or groundwater contamination would not occur and Impact HAZ-1 would not have the potential to combine with impacts of other projects and would not be cumulatively considerable.

*Impact HAZ-2 (The Project could handle hazardous or acutely hazardous materials, substances, or waste near an existing or planned school, potentially exposing sensitive receptors)*: No existing or planned schools were identified within one quarter-mile of the Proposed Action or Alternatives. Therefore, the Proposed Action would not have the potential to combine with impacts of other projects and would not be cumulatively considerable.

Impact HAZ-3 (*Project construction activities [i.e., site excavation or grading] could mobilize existing soil or groundwater contaminants from sites listed pursuant to Government Code 65962.5 or other known sites*) could occur if preexisting soil and groundwater contamination is encountered during Project construction, which would result in exposure of construction workers to potential health hazards. Based on a review of the Department of Toxic Substance Control Envirostar database, the impact corridors of Alternative 1, Alternative 2, Alternative 2a, and Alternative 3 would not be located on any known contamination sites listed pursuant to Government Code Section 65962.5. In addition, the Proposed Action or Alternatives include HAZ-2, which would require investigation of potentially contaminated sites along the proposed transmission line route as well as clean up of any contamination identified. Therefore, because any contamination encountered would be removed and/or remediated prior to construction, Impact HAZ-3 would not have the potential to combine with impacts of other projects and would not be cumulatively considerable.

Impact HAZ-4 (*Project construction activities [i.e., site excavation or grading] could inadvertently release unknown preexisting soil and/or groundwater contaminants*) could occur if preexisting soil and groundwater contamination is encountered during Project construction, which would result in exposure of construction workers to potential health hazards. Such exposure would be hazardous to people in the immediate vicinity of the contamination since the contaminant would either be limited to the medium in which it is discovered or would volatilize and become airborne. If vapors from potential contamination volatilized, risk of exposure would decrease as distance from the source of contamination increased due to dispersal of the vapors.

Since some types of contamination are detectable by visual and olfactory observation, GPs would be implemented to address common contamination indicators (e.g., an obvious sheen, strong odor, or abnormal stains to soil or groundwater) observed during Project construction activities. Further, the Project construction contractor would document the exact location(s) of contamination, notify the Environmental Monitor, and issue a temporary work stop until potentially contaminated material(s) are properly characterized and addressed.

However, the GPs do not specify methods used to determine if regulatory limits are exceeded and who would be qualified to make such a determination. In addition, these practices do not specify the reporting requirements for these incidents, including documentation of verification sampling results, and measures taken for potentially contaminated sites to the USFS (if on USFS
lands) or BLM (if on BLM public lands). Misinterpretation of laboratory data could result in the improper handling or disposal of contaminated materials, resulting in further environmental contamination and/or human exposure to hazardous substances. The Proposed Action or Alternatives include HAZ-2, which would require investigation of potentially contaminated sites along the proposed transmission line route as well as clean up of any contamination identified. Therefore, because any contamination encountered would be removed and/or remediated prior to construction, Impact HAZ-4 would not have the potential to combine with impacts of other projects and would not be cumulatively considerable.

Impact HAZ-5 (Project operations may result in an accidental spill of contaminants into the surrounding environment, polluting the soil or groundwater) could result at the substations during facility operation or along the transmission line during maintenance operations. Implementation of GPs would minimize potential contamination impacts related to the improper storage, use, handling, or accidental spillage of such material by requiring enforcement of a Project Emergency Response Plan, and a Hazardous Materials and Hazardous Waste Management Plan.

Mitigation measure HAZ-1 would also be implemented as part of the Proposed Action or Alternatives to decrease the potential for accidental releases to occur and to clean up potentially harmful materials in the unlikely event of a release. Therefore, since any spills of contaminated material would be cleaned, soil or groundwater contamination would not occur and Impact HAZ-5 would not have the potential to combine with impacts of other projects and would not be cumulatively considerable.

Impact HAZ-6 (Herbicides used for vegetation control around towers and other project facilities could adversely affect the health of maintenance workers or the public) could potentially impact workers or members of the public that enter affected portions of the ROW. BIO-2 would require LADWP contractors to follow herbicide application protocols as recommended by the manufacturer. Therefore, as herbicide application protocols would be in place to prevent environmental contamination and protect worker health and safety, Impact HAZ-1 would not have the potential to combine with impacts of other projects and would not be cumulatively considerable.

Mitigation to Reduce the Project’s Contribution to Significant Cumulative Effects

Implementation of the above selected GPs in conjunction with mitigation measures was utilized to reduce the contribution of the Proposed Action or Alternatives to significant cumulative effects.

Traffic and Transportation

Introduction

This section details cumulative area projects, which include roadway and area development projects within the impact area as described in the Traffic Technical Study that was prepared for the Draft EIS/EIR and located in Volume III of this Final EIS/EIR. Subsequently, this section was updated to reflect current cumulative projects for this Final EIS/EIR. The summary of the project, location, potential overlap, and impacts with relation to the Proposed Action and Alternatives are described in the following sections.
Present and Reasonably Foreseeable Actions

Roadway Projects

Table 5-5 provides a summary of planned roadway projects that would overlap with the Project Alternatives. The location of these projects is shown on Figure 4 of the Traffic Technical Study in Volume III.

**Table 5-5. Summary of Major Planned Roadway Projects Within Impact Area**

<table>
<thead>
<tr>
<th>Project Location (Jurisdiction)</th>
<th>Project Description</th>
<th>Alternative(s) Impacted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Castaic Cutoff from Lake Hughes Road to San Francisquito Canyon Road (Los Angeles Co.)</td>
<td>Construct a new road – four 12-foot lanes and 10-foot shoulders</td>
<td>1, 2, 2a, 3</td>
</tr>
<tr>
<td>Pear Blossom Highway Widening Project: Avenue T to Route 18 (City of Palmdale, City of Llano)</td>
<td>Lane widening to four lanes and drainage improvements</td>
<td>3</td>
</tr>
<tr>
<td>SR-14 on the north to Parker Road on the north (City of Santa Clarita, Los Angeles Co.)</td>
<td>Elevated two-lane high occupancy vehicle (HOV) lane connector would be constructed to connected the HOV lanes of I-5 and SR-14</td>
<td>Reconductoring of existing 230 kV transmission line (Barren Ridge – Rinaldi) for Alternatives 1, 2, 2a, and 3</td>
</tr>
<tr>
<td>Golden Valley Road from Soledad Canyon to Newhall Ranch Road (City of Santa Clarita)</td>
<td>Construct Golden Valley Road to six lanes for less than 0.5 mile, including a bridge over the Santa Clara River</td>
<td>Reconductoring of existing 230 kV transmission line (Barren Ridge – Rinaldi)</td>
</tr>
<tr>
<td>Golden Valley Road from Newhall Ranch Road to Rum Canyon Road (City of Santa Clarita)</td>
<td>Construct Golden Valley Road to four lanes for approximately 1.5 miles</td>
<td>Reconductoring of existing 230 kV transmission line (Barren Ridge – Rinaldi)</td>
</tr>
<tr>
<td>Newhall Ranch Road from Golden Valley Road to Bouquet Canyon Road (City of Santa Clarita)</td>
<td>Construct Newhall Ranch Road to six lanes for approximately 1.5 miles</td>
<td>Reconductoring of existing 230 kV transmission line (Barren Ridge – Rinaldi)</td>
</tr>
<tr>
<td>North side of the Santa Clara River from I-5 to discover Park (City of Santa Clarita)</td>
<td>Designing seven miles of Class I bicycle/pedestrian pathway</td>
<td>Reconductoring of existing 230 kV transmission line (Barren Ridge – Rinaldi)</td>
</tr>
<tr>
<td>Via Princessa from Magic Mountain Parkway to Golden Valley Road (City of Santa Clarita)</td>
<td>Construct approximately one mile of new road (three lanes in each direction), including curb/gutter and drainage improvements</td>
<td>Reconductoring of existing 230 kV transmission line (Barren Ridge – Rinaldi)</td>
</tr>
<tr>
<td>Santa Clarita Parkway from Bouquet Canyon Road to Soledad Canyon (City of Santa Clarita)</td>
<td>Construct a new 2.5 mile road to four lanes</td>
<td>Reconductoring of existing 230 kV transmission line (Barren Ridge – Rinaldi)</td>
</tr>
<tr>
<td>Via Princessa from Golden Valley Road to Rainbow Glen (City of Santa Clarita)</td>
<td>Construct Via Princessa to six lanes for less than one mile</td>
<td>Reconductoring of existing 230 kV transmission line (Barren Ridge – Rinaldi)</td>
</tr>
<tr>
<td>Santa Clarita Parkway from Soledad Canyon to Via Princessa (City of Santa Clarita)</td>
<td>Construct Santa Clarita Parkway to six lanes for approximately 1.6 miles</td>
<td>Reconductoring of existing 230 kV transmission line (Barren Ridge – Rinaldi)</td>
</tr>
<tr>
<td>Santa Clarita Parkway from Via Princessa to Route 14</td>
<td>Construct Santa Clarita parkway to six lanes for approximately one mile</td>
<td>Reconductoring of existing 230 kV transmission line (Barren Ridge – Rinaldi)</td>
</tr>
</tbody>
</table>

Sources:
Caltrans District 7 Future Projects: State Route 138 Corridor Improvement Projects, October 14, 2008
Southern California Association of Governments, 2008 Regional Transportation Plan Project List
Other Area Projects

Several area projects comprise energy infrastructure projects, major projects, maintenance projects, landscape management projects, and local projects as described in Section 5.2. The consideration of potential impacts adjacent to or along the Proposed Action and Alternatives are analyzed within this section.

Cumulative Effects Evaluation

As Project design and construction plans move forward, coordination would be necessary with the lead agencies on these roadway projects, in order to determine if special considerations would need to be made for wider roadway crossings and project timing.

In addition to the identified planned area roadway projects, construction activities for other utility projects that would cross or run parallel to the Proposed Action or Alternatives and would occur within overlapping timeframes could cause cumulative impacts without the proper implementation of mitigation measures.

The Centennial project, once operational and occupied, would generate new daily vehicle trips. The opening of this project is not anticipated to overlap the construction period of the BRRTP, but cumulative impact determinations for this report are conservative. If built, this large development may create potential impacts as part of the site intersects a portion of a Project Alternative. The impacts may occur during both the construction and maintenance phases of the BRRTP, as new trips would be generated by the Project when construction of the unincorporated community of Centennial is complete and uses are occupied.

In addition to the identified planned area roadway projects, construction activities for other utility and renewable energy generation projects that would require crossing or run parallel to the Proposed Action or Alternatives and would occur within overlapping timeframes could cause cumulative temporary construction-related traffic impacts without the proper implementation of mitigation measures.

With proper coordination across the multiple planned projects that are identified, as applicable to the overlapping alternatives, cumulative temporary construction-related traffic impacts of the projects would be less than significant. The cumulative maintenance traffic and transportation impacts of the multiple area roadway, utility, and renewable energy generation projects would be minimal, as each project would likely generate only a nominal amount of new daily vehicle trips on the roadway network, which would be inconsequential to transportation operations. Therefore, cumulative traffic and transportation impacts during the maintenance period of the Proposed Action or Alternatives would be less than significant.

Visual Resources

Introduction

The increases in structure prominence as a result of the Project could result in significant cumulative impacts. The Project could also combine with the visual effects of other types of present and reasonable foreseeable actions, including generation projects, transportation and
public facilities projects, and community and recreation developments that would contribute to the cumulative contrast with the existing landscape and resulting visual effects.

**Impact Area**

The BRRTP visual study corridor was used as the geographic boundary for the analysis of cumulative impacts to visual resources. The study corridor extends three miles on either side of the assumed centerlines of the Alternative routes. Within the ANF, the visual study corridor was expanded to a 10-mile-wide study corridor (five miles on each side of the centerline for each Alternative).

**Present and Reasonable Foreseeable Actions**

Projects identified within the BRRTP visual study corridor that could contribute to cumulative visual impacts include proposed transmission lines, transportation and public facilities projects, applications for generation projects like wind energy and solar farms, and large-scale community.

Refer to the table below for a list of projects in the visual study corridor that could contribute to cumulative impacts to visual resources.

**Table 5-6. Summary of Cumulative Projects in the Visual Study Corridor**

<table>
<thead>
<tr>
<th>Project Type</th>
<th>Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmission Projects</td>
<td>Antelope Transmission Project; Tehachapi Renewable Transmission Project</td>
</tr>
<tr>
<td>Transportation and Public Facilities</td>
<td>California High Speed Rail; Pacific Pipeline Storm Relocation Project and Access Road Repairs; Antelope Valley Water Bank Project, Soledad Canyon Cemex Project</td>
</tr>
<tr>
<td>Community Development</td>
<td>Centennial Project</td>
</tr>
</tbody>
</table>

**Cumulative Effects Evaluation**

The Project, in addition to future development/disturbance throughout the study corridor, may increase direct and indirect impacts to visual resources. Cumulative visual contrast levels increase as man-made features are added, vegetation is cleared, or landforms are disturbed or altered. The resulting visual effects accumulate with each successive project constructed. Cumulative impacts may occur for the following:

- Scenic Attractiveness
• Sensitive Viewpoints (Residences, Recreation and Preservation Sites, Transportation Corridors, Visually Sensitive Cultural Sites)

• Compatibility with Agency Management Objectives

Visual impacts from the construction and operation of a 230 kV transmission line are typically direct. Cumulative visual impacts would result from the visibility of the Project and other actions from sensitive viewpoints and from the visual contrast of the Project and other actions with the inherent aesthetic values of the landscape.

The significance of the cumulative impact would depend on the level of visual contrast between the existing surroundings and the Project, the degree to which the scenic quality of the surroundings was diminished, visibility of the Project and other actions from sensitive viewers, and compatibility of contrast levels with Agency Management Objectives. Potential visual impacts tend to be greatest when there are high sensitivity levels coupled with close views and highly contrasting project elements.

All Alternatives, with the exceptions of portions of Alternative 2a and Alternative 1, would parallel existing transmission lines. Generally, the first manmade objects in a natural setting cause the most noticeable change because of the contrast of form, line, color and texture with the surroundings. Thereafter, each successive change becomes less noticeable than the first. The sum of all the changes (e.g., form, line, color and texture) is more evident to the casual observer. Likewise, the first transmission line in a natural area normally causes the greatest incremental change. The cumulative visual impact of a corridor increases with the addition of each new line. Hence, a multi-line corridor would be more visible at greater distances than a single transmission line because of the cumulative contrast with the natural landscape.

The Project would combine with visual effects of existing transmission lines and would cumulatively result in increased structure sizes that would cause a significant increase in structure prominence and alteration of landscape character, and a comparable decrease in the scenic attractiveness of impacted landscapes. Sensitive viewers with views of the existing transmission corridors are already impacted by the cumulative effects of the existing lines. These increases in structure prominence could be considerable and could result in substantial cumulative impacts.

All Alternative routes would contribute to cumulative effects on scenic attractiveness and to sensitive viewers. North of the ANF, cumulative impacts would be increased where the Alternatives would cross or be close to the Antelope Transmission Project, the TRTP, Beacon Solar Energy Project, the Alta Wind Energy Center, the Windstar Wind Energy Project, the PdV Wind Energy Project, the AV Solar Ranch One Project, other projects shown in Table 5-6, and any development on lands included in BLM applications for wind or solar generation. These projects would potentially result in structure contrast due to highly visible wind turbines, solar collectors, and transmission towers and conductors; and landform and vegetation contrast created by vegetation clearing and grading for access roads and construction areas. The California High Speed Rail and the Antelope Valley Water Bank Project would contribute to cumulative impacts in this area due to landform and vegetation contrast created by vegetation clearing and grading. The Centennial project would also result in landform and vegetation contrast due to clearing and
grading and structure contrast due to the addition of large numbers of structures. Within the ANF, Alternative 1 would increase cumulative impacts to sensitive viewpoints where it would be close to the Pacific Pipeline Storm Relocation Project and Access Road Repairs. The project would potentially create landform and vegetation contrast due to vegetation clearing and grading.

**Scenic Attractiveness**

Cumulative impacts to scenic attractiveness would result from the visual contrast of the BRRTP and other actions with the inherent aesthetic values of the landscape. Scenic attractiveness, or scenic quality, was inventoried based on BLM criteria in accordance with BLM Manual Handbook 8410-1 (II. Scenic Quality Evaluation) on undeveloped private and BLM lands; scenic attractiveness/scenic quality data was available on the ANF lands, and referenced in those areas where applicable. While cumulative impacts would occur for Scenic Attractiveness Class C areas, these impacts would generally be low. Greater impacts would occur for Scenic Attractiveness Class A and Class B areas, which include a Class A area in the Castaic Lake area and Class B areas including the ANF, the unincorporated community of Leona Valley, the Ritter Ranch Area, the Antelope Valley California Poppy Reserve area, areas west and south of Castaic Lake, and areas between the ANF and the unincorporated community of Agua Dulce. The majority of cumulative impacts to scenic attractiveness would result from the combination of the BRRTP with the visual effects of existing transmission lines. Present and reasonably foreseeable actions combined with the BRRTP would contribute to cumulative impacts to Class B Scenic attractiveness, and include the Pacific Pipeline Storm Relocation Project and Access Road Repairs, and AV Solar Ranch One.

**Sensitive Viewpoints**

The BRRTP and other projects discussed above that would be visible from the same sensitive viewpoint or viewed in sequence along a sensitive transportation corridor would contribute to cumulative impacts for sensitive viewers.

Viewers that would potentially be impacted by the combination of the BRRTP and other actions are primarily residences. Viewers along State Highway 14, an eligible state scenic highway, would potentially be impacted by the Project in combination with development on lands identified in BLM applications for wind or solar generation and with the California High Speed Rail Project. Cumulative impacts would potentially occur for the Pacific Crest Trail due to views of Alternative 1 in combination with the PdV Wind Energy Project and the Antelope Valley Water Bank Project. Views from the Antelope Valley California Poppy Reserve would potentially be impacted by the Project in combination with the Antelope Valley Water Bank Project. Views from several sensitive roadways, including Lancaster Road and the Old Ridge Route, both Second Priority County Scenic Highways, would be potentially impacted by views of Alternative 1 in combination with the Centennial Project.

Within the ANF, Alternative 1 would increase cumulative impacts to sensitive viewpoints where it would be close to the Pacific Pipeline Storm Relocation Project and Access Road Repairs project, which would create landform and vegetation contrast due to vegetation clearing and grading. Sensitive viewpoints that would potentially be impacted include the Templin vista point; Ridge Route Road, a First Priority County Scenic Highway; and I-5, a Second Priority County Scenic Highway.
Agency Management Objectives

ANF Land Management Plan Part 3, S9 is as follows:

**S9**: Design management activities to meet the Scenic Integrity Objectives (SIOs) shown on the Scenic Integrity Objectives Map.

The majority of the ANF that would be crossed by the Proposed Action and Alternatives is designated as having a High SIO. A transmission line is not typically compatible with the High SIO classification. Neither the existing transmission lines that would be paralleled by the Project within the ANF nor the Project are compatible with the established High SIO. Mitigation measures, listed in Chapter 4, may be effective at decreasing the visual contrast of the Project; however, they would not be adequate to achieve the High SIO. A Non-Specific Plan Amendment would be required for the BRRTP to cross High SIO areas of the ANF.

ANF Land Management Plan Part 2, ANF S1 is as follows:

**ANF S1** - Pacific Crest Trail - Protect scenic integrity of foreground views as well as from designated viewpoints. Where practicable, avoid establishing nonconforming land uses within the viewshed of the trail.

Within the ANF, Alternative 1, Alternative 2, Alternative 2a, and Alternative 3 would contribute to cumulative impacts to the Pacific Crest National Scenic Trail where it would be crossed and where foreground views of the Project would occur. Neither the existing transmission lines that would be paralleled by the Project within the ANF nor the Project meet the Plan Standard. Mitigation measures, listed in Chapter 4, may be effective at decreasing the impact of the Project to the trail; however, they would not be adequate to meet the Plan Standard. A Project-specific ANF Plan Amendment would be required for the areas of the Project that would impact the trail.

Cultural Resources

Introduction

Cumulative effects on cultural resources are those effects that result from incremental impacts of the BRRTTP when added to other past, present and reasonably foreseeable future actions. Analysis of cumulative effects places project-specific impacts into a broader context that takes into account the full range of impacts on cultural resources by actions taking place over a given space and time. Cumulative effects may be considered a significant impact to the environment, because cultural resources are non-renewable and the loss of California’s heritage may result from the combined, incremental effects of many actions.

Impact Area

The impact area is Los Angeles County north of the San Fernando Valley and eastern Kern County. While prehistoric and historic Native American groups in Southern California did not have formal boundaries, the projects included in the cumulative analysis fall in a large enough area to encompass the traditional hunting and gathering territories of several groups. Likewise,
the historic Euroamerican occupation in the area included a variety of activities, for example mining, ranching, and transportation, and population centers.

**Present and Reasonably Foreseeable Actions**

Present and reasonably foreseeable actions considered for the cumulative effects analysis are described in Section 5.2. Figure 5-1 illustrates the locations of the major projects.

**Direct and Indirect Impacts Summary**

Most ground disturbing activities constitute a direct impact to cultural resources. Preparation of the construction site and grading of access roads can directly impact cultural resources. Ground clearing can compact soils, crush artifacts, and alter prehistoric and historic features. Although some construction activities are temporary, damage to cultural resources resulting from these activities is permanent.

Indirect access-related impacts to cultural resources can be caused by improving existing roads or creating new roads into a previously remote area, thereby increasing pedestrian and vehicle traffic. The likelihood of unauthorized collection of artifacts and intentional, as well as inadvertent, destruction of structures or features increases with ease of access.

Indirect effects to cultural resources can also include erosion caused by nearby construction activities (e.g., a new road) that may not have directly impacted the resource.

Visual impacts may occur to some significant cultural resources, such as sacred sites, historic roads and some historic buildings, when modern industrial structures are introduced into the viewshed.

Finally, despite data recovery and other mitigation measures, there would likely be over time an unquantifiable cumulative loss of data about the past. Similarly, Native Americans may feel a cumulative loss of cultural identity as prehistoric archaeological sites are impacted by the projects described in Section 5-2.

**Impacting Factors**

Overall, present and foreseeable projects on federal, State, county, city, and private land in the impact area would probably encompass over 120,000 acres of development, although the extent of ground disturbance within each project footprint would vary widely, as would the potential for adverse visual effects on cultural resources. Table 5-7 briefly summarizes the range of impacts to cultural resources that would most likely be associated with different types of actions.

<table>
<thead>
<tr>
<th>Project Type</th>
<th>Potential Visual Impact</th>
<th>Potential Ground Disturbance Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmission Projects</td>
<td>Height of towers</td>
<td>Access roads, vegetation clearance, structure placement, erosion</td>
</tr>
<tr>
<td>Generation Projects (Wind and Solar)</td>
<td>Height of wind turbines and expanse of solar panels</td>
<td>Access roads, vegetation clearance, turbine tower/panel foundations, erosion</td>
</tr>
</tbody>
</table>

**Table 5-7. Potential Impacts to Cultural Resources Caused by Different Types of Projects**
### Cumulative Effects Evaluation

The National Historic Preservation Act (NHPA); state CEQA guidance; and various agreement documents between the BLM, USFS, California State Historic Preservation Office (SHPO), and other agencies all provide specific guidance on how cultural resources should be managed in regard to proposed projects on federal, State, or private land in California. Therefore, it is assumed that all projects that could potentially affect cultural resources in the BRRTP cumulative impact area would be required to have some level of cultural resource documentation, evaluation, impact assessment, and, if necessary, mitigation. In many cases, potential impacts may be reduced or eliminated by avoiding significant cultural resources through project redesign or by implementing mitigation measures, such as data recovery. Despite mitigation efforts, cumulative impacts to cultural resources could result from the loss of irreplaceable cultural resources from development of over 225,000 acres in the BRRTP vicinity.

The projects listed in Section 5.2 have already complied or would need to comply with Section 106 of the NHPA or CEQA. Cultural resource surveys, evaluations of National Register and California Register listing eligibility, and other activities have likely been performed for the projects or would be performed in the future. The numbers and types of cultural resources potentially affected by these projects are unknown at this time. However, it is reasonable to assume that the overall density of cultural resources within these 225,000 acres would be comparable to the overall density of cultural resources in the BRRTP area. A cultural resource survey of the BRRTP action Alternatives has not yet occurred. However, any one of the four BRRTP action Alternatives could potentially affect cultural resources in areas covering approximately 1,500 to 2,000 acres (depending on the length of the 200-foot-wide ROW of the selected Alternative). This acreage would be less than one percent of the present and foreseeable development of 225,000 acres in the surrounding area. Therefore, construction of the BRRTP would make only a small contribution to the cumulative quantitative loss of cultural resources in the vicinity of the Project, particularly with implementation of the stipulations outlined in the Programmatic Agreement (PA) being prepared by the BLM, ANF, and California SHPO.

### Wildfire and Fuels

#### Introduction

This section describes cumulative effects on wildfire and fuels that would be caused by implementation of the BRRTP in combination with other past, present and reasonable future projects.
Impact Area

The cumulative effect impact area encompasses the entire BRRTP fireshed. Cumulative effects are evaluated to the geographic extent of the fireshed boundary due to similar wildfire risks across the fireshed.

Present and Reasonable Foreseeable Actions

Projects identified within the BRRTP fireshed that could contribute to wildfire- and fuels-related cumulative impacts include proposed energy infrastructure projects, community development projects, and landscape management projects. Refer to Figure 5-1 for a map of major cumulative projects within the Project area. The following projects have been specifically identified for this cumulative effects analysis:

1) Tehachapi Renewable Transmission Project: This project would involve new and upgraded transmission infrastructure along approximately 173 miles of new and existing rights-of-way (ROW) in southern Kern County, portions of Los Angeles County, including the ANF, and the southwestern portion of San Bernardino County, California to integrate new wind generation.

2) Antelope Transmission Project: The project consists of a 25.6-mile 500 kV transmission line between Southern California Edison’s existing Antelope Substation (City of Lancaster) and Pardee Substation (City of Santa Clarita).

3) Pacific Pipeline Storm Relocation Project and Access Road Repair: This project would relocate several miles of crude oil lines to stable ground locations within ANF.

4) Centennial Development Project: The project, located in the unincorporated community of Centennial, would include a specific plan and subdivision entitlements (i.e., tract maps and conditional use permits) for a master planned community of up to 23,000 dwelling units and 14 million total square feet of non-residential development.

5) Tule Ridge/South Portal Project: This project is a USFS proposed fuel reduction and re-establishment of a fuel break in ANF.

6) Jupiter Fuel Break Project: This USFS project begins southwest of the unincorporated community of Green Valley and travels east bisecting Jupiter Mountain before heading south down to Bouquet Reservoir. The purpose of the project is to re-establish an existing fuel break.

Cumulative Effects Evaluation

The ANF has a considerable history of wildfires and serves as a wildland-urban interface to unincorporated communities on the fringe of the forest boundary (Green Valley, Elizabeth Lake, and Lake Hughes). These unincorporated communities are particularly susceptible to fire under conditions of wind, and would be vulnerable to ANF wildfires due to their proximate location.

Generally, fires are fought at locations where there is ground-based access to wildlands by road, and by aerial access to wildlands where obstacles, such as transmission lines, do not exist. A
new transmission line that is not located adjacent to an existing transmission line effectively creates a new barrier to firefighting effectiveness in a new location. Some of the proposed Alternatives would be in areas where there currently are no transmission lines or towers. Alternatives 1, 2a and 3 of the BRRTP, in combination with the Antelope Transmission Project, which is currently being constructed, and the approved—but not yet constructed—TRTP, would result in impacting the effectiveness of firefighting by introducing new transmission lines and structures in areas that currently are undeveloped. Therefore, there would be an incremental contribution to the effectiveness of firefighting in areas of new and/or additional transmission lines.

Several developments are in various stages of planning and implementation within the BRRTP fireshed. Development within the fireshed increases the human influence and activity adjacent to and within wildlands, thereby increasing the risk of wildfire. Increased travel on roadways can contribute to ignitions that result in fire hazards. Construction and maintenance activities also can result in ignitions in areas that are considered to have moderate to very high fire sensitivity. Specifically, sparks generated by idling construction vehicles, welding equipment, power tools, or other sources of human-influenced ignition (e.g., cigarette smoking) could accidentally ignite dry and overgrown vegetation located in or adjacent to the Project ROW or staging areas, resulting in a wildfire.

Another source of wildfire hazards that could occur with the Proposed Action and Alternatives in conjunction with the cumulative projects included in this evaluation is an increase in the distribution of non-native plant species within the BRRTP fireshed. The Project includes mitigation measures that assist in the discouragement of the spreading of non-invasive plant species (Mitigation Measure BIO-2a, Prevent the spread of invasive weeds). Similarly, the Antelope Transmission Project and the TRTP contain mitigation that discourages the spreading of non-native plant species. Similar mitigation measures are expected for any reasonably foreseeable developments considered in the cumulative analysis. However, not all activities that result in plant dispersion can be regulated. Non-native plant species can be spread through human travel on roadways and recreational hiking in wildland areas, both of which can spread non-native plant seeds in soils compacted in tire treads and in the soles of hiking boots. Additionally, in areas where there may be helicopter mitigation, there is the potential for the transport of seeds of non-native species. While mitigation would be implemented into the Project, it is not possible to totally eliminate the potential for non-native species to be introduced into the cumulative project area; thus, this impact would be considered cumulatively adverse.

In relation to the existing fire sensitivity in the fireshed, it should be noted that two fuel reduction programs, the Jupiter Fuel Reduction Project and the Tule Ridge/South Portal Fuel Reduction Project, are currently being implemented in the fireshed, both of which have beneficial impacts in relation to wildfire suppression and firefighting effectiveness.

Only Alternatives 2 and 2a would be directly impacted by the Tule Ridge/South Portal Project. The ongoing implementation of these two fuel reduction projects would assist in reducing the overall wildfire sensitivity in the fireshed, especially in areas where wildlands are adjacent to urban development in the vicinity of the unincorporated community of Green Valley.
To minimize the adverse and cumulative impacts of the Project, mitigation measures, as described in Chapter 4, would be applied to the Proposed Action or Alternatives. No additional mitigation is available to further reduce the Project’s contribution to significant cumulative effects on wildfire prevention and suppression.

**Electrical Effects**

The electrical effects associated with the Proposed Action or Alternatives would occur in the immediate vicinity of the BRRTP transmission line ROW. These impacts would be similar to the impacts of the existing LADWP and SCE transmission lines, which the Project would be adjacent to. Due to the nature of electric fields, these impacts would not be additive, and the Proposed Action or action Alternatives would not result in greater electrical fields in areas of existing lines. As distinguished from electric fields, magnetic fields from the Proposed Action or action Alternatives and other future projects that entail construction and operation of new transmission lines adjacent to existing lines would be additive resulting in a changes to existing magnetic fields. In this instance, the magnetic field from the two facilities would interact in a manner such that the cumulative impact would be a change in the magnetic field at the edge of the Project ROW. Depending upon a number of variables, this magnetic field change could result in either an increase or decrease in the field strength. The Electric and Magnetic Fields Management Plan (see Appendix E of this Final EIS/EIR) addresses mitigation techniques to reduce the magnetic fields at the 230 kV transmission line edge of the ROW, a minimum of 15% of which meets CPUC guidelines for “no cost” or “low cost” design considerations.

**Social and Economic Conditions**

**Introduction**

This section describes cumulative effects on social and economic conditions that would be caused by implementation of the BRRTP in combination with other past, present, and reasonable future projects.

**Impact Area**

The geographic extent of the cumulative impacts analysis for Socioeconomics is southwestern Kern County and northern Los Angeles County, since this area is the likely area from which local workers would be drawn for the Project and employment indirectly created, and in which most workers who in-migrate would reside. Impacts in this area on employment, population, housing (particularly transient housing), and public services arising from the Proposed Action and its Alternatives are expected to be insignificant, with potential minor impacts on transient housing (hotels, motels, and RV parks).

**Present and Reasonable Foreseeable Future Actions**

This labor market area currently has significant unemployment, with construction employment having declined noticeably. With a relatively slow recovery in employment expected over the next two years, in the absence of large construction employment increases, some slack in the construction labor market is expected.

Numerous other projects have been proposed and/or are pending with the county and city jurisdictions in the region, but in general these projects are individually small, and can be
considered part of general overall growth in the area, already included in the socioeconomics baseline population and employment projections. It is the larger projects (e.g., Antelope Transmission Project, TRTP) that may be considered “additional” potential developments that would materially affect baseline projections. In addition, these would primarily serve export markets, and thus could have noticeable ripple effects in the local economy, entailing further increases in population and demand for housing and public services.

A number of these potentially medium-to-large construction projects have been identified whose construction labor demands are unknown, or which may be medium to large (of unknown, or approximately equal or greater, construction worker demand). These projects are detailed in Section 5.2, Cumulative Projects List.

**Cumulative Effects Evaluation**

Operation impacts of the Proposed Action and Alternatives have previously been assessed as unnoticeable (see Chapter 4, Section 4.2.13) because operation would entail only a handful of workers. Therefore, no cumulative impacts of operation are expected. However, its construction impacts would be noticeable, although not significant by themselves. If construction occurs at the same time as one or more of the projects listed in Section 5.2, the combined impacts of construction worker in-migration, and those of the projects’ ripple effects, could be noticeable. These projects would have the potential to impact existing development, and could be cumulatively considerable.

The potential cumulative impacts to social and economic conditions would be primarily temporary. Construction workforces for identified projects would be significantly larger than their operations workforces, and construction would occur over a relatively short term (generally between one and three years).

The Project area is expected to have availability of construction labor due to the fact that, in recent years, construction employment has fallen by several thousand workers. Assuming that all projects in Table 5-1 were constructed at once, and that about one construction worker per MW was needed, only about 6,800 jobs would be created. This would be under the amount by which construction employment fell in the Project area from 2007 to 2011, and the employment demand increase would be spread across several years. In light of the loss of employment and population in recent years, local rental and ownership housing supplies would be expected to be adequate to accommodate population and employment increases. Thus, the expected resurgence of construction employment demand in the area would be viewed as a positive cumulative impact.

Potential adverse cumulative impacts would be created on transient housing such as hotels and RV capacity. The economic downturn in the region from 2007 to 2010 has likely decreased demand for transient housing, which is mostly located in Lancaster, Palmdale, California City, Mojave, Tehachapi, and Santa Clarita. Given the existence of excess capacity, the cities are well-situated to accommodate increasing demand. However, in-migrating construction workers generally prefer hotels and RV parks closest to their work locations, and many of the cumulative projects are located in the more rural, undeveloped portions of the Project area. Few hotels and RV parks are in these rural areas. Thus, some rural hotels and RV park facilities may experience temporary shortages of supply. Market mechanisms such as price adjustment (some increased
cost for all visitors) and some increase in supply can be expected to ameliorate shortages. In addition, sharing of RVs and hotels could increase. However, the contribution of the Project to these cumulative impacts would be small, owing to the Project’s relatively small construction and operation employment and associated socioeconomic impacts.

The contribution of the Project Alternatives to any cumulative impacts that may occur would be similar to, but slightly higher than, the contribution of the Proposed Action to cumulative impacts. However, the difference would likely be very minor, because the Alternatives all would have only slightly higher work forces and local purchases than the Proposed Action. Since the cumulative impacts of the Proposed Action would be insignificant, the cumulative impacts of Project Alternatives are also assessed as insignificant.

5.3.2 NATURAL ENVIRONMENT

Biological Resources

Introduction

Cumulative effects for biological resources apply to both plant and wildlife species and must take into account known distribution, availability of preferred habitat, designated critical habitat, local population size, and likely responses to effects for each species that is considered.

Impact Area

The region of influence for BRRTP’s biological cumulative effects is defined as any project within five miles of the Proposed Action or Alternatives, as well as any large projects in the wider vicinity (i.e., solar development, wind development). This five-mile boundary is assumed to account for impacts to most plants’ dispersion area and most animals’ migration corridors or individual home ranges. In the case of the California condor, which will often fly very long distances while foraging, a twenty-mile region of influence would be implemented.

Past, Present and Reasonable Foreseeable Actions

The Cumulative Projects Map (Figure 5-1) illustrates the locations of the major cumulative projects in the BRRTP area. The Cumulative Project List, described in Section 5.2, includes: 1) Electricity Transmission Projects; 2) Power Generation Projects; 3) Transportation and Public Facilities Projects; 4) Community Development Projects; 5) Recreation Projects; 6) Maintenance/Landscaping Projects; and 7) Local Development Projects.

It is expected that BRRTP’s cumulative effects would apply to both special-status plant and wildlife species. Special-status species are defined as any species currently listed, formally proposed for listing, or a candidate for listing as endangered or threatened under the federal Endangered Species Act (ESA) or California Endangered Species Act (CESA); any species designated as sensitive, of special concern, fully protected, or as a management indicator species by the Regional Forester, R5-USDA, California Department of Fish and Game (CDFG), or BLM; any species listed by the California Native Plant Society (CNPS) as List 1 or 2; or any species otherwise defined as rare, threatened, or endangered under the California Environmental Quality Act. Two sensitive plant species were observed within the ANF, while none were identified on areas surveyed outside the ANF. However, there may be additional sensitive plants on the ANF or outside the ANF that may be affected by BRRTP, including State or federal listed...
species, which were not identified during surveys or may occur on lands not surveyed. These species may in turn be affected by other past, present, or future projects such as those described previously, especially those which occur in the ANF. Additionally, there is the potential for numerous special-status animals to occur and be affected by BRRTP. Many of these are known to occur within the Project area due to recent observations, and some of them are listed at the State and/or federal level, such as the desert tortoise (Gopherus agassizii) in the Mojave Desert, the unarmored threespine stickleback (Gasterosteus aculeatus williamsoni) in Bouquet Creek, or the coastal California gnatcatcher (Polioptila californica californica) in the coastal sage scrub at the southern end of BRRTP. All three of these species, along with many other special-status terrestrial, aquatic, and/or aerial species, may be impacted by the cumulative effects of BRRTP with other projects in the area that require similar actions over these species’ ranges.

Numerous energy infrastructure, wind and solar generation projects are in various stages of planning and development within the vicinity of the Project as described in Section 5.2. Table 5-8 summarizes which projects may cumulatively impact the resources along the Alternatives.

<table>
<thead>
<tr>
<th>Project</th>
<th>Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absolutely Solar Project</td>
<td>2, 2a, 3</td>
</tr>
<tr>
<td>Alpine Solar Project</td>
<td>1</td>
</tr>
<tr>
<td>Alpine Solar Project Addition</td>
<td>1</td>
</tr>
<tr>
<td>Alta East Wind Project</td>
<td>1, 2, 2a, 3</td>
</tr>
<tr>
<td>Alta-Oak Creek Mojave Wind Energy Project</td>
<td>1, 2, 2a, 3</td>
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<tr>
<td>Antelope Solar 1 Project</td>
<td>2, 2a, 3</td>
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<tr>
<td>Antelope Solar 2 Project</td>
<td>2, 2a, 3</td>
</tr>
<tr>
<td>Antelope Solar Farm Project</td>
<td>2, 2a, 3</td>
</tr>
<tr>
<td>Antelope Transmission Project--Segment 1</td>
<td>3</td>
</tr>
<tr>
<td>Antelope Transmission Project--Segment 2</td>
<td>3</td>
</tr>
<tr>
<td>Antelope Transmission Project--Segment 3</td>
<td>1, 2, 2a, 3</td>
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<tr>
<td>Antelope Valley Solar Project</td>
<td>2, 2a, 3</td>
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<td>AV Solar Ranch One</td>
<td>2, 2a, 3</td>
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<tr>
<td>Avalon Wind Project</td>
<td>1, 2, 2a, 3</td>
</tr>
<tr>
<td>Barren Ridge Type II Project</td>
<td>1, 2, 2a, 3</td>
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<td>Beacon Solar Energy Project</td>
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<td>Blue Sky Wind Energy Project</td>
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<td>Catalina Renewable Energy Project</td>
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<td>Lower West Wind Project</td>
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<td>Monte Vista Solar Array</td>
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</tr>
<tr>
<td>Morgan Hills Wind Project</td>
<td>1</td>
</tr>
<tr>
<td>Oak Creek – Sun Creek Type II Project</td>
<td>1, 2, 2a, 3</td>
</tr>
</tbody>
</table>
### Direct and Indirect Impacts Summary

Both direct and indirect impacts are expected to occur to vegetation and wildlife. Direct impacts are defined as those that occur at the same time and place as BRRTP or the surrounding projects mentioned in Section 5.2. Indirect impacts are defined as those which could be caused by BRRTP or surrounding projects, but which would occur at a later time or occur at a distance farther removed from the direct construction corridor. While all of the direct and indirect impacts below could possibly occur due to BRRTP, not all may necessarily apply to each project listed in Section 5.2. However, any common direct or indirect impacts between BRRTP and any of the above-listed projects would exert cumulative effects of varying degrees on certain species or groups of species.

### Direct Impacts
- Habitat loss, fragmentation, or degradation (short-term and long-term);
- Direct injury or mortality;
- Disturbance of special-status plants or animals (dust deposition on or crushing of plants, disturbance of an animal’s daily activities or natural history); and
- Dispersal of local wildlife (including mortality of young for nesting wildlife).
Indirect Impacts

- Habitat degradation (spread of non-native plant species, soil compaction);
- Indirect injury or mortality (dispersal leading to increased predation risk and/or competition, ingestion of construction debris);
- Disturbance of special-status plants (loss of plant vigor due to dust or mud deposition);
- Reduction in water quality due to insufficient erosion control; and
- Avian collisions and/or electrocutions.

Cumulative Effects Evaluation

Cumulative effects are evaluated below for each receptor or group of receptors that may be affected by BRRTP and surrounding projects. Because of the common susceptibility that plants have to potential project impacts, they are grouped together into one category. Wildlife are broken into three categories which consist of terrestrial (including burrowing), aquatic, and aerial species. Plants and animals which are listed as Endangered, Threatened, or Candidate species according to State or federal regulations are individually separated into their appropriate categories above. Plants and animals which are sensitive according to BLM, CNPS, CDFG, or USFS are grouped into the general plants, terrestrial animals, aquatic animals, and aerial animals categories.

Plants

**Slender Mariposa Lily** (*Calochortus clavatus var. gracilis*) – The USFS sensitive slender mariposa lily has been identified on all Alternatives. Cumulative effects may be projected onto this species with the combined influence of BRRTP and the Pacific Pipeline Storm Relocation Project on Alternative 1 and LADWP’s Power Plant Two (PP2) Tailings Removal Project, SCE’s Antelope Transmission Project (ATP), and SCE’s Tehachapi Renewable Transmission Project (TRTP) on Alternatives 2, 2a and 3. The Pacific Pipeline Storm Relocation Project, located east of Alternative 1, would relocate several miles of crude oil lines to different locations and would likely result in some habitat loss to this species, although the specific amount is unknown (USFS 2010b). It is unknown if this would impact the 12 individuals that were identified on Alternative 1 during BRRTP botanical surveys (POWER 2010c), but would still result in a loss of habitat.

LADWP’s PP2 Tailings Removal Project, located west of Alternatives 2 and 2a, resulted in the removal of 150 individual slender mariposa lilies from its project area. However, while 400 individuals and nearly 1,700 individuals—with some overlap—were located on Alternative 2 during BRRTP botanical surveys in 2008 and 2009, respectively (POWER 2008b, POWER 2010c), none of these were part of the individuals removed during the PP2 Tailings Removal Project. An estimated 5,000 slender mariposa lilies, as well as several acres of suitable habitat, were impacted by SCE’s ATP, located in between Alternatives 2, 2a, and 3. Over 400 individuals were located on Alternative 3 during BRRTP botanical surveys, and would be impacted by habitat loss and degradation if not also individual removal, depending on specific plant locations (POWER 2008b). The effects from these three projects would exert a cumulative effect with BRRTP on slender mariposa lily by reducing the overall local population and also removing and degrading appropriate habitat.
There are currently 54 recorded occurrences of this species within the California Natural Diversity Database (CNDDB), including 51 in Los Angeles County and three in Ventura County, and 42 records in the Jepson Online Interchange, all from Los Angeles County. All CNDDB records are presumed extant, and 36 of these are from within the last decade. The largest of these is a cumulative 31,370 individual plants from numerous survey areas on Newhall Ranch in 2003; however, most other records in CNDDB are smaller than those seen during 2008 BRRTP surveys, although the total numbers observed in BRRTP surveys in 2008 and 2009 are composed of several dozen individually mapped populations. As such, the total number of slender mariposa lilies located within the Alternative 2 corridor represents a large amount of individuals from this species relative to many of the other documented occurrences. However, because the large number of slender mariposa lilies in the BRRTP Alternative 2 corridor is composed of many smaller populations ranging from one to 1,000 individuals, the impact that BRRTP construction would have on the species as a whole is dependent on which specific populations would be impacted within the Project Area.

SCE’s TRTP, located east and southeast of BRRTP, estimated that it was unlikely for slender mariposa lily to be present within TRTP Segments 4 and 5, but that individuals could possibly be present on Segments 6 and 11 due to nearby populations (Aspen 2009). Both of the latter TRTP segments are located within the ANF south of California SR 14. Loss of individuals or of habitat in these areas would exert a cumulative effect with BRRTP on slender mariposa lily by reducing the overall regional population and/or habitat.

Several other projects are located in the vicinity of Alternatives 1, 2, and 2a, including the construction of the unincorporated community of Centennial, California partially within Alternative 1 north of ANF by Centennial Founders, LLC; LADWP’s sediment removal within Castaic Creek; LADWP’s repair of the Elizabeth Tunnel located west of Alternatives 2 and 2a; the USFS weed removal within Bouquet Creek; and various fuel treatment projects. The Centennial Project construction is unlikely to have any impact on slender mariposa lily because slender mariposa lily is not known to grow on the northern slopes of the San Gabriel and Sierra Pelona Mountains and is unlikely to occur within this project area (Aspen 2009, USFS 2010a). The sediment removal within Castaic Creek which occurred in fall 2009 had no effect on slender mariposa lily because the habitat that was removed was unsuitable for this species. While the Elizabeth Tunnel repair project conducted in fall 2009 was in an area surrounded by chaparral vegetation, the specific project work resulted in little, if any, impact to the chaparral on the slopes. The weed removal within Bouquet Creek by USFS staff had no effect on slender mariposa lily because there was no suitable habitat for it within the project area.

Nearly 3,000 acres of ANF land in the vicinity of Tule Ridge and South Portal Canyon are expected to undergo fuel treatment in response to a recent fire in 2008 (USFS 2009). Treatments would consist of mastication, crushing, cutting, piling, and burning of vegetation. While no slender mariposa lilies were identified along Tule Ridge Road, Burns Road, or Ruby Clearwater Fire Road, it is likely that habitat for this species would be impacted, if not previously unidentified individuals as well. Vegetation removal at various plantations in the ANF (USFS 2010) resulted in more than 100 slender mariposa lilies being impacted at the Hollow Tree and Artesian Springs Plantations (USFS 2011).
While no botanical surveys were conducted on new 230 kV circuit corridor and reconductoring corridor south of Haskell Canyon, there may be existing habitat for or individuals of this species on these corridors. General practices that would reduce short-term or long-term effects to special-status plant species or their habitat include GP-24, GP-25, GP-33, GP-35, GP-36, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to special-status plant species or their habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Compensate for habitat modifications per coordination with responsible resource agencies), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat). Cumulative effects on slender mariposa lily between BRRTP and past, present, and foreseeable projects would be significant on all the Alternatives.

**Short-joint Beavertail (Opuntia basilaris var. brachyclada)** – The USFS and BLM sensitive short-joint beavertail has been identified on all Alternatives. Cumulative effects may be projected onto known populations of this species with the combined influence of BRRTP and the construction of the Centennial Project and the Pacific Pipeline Storm Relocation Project on Alternative 1 and LADWP’s PP2 Tailings Removal Project, SCE’s ATP, and SCE’s TRTP on Alternative 2, 2a and 3. Centennial Founders’ construction of the Centennial Project would likely remove short-joint beavertail habitat, although it is unknown if any individual plants occur within its project area. It is located around SR 138 where the ANF gives way to the Antelope Valley. The Pacific Pipeline Storm Relocation Project, located east of Alternative 1, would relocate several miles of crude oil lines to different locations and would likely result in some habitat loss to this species, although the specific amount is unknown (USFS 2010b). It is unknown if this would impact the 40 individuals that were identified on Alternative 1 during BRRTP botanical surveys (POWER 2010c), but it would still result in a loss of habitat.

LADWP’s PP2 Tailings Removal Project, located west of Alternatives 2 and 2a, did not have any identified individuals of this species, although suitable habitat was removed during the project. During 2008 and 2009 BRRTP botanical surveys, 84 short-joint beavertail individuals were identified along Alternatives 2 and 2a (POWER 2008b, POWER 2010c) which would likely be affected by BRRTP construction, resulting in a combined effect of habitat loss in both areas. No short-joint beavertails were located during botanical surveys for SCE’s ATP (LSA 2007e, LSA 2007f, LSA 2007g), but appropriate habitat for this species was impacted during construction. Five individuals were located on Alternative 3 during BRRTP botanical surveys, and would be impacted by habitat loss and degradation if not also individual removal, depending on specific plant locations (POWER 2008b). SCE’s TRTP, located east and southeast of BRRTP, estimated that it was likely for short-joint beavertail to be present within TRTP Segment 5, and that individuals are present on Segments 6 and 11 (Aspen 2009). TRTP Segment 5 originates in the southern section of ANF and runs adjacent to Alternative 3; TRTP Segments 6 and 11 are located within the southern section of ANF. Loss of individuals or of habitat in any of these areas would exert a cumulative effect with BRRTP on short-joint beavertail by reducing the overall local and regional population and/or habitat.

Several projects are located in the Antelope Valley and Mojave Desert near the northern portion of all Alternatives. While no specimens are known from these areas, these project areas may be
within habitat which is suitable for short-joint beavertail to grow. These projects include the Beacon Solar Energy Project, Pine Tree Solar Project, Alta Wind Energy Center: Alta-Oak Creek Mojave Project, PdV Wind Energy Project, Antelope Valley Water Bank Project, Antelope Solar 1 and 2, Willow Spring Solar Array, Silver Sun Greenworks, AV Solar Ranch One, and numerous parcels of land for which BLM has received applications to build wind or solar generation facilities. For projects which have available biological resource documents, these projects are not known to have short-joint beavertail present, but they may contain suitable habitat, and construction would affect that habitat by removing or degrading it for project sites. The California High Speed Rail runs along the edge of the southern section of ANF and along SR 14 between the northern and southern ANF sections; while there may be short-joint beavertail individuals and/or habitat located in this area along the edge of ANF, full biological studies of the rail line have not been conducted yet.

Some additional projects are located in the vicinity of Alternative 1, 2, and 2a, including LADWP’s sediment removal within Castaic Creek; LADWP’s repair of the Elizabeth Tunnel; and USFS weed removal within Bouquet Creek. The sediment removal within Castaic Creek, which occurred in fall 2009, had no effect on short-joint beavertail because the habitat that was removed was not appropriate for this species to grow in. While the Elizabeth Tunnel repair project conducted in fall 2009 was in an area surrounded by chaparral vegetation, the specific project work resulted in little, if any, impact to the chaparral on the slopes. The weed removal within Bouquet Creek by USFS staff had no effect on short-joint beavertail because there was no suitable habitat for it within the project area.

While no botanical surveys were conducted on new 230 kV circuit corridor and reconductoring corridor south of Haskell Canyon, there may be existing habitat for or individuals of this species on these corridors. General practices that would reduce short-term or long-term effects to special-status plant species or their habitat include GP-24, GP-25, GP-33, GP-35, GP-36, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to special-status plant species or their habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat). Cumulative effects on short-joint beavertail between BRRTP and past, present, and foreseeable projects would not be significant if properly mitigated.

**Non-listed Special-status Plant Species** – Many special-status plant species may occur in the BRRTP area, only two of which were identified during 2008, 2009, and 2010 botanical surveys. These include species listed as “sensitive” by the USFS and BLM and those listed by the State and the California Native Plant Society. Specific sensitive plant species and species of special concern that may occur in the Project area are described in greater detail in the Biological Resources Technical Report in Volume IV of this Final EIS/EIR. Large populations or many scattered individuals of sensitive plant species may have gone undetected in the limited surveys that were conducted. Direct impacts that may occur to these species include habitat loss and degradation due to construction activities and disturbance due to dust deposition or crushing (but not removal) of vegetation. Dust deposition may lead to reduced plant vigor if the plants are unable to sufficiently photosynthesize. Indirect impacts to this species include soil compaction...
from excessive activity and spread of non-native weed species as a result of seeds stuck to vehicles. Soil compaction may prevent sufficient water from reaching the roots of plants, which can lead to mortality or a reduction in vigor of the plant.

Non-native weed species tend to follow disturbance and can spread through vehicle tires or be carried by the wind from nearby established populations. With the amount of disturbance that may occur with this Project where new roads or tower sites are created, there could be a potentially large amount of non-native weed seeds spreading into bare or disturbed areas. Surrounding projects, whether large or small, result in some quantity of habitat loss and/or spread of non-native weeds, which in turn makes it difficult for native plants to establish and can affect whole habitats.

Several transmission line, wind, or solar energy projects occur within the BRRTP vicinity along the ANF, Antelope Valley, and Mojave Desert. These include the Alta East Wind Project, Avalon Wind Project, Catalina Renewable Energy Project, Beacon Solar Energy Project, Pacific Wind Energy Project, Pahnamid Wind Energy Project, Pine Tree Solar Project, Alta-Oak Creek Mojave Project, PdV Wind Energy Project, Antelope Solar 1 and 2, Willow Spring Solar Array, Silver Sun Greenworks, AV Solar Ranch One, RE Distributed Solar Project, TRTP, ATP, various parcels of land for which the BLM has applied to develop for wind or solar generation, and several other projects listed above. Additional projects in the BRRTP area include the Antelope Valley Water Bank Project, the California High Speed Rail, the construction of the Centennial Project, the Pacific Pipeline Storm Relocation, the ongoing Castaic Power Plant Sediment Removal, the PP2 Tailings Removal Project, the Elizabeth Tunnel repair, the Bouquet Creek Weed Removal Project, and the Grapevine Creek Streambed Diversion Project. All of these projects have or would result in vegetation loss and, although efforts are made to identify special-status plant species for avoidance before construction begins, some individuals may have been or may be missed, resulting in individual losses. It is not expected that any of these individual projects would lead to a change in listing status of any of these plants, but considered cumulatively they may be more significantly affected in local or regional populations of species.

General practices that would reduce short-term or long-term effects to special-status plant species or their habitat include GP-24, GP-25, GP-33, GP-35, GP-36, GP-41, GP-42, GP-43, GP-44, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to special-status plant species or their habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-13 (Protect special-status plant species and their habitat). However, large populations or many scattered individuals of sensitive plant species may have gone undetected in the limited surveys that were conducted along all the Alternatives, especially in more dense or inaccessible chaparral. Therefore, cumulative effects on special-status plant species between BRRTP and past, present, and foreseeable projects may be significant.

**Non-native Invasive Plant Species** – Numerous species of non-native invasive plants were identified within the Project area during 2008, 2009, and 2010 botanical surveys (POWER
These plants can destroy wildlife habitat, threaten listed species and native plants, and increase soil erosion and ground water loss. The plants that were identified within the Project area during surveys were split into categories composed of high-risk noxious weed species, moderate-risk noxious weed species, and low-risk noxious weed species or species for which there is relatively little information. High-risk species have high impacts on physical processes, plant and animal communities, and vegetation structure of the environments in which they establish. They typically experience moderate to high rates of dispersal and establishment and most have wide ecological distribution ranges. Moderate-risk species have clear impacts on physical processes, plant and animal communities, and vegetation structure of the communities in which they establish, but not as severe as the high-risk species. They generally experience moderate to high dispersal rates, with their establishment success dependent on ecological disturbance. Ecological amplitude and distribution may range from restricted to extensive.

Low-risk species have more minor impacts on a statewide level than either the high- or moderate-risk species. In some cases there is not enough information known about the species to justify an elevation into either of the other categories. They generally experience low to moderate dispersal rates, and although their ecological amplitude and distribution may be limited, these species may still be problematic on local levels. A greater discussion of BRRTTP-specific weed species, including which categories they are in, is in the Biological Resources Technical Report in Volume IV of this Final EIS/EIR.

Several transmission line, wind, or solar energy projects are within the BRRTTP vicinity along the ANF, Antelope Valley, and Mojave Desert. These include the Alta East Wind Project, Avalon Wind Project, Catalina Renewable Energy Project, Beacon Solar Energy Project, Pacific Wind Energy Project, Panamid Wind Energy Project, Pine Tree Solar Project, Alta-Oak Creek Mojave Project, PdV Wind Energy Project, Antelope Solar 1 and 2, Willow Spring Solar Array, Silver Sun Greenworks, AV Solar Ranch One, RE Distributed Solar Project, TRTP, ATP, various parcels of land for which the BLM has applied to develop for wind or solar generation, and several other projects listed above. Additional projects in the BRRTTP area include the Antelope Valley Water Bank Project, the California High Speed Rail, the construction of the Centennial Project, the Pacific Pipeline Storm Relocation, the ongoing Castaic Power Plant Sediment Removal, the PP2 Tailings Removal Project, the Elizabeth Tunnel repair, the Bouquet Creek Weed Removal Project, the Tule Ridge, Green Valley, and Leona Divide Fuelbreaks, the Hollow Tree and Artesian Springs Tree Plantation Fuel Removal projects, and the Grapevine Creek Streambed Diversion Project.

For any of these projects, disturbance related to construction or maintenance has the potential to increase infestations of noxious weed species, particularly if vegetation is cleared, because during regrowth the native species would be competing to re-establish at the same time that the noxious weed species are attempting to dominate the cleared area. Additionally, vehicles and personnel can carry weeds on-site with them and along access roads, increasing the likelihood of spreading noxious weed species into areas where they may not have been prevalent or increasing the size of existing local populations of noxious weeds. Some sites may contain existing noxious weed seed banks which would contribute to the spread of weed species as sites are disturbed. Some of these projects may be on existing weedy sites and construction would likely not contribute to a significant increase in weed abundance, but sites that are dominated by native plant species may be more susceptible to shifts in species composition and dominance.
However, the USFS Bouquet Creek Weed Removal Project focused on the removal of seven noxious weed species from selected sections of Bouquet and San Francisquito Creeks, which improved habitat quality and health for not only native plants but also several special-status wildlife species which could or do occur within the habitat present in these creeks.

Mitigation measures that would reduce short-term and long-term effects from non-native invasive plant species include mitigation measures BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities) and BIO-2 (Prevent the spread of invasive weeds). However, given the multitude of ground-disturbing projects in the vicinity of all the Alternatives and difficulty in weed eradication, cumulative effects from non-native invasive plant species between BRRTP and past, present, and foreseeable projects would be significant.

Terrestrial Wildlife

**Mohave Ground Squirrel (Spermophilus mohavensis)** – The State Threatened Mohave ground squirrel has been identified on the northernmost portion of all Alternatives, and may also occur just south of this area. Cumulative effects may be projected onto this species with the combined influence of the effects of BRRTP and those of the Alta East Wind Project, Avalon Wind Project, Catalina Renewable Energy Project, Beacon Solar Energy Project, Lower West Wind Project, Pacific Wind Energy Project, Pine Tree Solar Project, Alta Wind Energy Center: Alta-Oak Creek Mojave Project, PdV Wind Energy Project, RE Distributed Solar Project, Rising Tree Wind Project, Antelope Valley Water Bank Project, AV Solar Ranch One, California High Speed Rail, TRTP, numerous parcels of land for which BLM has received applications to build wind or solar generation facilities, and several other projects listed above. Biological resource documents are not available for all of these projects.

The Beacon Solar Energy Project identifies several project mitigation measures for Mohave ground squirrel, including a measure for a Mohave ground squirrel translocation plan, a measure for potential injury or fatality due to project construction or operation, and a statement of 115 acres of habitat to be acquired in mitigation for Mohave ground squirrel habitat loss (CEC 2010). Despite a 2006 CNDDB record within the project area, protocol surveys conducted for Mohave ground squirrel throughout the Alta-Oak Creek Mojave project area did not locate any individuals (Kern County 2009). However, habitat is present on all three sections of the project area which would be affected by construction. Should Mohave ground squirrels be present within the Alta-Oak Creek area, burrow crushing and mortality could also occur.

Within the project area for the PdV Wind Energy Project, although Mohave ground squirrel was determined to be absent based on protocol surveys, 921 acres of Mojave creosote bush within the site could support this species (Kern County 2007). SCE determined for TRTP that Mohave ground squirrel had a possibility of occurring on TRTP Segment 4, and was present on Segment 10, which runs near Alternative 1. TRTP is expected to result in habitat loss and fragmentation for the Mohave ground squirrel, along with crushing of burrows and vehicle collisions. No biological resource documents are publically available for any other of the aforementioned projects, but because they are all in the same general area as the above-described projects, they are likely to also possess suitable habitat for the Mohave ground squirrel. Because these projects would require ground to be cleared, mostly for wind or solar projects, there is potentially a very large amount of habitat that would be removed or degraded by construction of these various projects.
Construction of BRRTP, ATP, and TRTP would result in minor amounts of Mohave ground squirrel habitat fragmentation. Transmission towers would be cleared underneath but would represent small areas of vegetation removal and would be widely spaced apart from each other, allowing ground squirrels to continue to move under and around the transmission towers and transmission lines and presenting minimal impediments to migration. Vegetation clearance on the ROWs would likely result in long-term linear areas of bare ground or minimal vegetation for the length of the transmission line; however, because the ROWs would not generally be used by the public, they would not present the same dangers to migration and levels of fragmentation as high-use roads such as SR-14 or SR-58. The various solar and wind energy development projects in the area would present higher concentrated habitat fragmentation because they would impact entire large blocks of habitat. Mohave ground squirrels would still be able to move around the facilities and possibly through them, as well, depending on any fencing used around these sites.

Loss of individuals or habitat in these areas would exert a cumulative effect on Mohave ground squirrel by reducing the local population size or removing suitable habitat. The intensity of the cumulative effect is increased due to the fact that these projects would be ongoing for several years. The CNDDB lists 302 recorded occurrences of Mohave ground squirrel in California, 301 of which are presumed extant; 50 of these occurrences are from the last decade. Leitner (2008) presented metadata showing the distribution of trapping efforts, positive and negative, for Mohave ground squirrel throughout its historic range from 1998 to 2007, and also discusses regional records in the historic range. According to Leitner (2008), from 1998 to 2007, 52 grids were surveyed according to protocol requirements in the vicinity of the desert portion of Alternative 2 in Los Angeles County. The closest of these survey grids to Alternative 3 is 2.5 miles east; the closest to Alternative 2 is 10 miles east; the closest to Alternative 1 is 13 miles southeast. The species was not detected during any of these surveys.

Edwards Air Force Base (AFB), east of the Project area, has conducted surveys for Mohave ground squirrel, detecting individuals at six of 40 grids from 2003 to 2007 in the eastern portion of the base. The closest of the positive detections within Edwards AFB is 26 miles southeast of Alternative 1, 25 miles east of Alternative 2, and 27 miles northeast of Alternative 3. An additional 20 incidental observations of the species on Edwards AFB are included in Leitner (2008), concentrated in the central area of the base and in the eastern portion of the base in the vicinity of the positive trapping efforts. The closest of these observations to BRRTP is 20 miles southeast of Alternative 1, 18.5 miles southeast of Alternative 2, and 23 miles northeast of Alternative 3. Additional trapping southwest of the unincorporated community of Mojave has been conducted, and proposed routes of both Alternatives 1 and 2 span over several of these survey grids, which are mostly focused around the Tehachapi Wind Farm. These trapping efforts have not yielded any positive results, although two recent (2006) observations are recorded in CNDDB in the general area, one of which is 0.5 mile from Alternative 2 (Leitner 2008, CDFG 2011).

In his paper, Leitner (2008) identifies four core extant populations of Mohave ground squirrel based on incidental observations, regional surveys, and protocol survey grids, as well as several other non-core populations. While no populations are described for the BRRTP area, Leitner (2008) shows the Edwards AFB Core Area east of the BRRTP and the Little Dixie Wash Core
Area north of the BRRTP, within and north of Red Rock Canyon State Park. There are also two other non-core populations that Leitner shows as being east of SR-14 and north of SR-58. The closer of these is located within and just outside of the Kern County Desert Tortoise Natural Area, four miles east of Alternative 2 at its closest point but separated from BRRTP by SR-14. Thus, if any population(s) of Mohave ground squirrel is present within the BRRTP area, it is likely small given the extensive amount of trapping that has been conducted in the general area and the general lack of recorded occurrences west of SR-14 as shown by Leitner (2008) and CNDDB (CDFG 2011). Therefore, because any population living in the BRRTP area is likely relatively small, any impacts to Mohave ground squirrels or their habitats due to BRRTP may have a large effect in this immediate area. However, the impact that BRRTP would have on populations in the general region—the aforementioned local core and non-core populations—and throughout the Mohave ground squirrel’s range is relatively small in comparison.

General practices that would reduce short-term or long-term effects to Mohave ground squirrel include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to Mohave ground squirrel include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox). Cumulative effects on Mohave ground squirrel between BRRTP and past, present, and foreseeable projects in its vicinity would not be significant, if properly mitigated.

**Desert Tortoise (Gopherus agassizii)** – The State and federal Threatened desert tortoise is known to be present on the northernmost portion of all Alternatives and may also occur just south of this area. Cumulative effects may be projected onto this species with the combined influence of the effects of BRRTP and those of the Alta East Wind Project, Avalon Wind Project, Catalina Renewable Energy Project, Beacon Solar Energy Project, Lower West Wind Project, Pacific Wind Energy Project, Pine Tree Solar Project, Alta Wind Energy Center, Alta-Oak Creek Mojave Project, PdV Wind Energy Project, Antelope Valley Water Bank Project, AV Solar Ranch One, Ridge Rider Solar Park Project, Rosamond Solar Array, Willow Springs Solar Array Project, RE Distributed Solar Project, Rising Tree Wind Project, California High Speed Rail, numerous parcels of land for which BLM has received applications to build wind or solar generation facilities, and several other projects listed above. Biological resource documents are not available for all of these projects.

The Beacon Solar Energy Project identifies several project mitigation measures for desert tortoise, including a measure for a desert tortoise translocation plan, a measure for potential injury or fatality due to project construction or operation, and a statement of 115 acres of habitat to be acquired in mitigation for desert tortoise habitat loss (CEC 2010). Protocol desert tortoise surveys conducted for Alta-Oak Creek located two individual tortoises, scattered desert tortoise sign, and 8,436 acres of suitable habitat within the project area (Kern County 2009). The project is expected to have impacts to desert tortoise that could include mortality by vehicle collision, habitat loss and degradation, increased predation, and burrow crushing.
Within the project area for the PdV Wind Energy Project, the desert tortoise was determined by literature review, consultation, and surveys to be absent (Kern County 2007). While there are 5,555 acres of suitable desert tortoise habitat on the project site, it is expected that only 276.8 acres would be affected, leaving over 95% of the project area with habitat. No biological resource documents are publicly available for any other of the aforementioned projects, but because they are all in the same general area as the above-described projects, they are likely to also possess suitable habitat for the desert tortoise. Because these projects would require ground to be cleared, mostly for wind or solar projects, there is potentially a very large amount of habitat that would be removed or degraded by construction of these various projects.

Construction of BRRTP, ATP, and TRTP would result in minor amounts of habitat fragmentation for desert tortoise. Transmission towers would be cleared underneath but would represent small areas of vegetation removal and would be widely spaced apart from each other, allowing tortoises to continue to move under and around the transmission towers and transmission lines and presenting minimal impediments to migration. Vegetation clearance on the ROWs would likely result in long-term linear areas of bare ground or minimal vegetation for the length of the transmission line; however, because the ROWs would not generally be used by the public, they would not present the same dangers to migration and levels of fragmentation as high-use roads such as SR-14 or SR-58. The various solar and wind energy development projects in the area would present higher concentrated habitat fragmentation because they would impact entire large blocks of habitat. Tortoises would still be able to move around the facilities.

Loss of individuals or habitat in these areas would exert a cumulative effect on desert tortoise by reducing the local population size or removing suitable habitat. The CNDDB lists 263 recorded occurrences for desert tortoise within California (CDFG 2011); only 23 of these are from Kern County and only one is from Los Angeles County. Fifteen of these 24 occurrences—all in Kern County—are from the last ten years, and all 24 are presumed extant. Of these, five are from the BRRTP area within the last ten years and three are of live specimens (CDFG 2011); one of these was an identification made by POWER Engineers, Inc. (BRRTP Biological Technical Report 2011). Tortoise population surveys have been conducted for the various desert tortoise recovery units over the last decade (USFWS 2006, USFWS 2009a, USFWS 2010a, USFWS 2010b). Of the six recovery units (Northeast Mojave, Eastern Mojave, Eastern Colorado, Northern Colorado, Western Mojave, and Upper Virgin River), only the Upper Virgin River Recovery Unit is completely outside of California. BRRTP would be located within the Western Mojave Recovery Unit. During surveys conducted within the recovery units, the Western Mojave Recovery Unit was determined to have the third lowest average density of desert tortoises, at 5.24 per square kilometer, but also the largest average density of the three “Mojave” recovery units, as shown in the table below. The BRRTP would not be located within any Desert Wildlife Management Areas or in the Desert Tortoise Natural Area.

**Table 5-9. Estimated Desert Tortoise Density (/km²) in California Recovery Units (2001 – 2010)**

<table>
<thead>
<tr>
<th>Recovery Unit</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>Average</th>
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<tr>
<td>Northeast Mojave</td>
<td>2.32</td>
<td>0.84</td>
<td>3.01</td>
<td>1.42</td>
<td>2.15</td>
<td>-</td>
<td>1.7</td>
<td>-</td>
<td>3.4</td>
<td>3.2</td>
<td>2.26</td>
</tr>
<tr>
<td>Eastern Mojave</td>
<td>3.00</td>
<td>4.11</td>
<td>2.76</td>
<td>5.57</td>
<td>5.54</td>
<td>-</td>
<td>5.8</td>
<td>6.4</td>
<td>5.1</td>
<td>3.6</td>
<td>4.65</td>
</tr>
<tr>
<td>Eastern Colorado</td>
<td>10.80</td>
<td>8.28</td>
<td>4.00</td>
<td>5.38</td>
<td>6.38</td>
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<td>5.8</td>
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<td>Northern Colorado</td>
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<td>4.6</td>
<td>5.8</td>
<td>9.2</td>
<td>4.4</td>
<td>6.68</td>
</tr>
</tbody>
</table>

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The intensity of the cumulative effect is increased due to the fact that these projects would be ongoing for several years. Concerning the desert tortoise, the accelerated loss of habitat—combined with the increased potential for losses of fossorial or slow-moving species, such as the desert tortoise—would represent the most significant cumulative impact from the BRRTP and other nearby developments. The Proposed Action, in conjunction with other projects, would diminish habitat availability and quality, and potentially result in the “taking” of these species. Because this species can take up to 20 years to reach sexual maturity and has low reproductive rates (USFWS 2008), any actions that stress, harm, or kill desert tortoises can be considered significant impacts under CEQA.

General practices that would reduce short-term or long-term effects to desert tortoise include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to desert tortoise include AIR-2a (Implement fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-23 (Protect desert tortoise and habitat loss). Cumulative effects on desert tortoise between BRRTP and past, present, and foreseeable projects in its vicinity would be significant under CEQA on all the Alternatives.

Non-listed Special-status Terrestrial Species – Numerous special-status terrestrial species that are not listed by the USFWS may occur within the southern, ANF portion and the northern, Antelope Valley and Mojave Desert portion of BRRTP. These include species listed as “sensitive” by the USFS and BLM and those listed as “species of special concern” by CDFG. Specific sensitive wildlife species and species of special concern are described in greater detail in the Biological Resources Technical Report in Volume IV of this Final EIS/EIR. Based on known records and surveys, some of these species are expected to be more prevalent than others. Many of these animals have overlapping habitat preferences or distributions, and many would be affected by project activities, most notably habitat loss or degradation that would occur from construction and maintenance of access roads and tower sites.

For the most part, many of the surrounding projects would have similar effects to the same species. The ATP and TRTP run close to BRRTP and would exert cumulative effects on many species due to proximity, resulting in habitat loss in ANF and/or in the Antelope Valley and Mojave Desert, depending on species. The construction of the ATP would have a short-term impact on biological resources. Individual animals may be injured or killed as a result of these projects, resulting in a cumulative reduction in local or regional populations. Long-term impacts from this project would include ongoing maintenance of the line that could potentially impact individual animals and continue the reduction of the population.

Other wind and solar energy projects—such as the Alta East Wind Project, Avalon Wind Project, Catalina Renewable Energy Project, Beacon Solar Energy Project, Lower West Wind Project,
Pacific Wind Energy Project, Pine Tree Solar Project, Alta-Oak Creek Mojave Project, Ridge Rider Solar Park Project, Rosamond Solar Array, Willow Springs Solar Array Project, RE Distributed Solar Project, Rising Tree Wind Project, and PdV Wind Energy Project—may be at a greater distance from BRRTP but may still exert cumulative effects with BRRTP due to large species ranges across the Antelope Valley and western Mojave Desert. However, many of these species have relatively small distribution ranges and negative effects in different locations from several different projects could still exert negative cumulative effects with BRRTP on local populations. The effects from these projects would be long-term when considered cumulatively, as they would be constructed over several years.

Fragmentation to terrestrial species from these projects would generally be minimal for transmission lines and greater for solar and wind facilities. Transmission lines would present very little impedance to movement because the towers would be open underneath. Some habitat would be removed directly underneath the towers and linearly along the ROW where necessary for tower access, but would not restrict movement of animals under or through the transmission line corridors. Solar and wind farms would potentially remove large blocks of habitat from movement corridors, most likely restricting larger animals to going around the facilities but possibly still allowing small animals to move through them, depending on the use of exclusion fencing. Animals may be discouraged from crossing through construction areas during the period of construction due to the heightened human presence, but would be expected to resume normal activity following its completion.

General practices that would reduce short-term or long-term effects to special-status terrestrial species that are not listed by the USFWS include GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to special-status terrestrial species that are not listed by the USFWS include AIR-2a (Implement fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-16 (Protect burrowing owl), BIO-20 (Protect American badger, Mohave ground squirrel, Tehachapi pocket mouse, and kit fox), and BIO-22 (Protect special-status herpetofauna). Cumulative effects on special-status terrestrial species that are not listed by the USFWS from BRRTP and past, present, and foreseeable projects in its vicinity would not be significant.

Aquatic Wildlife

**Arroyo Toad (Bufo californicus)** – The federal Endangered arroyo toad is only known to occur near the new 230 kV circuit corridor of BRRTP, although due to the presence of suitable habitat, it may occur elsewhere in Alternatives 1, 2, and 2a. There is a known breeding population of arroyo toads located in Castaic Creek north of the northern terminus of the new 230 kV circuit corridor, which ends at Castaic Power Plant. The power plant access road may serve as an access road for BRRTP, possibly resulting in mortality of individual arroyo toads that may be traveling along the road between the upland and the creek. Habitat loss is possible in Charlie Canyon, where there is a sandy streambed immediately south of ANF that is crossed numerous times by Charlie Canyon Road, which serves as an access road to the existing transmission lines.
In fall 2009, LADWP conducted a sediment removal project in Castaic Creek, which resulted in the removal of arroyo toad habitat that was part of proposed critical habitat (74 FR 52611 52664). One arroyo toad was identified during preconstruction surveys and relocated upstream; no other arroyo toads were identified during construction and it is unknown if the project resulted in any injuries to or mortalities of individuals. This sediment removal project has previously been conducted every few years, allowing opportunities for habitat to redevelop in the streambed due to deposited sediment from waterflow. Any individual injuries, mortalities, or loss or degradation of suitable arroyo toad habitat on the new 230 kV circuit corridor would exert a cumulative effect with the 2009 sediment removal, negatively affecting the local metapopulation in Castaic Creek. The Alternative 1 corridor contains only a small amount of suitable habitat, which may undergo removal and degradation when project vehicles and equipment drive through it.

On Alternatives 2 and 2a, suitable habitat for the arroyo toad is located in San Francisquito Creek and within side drainages that pass under or adjacent to the proposed alignment. This habitat may be minimally affected by construction but would likely be mostly affected by BRRTP. SCE’s ATP, located east of Alternatives 2 and 2a in the ANF, recognized that arroyo toads, if present, may be affected by construction, resulting in mortality, disruption of foraging sites or breeding behavior, habitat loss or degradation, and increased predation (Aspen 2006). However, arroyo toads are not known to be present within the ATP area and were not located during project protocol surveys; the nearest sighting is a 1994 record at the confluence of San Francisquito Creek and the Santa Clara River. Minimal suitable habitat is present on the Green Valley Localized Alternative. This habitat was part of BRRTP’s 2010 arroyo toad protocol surveys, and was in the project area for LADWP’s fall 2009 repair of the Elizabeth Tunnel. This action had a minimal effect to the existing habitat that was present on-site, as it removed recently eroded sediment buildup from the tunnel’s outflow and restored the outflow’s elevation and flowpath to approximately what it had previously been. Loss of individuals or habitat within any of these areas would exert a cumulative effect with BRRTP on the local arroyo toad population by removing individuals or suitable habitat.

Arroyo toad impacts from the TRTP are expected to be much the same as those for BRRTP. However, several factors have affected the severity of any impacts to arroyo toad that may be caused by TRTP, including the designation of proposed critical habitat and the effects of the 2009 Station Fire. In the same ruling that proposed critical habitat near the new 230 kV circuit corridor, critical habitat was proposed within TRTP’s Segments 6 and 11 (74 FR 52611 52664), elevating the severity of any project effects—such as habitat loss—in this area. Additionally, the Station Fire, which burned in the ANF between August and October of 2009, burned occupied arroyo toad habitat in the southern section of the ANF. It is believed that there was a high arroyo toad mortality rate as a result of the fire, leading to a potentially significant reduction in local population size and likely temporary negative breeding conditions due to increased sedimentation, stressed toads, and degraded habitat (USFS 2010c). Additional loss of individuals or habitat as a result of TRTP would create a significant cumulative effect with the Station Fire’s effects, exerting a cumulative effect with BRRTP on the regional population of arroyo toads between the northern and southern sections of the ANF.
Fragmentation as a result of BRRTP, ATP, TRTP, and other local projects is possible, but would be unlikely to create major impediments to toad movement. Habitat alteration would be expected to be minimal and only as necessary. Construction would be expected to occur outside of breeding season, when toad activity would be reduced, if they are present. If diversions are necessary for any project, such as to reduce sediment during a road expansion, then downstream habitat would be affected to an extent if water is flowing, but would be restored following completion of the required action. Long-term changes to arroyo toad movement and habitat would be minimal.

Several projects have been located within five miles of the above areas of suitable arroyo toad habitat, but are estimated to have not had any effect on the species. LADWP’s PP2 Tailings Removal Project was located in San Francisquito Canyon, but was not in appropriate arroyo toad habitat and was located 8.5 miles from the known population near the new 230 kV circuit corridor. USFS non-native vegetation removal in Bouquet Creek also did not occur in suitable arroyo toad habitat (USFS 2010a). Relocation and construction of the Texas Canyon Fire Station and Barracks in Bouquet Canyon may have affected marginal arroyo toad habitat, but because the fire station and barracks were relocated to an existing burned site, the area is considered to have been already disturbed and any impacts to undisturbed habitat, if any, were likely small.

General practices that would reduce short-term and long-term effects to arroyo toad and its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to arroyo toad and its habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-24 (Protect arroyo toad and California red-legged frog). Cumulative effects on arroyo toad between BRRTP and past, present, and foreseeable projects in its vicinity would not be significant if properly mitigated.

**California Red-legged Frog (Rana draytonii)** – The federal Threatened California red-legged frog is known to occur near Alternatives 2 and 2a in San Francisquito Creek in what is known as the St. Francis Dam reach. Direct impacts to individual animals are unlikely due to the distance of the transmission line corridor from the known population and the steep terrain in between. However, suitable habitat was located directly under the proposed Alternatives 2 and 2a ROWs along City Highline Road. While there are no known individuals in these locations, these areas may undergo habitat loss or degradation due to construction activity, as some transmission line spur roads would pass directly through them.

Unauthorized road grading performed by LADWP on City Highline Road in 2009 resulted in both habitat loss and degradation where dirt was pushed into streambeds, but effects in areas of suitable habitat were relatively small. California red-legged frogs are not known to be present in
the Project area outside of the St. Francis Dam reach. SCE’s ATP passed near areas that had known populations of California red-legged frogs—San Francisquito Creek and Amargosa Creek—and through an area outside ANF encompassing five acres with suitable stockpond habitat (Aspen 2006). Therefore, culvert placement and construction of new access and spur roads for the ATP could have affected California red-legged frog individuals or their habitat. Loss of individuals and habitat around Alternatives 2 and 2a due to these projects would exert a cumulative effect with BRRTP on the local population of California red-legged frogs by reducing the population size or availability of suitable habitat.

A potential California red-legged frog tadpole was identified in San Francisquito Creek on the new 230 kV circuit corridor during BRRTP special-status amphibian surveys. However, this was an isolated find and due to the unsuitability of habitat in the area that this tadpole was found, it is possible that the tadpole washed downstream from the occupied habitat during a heavy rain event. No additional projects in the vicinity of this sighting affected or could affect this area.

A new population of California red-legged frog was discovered in Aliso Creek less than one mile downstream of a road crossing for TRTP’s Segment 11; SCE would avoid this crossing during construction and use a different access road to avoid directly affecting this new population. However, it is recognized that TRTP could still cause indirect effects to this population, which is already stressed and enduring in temporary breeding pools constructed by USFS and the U.S. Geological Survey (USGS); the severity of these effects would be determined based on whether or not the Station Fire had burned the area surrounding the new population (USFS 2010c). However, SCE still estimates that cumulative effects to the new population would be minimal due to avoidance. Any effects from TRTP on California red-legged frog would exert a cumulative effect with BRRTP on the regional population of California red-legged frogs, but because the population in Aliso Creek is newly discovered, it is difficult to estimate how severe any effects would be on the local or regional scales. USFS non-native vegetation removal in Bouquet Creek likely exerted a positive effect on California red-legged frog habitat by removing noxious weeds from the creek, although this area is not known to contain a population of the species.

Several projects in the vicinity of BRRTP’s Alternatives 2 and 2a had little or no effect on California red-legged frog. LADWP’s PP2 Tailings Removal Project, located west of Alternatives 2 and 2a in San Francisquito Canyon, had little, if any, effect on California red-legged frog. The construction area was not near the occupied habitat, but project access was along Forest Road 5N27, which crosses San Francisquito Creek 1.5 miles upstream of the known population. Thus, with several transport vehicles crossing through the flowing creek twice a day, sediment was generated in the water. However, silt exclusion fences were placed at the crossing along with several wattles to minimize any effects to riparian species and remove sediment from the water before it flowed downstream. LADWP’s Elizabeth Tunnel repair, located west of Alternatives 2 and 2a, did not affect any California red-legged frog habitat.

Fragmentation as a result of BRRTP, ATP, TRTP, and other local projects is possible, but would be unlikely to create major impediments to frog movement during seasonal migrations. Habitat alteration would be expected to be minimal and only as necessary. If diversions are necessary for any project, such as to reduce sediment during a road expansion, then downstream habitat would be affected to an extent if water is flowing, but would be restored following completion of
the required action. Exclusion fences along stream crossings, such as those used for the PP2 Tailings Removal Project, may slightly reduce downstream water flow, but not to the extent that it would be expected to have an effect on red-legged frogs or their habitat. Because this species generally resides in permanent pools or deep, slow-flowing water, long-term changes to California red-legged frog movement and habitat would be minimal.

General practices that would reduce short-term and long-term effects to California red-legged frog and its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-43, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to California red-legged frog and its habitat include AIR-2a (Implement construction fugitive dust control plan), HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-24 (Protect arroyo toad and California red-legged frog). There are no cumulative effects on California red-legged frog between BRRTP and past, present, and foreseeable projects in its vicinity.

**Unarmored Threespine Stickleback (Gasterosteus aculeatus williamsoni)** – The State and federal Endangered unarmored threespine stickleback has been observed in the last several years near Alternative 3 in Bouquet Creek. There was previously a population in San Francisquito Creek near Alternatives 2 and 2a, but it has been determined to have been extirpated after 2005 flooding (CDFG 2010). BRRTP impacts to unarmored threespine stickleback habitat in Bouquet Creek are expected to be minimal. Impacts along Alternative 3 would likely consist only of habitat degradation due to the deposition of soil into the creek through vehicular access through the streambed to access tower sites. If water is flowing in the creek in these areas at the time of construction, this could result in mortality if fish are not properly excluded from the crossing with a barrier.

The ATP, which runs roughly along Bouquet Creek, may have resulted in deposition of soils into Bouquet Creek depending on specific tower sites, the amount of material cleared, and the location of the creek in relation to Bouquet Canyon Road at that point. However, effects to unarmored threespine stickleback were not expected from this project due to avoidance of known occupied habitat unless work was required directly in the streambed for a culvert repair (Aspen 2006). In addition, sediment monitoring conducted in conjunction with ATP indicates that no measurable levels of sediment have been deposited into Bouquet Creek from this project outside of the anticipated range of sediment from this watershed. The USFS Bouquet Creek weed removal project likely improved habitat for the unarmored threespine stickleback in Bouquet Creek by removing noxious weed species from the targeted section of Bouquet Creek, which is known to be occupied by this species (USFS 2010a). Habitat in San Francisquito Creek was improved as well, but this species is no longer believed to be present in the creek following heavy flooding in 2005 (CDFG 2010). There is a proposal to raise and realign Bouquet Canyon Road within the same stretch of road as the weed removal project (ANF Wildlife Biologist...
Nathan Sill, personal communication, 7/9/2010). This may affect the habitat or population of unarmored threespine stickleback present in this area, but no project details are currently known.

SCE’s TRTP is not expected to have any direct or indirect effects on unarmored threespine stickleback due to its being six miles away from the nearest known occurrence and to the implementation of best management practices. LADWP’s PP2 Tailings Removal Project did not have an effect on unarmored threespine stickleback due both to numerous barriers between the project site and San Francisquito Creek and to the extirpation of the population that previously inhabited the creek. LADWP’s Elizabeth Tunnel repair project did not affect any habitat for this species.

Fragmentation of stream habitat is expected to be minimal from BRRTP and other projects. Most of the waterways in the project areas are dry for a portion of the year, and construction that would affect the streams, such as road expansions, would in many cases occur while the streams are dry. If water is flowing and the stream is diverted, there may be an effect on movement if fish are present, but this activity should still provide continuous water flow. It is not expected that construction activities would have long-term effects on fish movements.

General practices that would reduce short-term and long-term effects to unarmored threespine stickleback and its habitat include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to unarmored threespine stickleback and its habitat include HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), and BIO-6 (Implement a Worker Environmental Awareness Program). Cumulative effects on unarmored threespine stickleback between BRRTP and past, present, and foreseeable projects in its vicinity would not be significant if properly mitigated.

Non-listed Special-status Aquatic Species – Several special-status aquatic species that are not listed by the USFWS may occur within the BRRTP area, none of which are known to occur in its direct area of effect. These include species listed as “sensitive” by the USFS and BLM and those listed as “species of special concern” by CDFG. Specific sensitive wildlife species and species of special concern are described in greater detail in the Biological Resources Technical Report in Volume IV of this Final EIS/EIR, and Management Indicator Species (MIS) are discussed in the MIS Report. Impacts to riparian habitats would result in some habitat loss and degradation to the extent needed for work and would be mitigated during construction by utilizing erosion control devices—to be described in the Stormwater Pollution Prevention Plan—to minimize the amount of sediment and stormwater entering streambeds, requiring equipment to be washed before entering the Project area, restricting refueling to areas at least 500 feet outside of riparian habitat, requiring Project vehicles and equipment working within 100 feet of active streams to be inspected for fluid leaks daily, narrowing centerline width and minimizing tower pad clearances in riparian habitat to the minimum safe extent, and requiring presence of a biological monitor during construction activities. Direct injury or mortality to any of these species would be unlikely unless, in the case of the southwestern pond turtle (Actinemys marmorata pallida),...
individuals happen to be in hibernation in a construction area. This would be unlikely, but in the event that it does occur, it would not lead to the State or Federal listing of the species.

SCE’s ATP was not expected to have any impacts on arroyo chub or Santa Ana speckled dace, but had the potential to disrupt southwestern pond turtles and two-striped garter snakes by crushing or disturbing individuals or removing or degrading nesting, breeding, or basking sites (Aspen 2006). However, in the TRTP project area, USGS expects that the Station Fire could have had a substantial effect on fish species both at the time of the fire and in the future due to increased sedimentation and debris, potentially leading to the extirpation of entire populations in the area (USFS 2010c). Effects from TRTP on fish populations are not expected to be increased very much, but the cumulative effects when combined with those of the Station Fire would be large. Expected effects on aquatic species from TRTP include mortality where access roads pass through flowing stream crossings, such as in the West Fork of the San Gabriel River, riparian habitat loss, and increased sedimentation from construction and vehicular crossings (Aspen 2009). However, the level of sedimentation expected from TRTP is expected to be minimal relative to expected sedimentation from the Station Fire (USFS 2010c). The USFS Bouquet and San Francisquito Creeks weed removal project improved riparian habitat within the project area by removing non-native weed species from the streambed (USFS 2010a).

Fragmentation of stream habitat is expected to be minimal from BRRTP and other projects. Most of the waterways in the project areas are dry for a portion of the year, and construction that would affect the streams, such as road expansions, would in many cases occur while the streams are dry. If water is flowing and the stream is diverted, there may be an effect on movement if aquatic species are present and tied to the water (such as fish), but this activity should still provide continuous water flow. Animals that can leave the water, such as anurans, turtles, or snakes, would be less restricted by a stream diversion. It is not expected that construction activities would have long-term effects on aquatic wildlife movements.

General practices that would reduce short-term and long-term effects to special-status aquatic species that are not listed by the USFWS include GP-3, GP-5, GP-11, GP-12, GP-17, GP-19, GP-24, GP-34, GP-35, GP-38, GP-41, GP-42, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to special-status aquatic species that are not listed by the USFWS and its habitat include HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), and BIO-22 (Protect special-status herpetofauna). Cumulative effects on special-status aquatic species that are not listed by the USFWS between BRRTP and past, present, and foreseeable projects in its vicinity would not be significant.

**Aerial Wildlife**

**Swainson’s Hawk (Buteo swainsonii)** – The State Threatened Swainson’s hawk has the potential to occur in the BRRTP area as part of its winter range or as part of a flyover on its way to South America. It was observed during surveys on Alternatives 2 and 2a in 2009 and could
also occur throughout the BRRTP area within the Antelope Valley. It is unlikely that any direct injury or mortality would occur to this species as a result of BRRTP, as Swainson’s hawk is not believed to be present in the area during its breeding season. However, habitat loss would occur as grassland and agricultural areas are bladed to construct access roads and tower sites. This may have an effect on foraging capabilities. New transmission towers would pose a risk of electrocution and collision if not properly designed and mitigated.

The only project in the vicinity of Alternatives 2 and 2a that would affect Swainson’s hawk is SCE’s ATP. This project was estimated to have 315 acres of suitable foraging habitat within the ANF that could be affected, but it was determined that due to foraging travel distances and overall regional habitat suitability, effects on habitat from project implementation would be limited (Aspen 2006). SCE also estimated that implementation of prescribed transmission tower designs as described by APLIC (2006) would prevent bird—including raptor—electrocutions and that bird collisions would not substantially increase from pre-project conditions (Aspen 2006). During construction, five active Swainson’s hawk nests were detected in the vicinity of the new transmission line (Aspen 2009).

Several projects in the Antelope Valley and West Mojave Desert would be conducted within Swainson’s hawk territory. SCE’s TRTP identifies the presence of Swainson’s hawk active nests within four miles of the project area in the Antelope Valley as discovered during construction of the ATP (Aspen 2009). The northern region of the project is expected to impact 33.7 acres of suitable foraging habitat for this species, 4.3 acres of which would experience permanent disturbance. New transmission towers would present permanent disturbances to birds, but are expected to have less than significant impacts for bird electrocutions and collisions due to the implementation of measures described by APLIC (2006) and the installation of swan wraps on NFS lands. Swainson’s hawks have a high probability of occurring near the Alta-Oak Creek Mojave Project (Kern County 2009), and although the project would present a permanent disturbance to birds, facilities would be designed according to raptor-safety measures suggested by APLIC (2006). However, it was determined that the risk of collision with wind turbines to Swainson’s hawk would still be significant and unavoidable (Kern County 2009).

Studies conducted at other generation facilities have determined that raptor use of nests and habitat remained approximately the same before and after facility construction (Kern County 2009). The PdV Wind Energy Project is not known to have any resident Swainson’s hawks, but migrating hawks have been observed in the project area, and it is estimated that 65.6 acres of grassland in the project area would be permanently affected out of a total of 1,639 acres (Kern County 2007). Grassland is used by the Swainson’s hawk as foraging habitat. The Pacific Wind Energy Project also expects Swainson’s hawks to be present, but would adopt mitigation measures similar to Alta-Oak Creek Mojave Project, the Catalina Renewable Energy Project and the PdV Wind Energy Project (Kern County 2010a, Kern County 2011). The Antelope Valley Solar Project found that loss of habitat for the Swainson’s hawk would be unavoidable and contribute to a cumulative impact (RRG 2011). In addition, the Pacific Wind Energy Project also noted that, despite proposed mitigation to reduce avian collisions, effects on Swainson’s hawk would still be significant and unavoidable (Kern County 2010a), while the PdV Wind Energy Project identified that impacts to Swainson’s hawk are potentially significant and unavoidable due to uncertainty regarding the level of incidences of injuries and mortalities at wind farms due to typical flight heights (Kern County 2007). Habitat loss and disturbance to
foraging and breeding activity by these projects would exert a cumulative effect with BRRTP Alternative 1 on the regional population of Swainson’s hawks, which appears to be mostly migrants in this area. Additional wind projects such as the Alta East Wind Project, Avalon Wind Project, Lower West Wind Project, and Rising Tree Wind Project may increase risks of injury or mortality to Swainson’s hawks that are in the area.

Fragmentation of Swainson’s hawk habitat related to BRRTP and other transmission line projects is expected to be minimal. Linear habitat removal along the ROW would not pose major changes to habitat use or foraging abilities and, due to the relatively low human traffic on the ROW, would be expected to pose less of a danger to foraging than existing paved roads (such as SR-14 and SR-138), which experience relatively high degrees of traffic. Additional transmission lines may result in higher likelihoods of collision if hawks are flying low, and construction of transmission lines in areas where none are currently present—such as along the northern portion of Alternative 1—may have a negative impact on bird migrations. Energy development projects, such as solar and wind farms, would remove large patches of habitat and would also restrict foraging in these project areas, due to the presence of units such as solar panels. Neither transmission lines nor solar and wind farms would be expected to restrict migration of hawks, but the increase in human activity around facilities for operations and/or maintenance may temporarily deter hawks from being in a particular area. It is expected that Swainson’s hawks, if present, would avoid the construction area during construction, but would begin using the area again after construction ceases.

General practices and mitigation measures to protect Swainson’s hawk would be implemented during construction of the BRRTP. General practices that would reduce short-term or long-term effects to Swainson’s hawk include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to Swainson’s hawk include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines). These include avoidance measures to protect raptors during breeding season and monitoring their activities to ensure that construction activities do not disturb this species. Cumulative effects on Swainson’s hawk between BRRTP and past, present, and foreseeable projects in its vicinity would be significant if Alternative 1 is chosen. Alternative 1 does not contain any existing transmission line corridors for a portion of its route through the Antelope Valley and would contribute to the already-significant impacts posed to this species by other projects in the area. Based on the presence of multiple existing transmission lines and access roads along Alternatives 2, 2a, and 3 and the minimal increased collision risk that the APLIC-compliant BRRTP transmission line would present, cumulative effects on Alternatives 2, 2a, and 3 are not expected to be significant.

**Western Yellow-billed Cuckoo (Coccyzus americanus occidentalis)** – The State Endangered, federal Candidate western yellow-billed cuckoo is not known to occur within the BRRTP area, although suitable habitat was identified on Alternatives 2 and 2a during 2008 and 2009 surveys. Of the areas identified, not all would be affected by BRRTP construction. Dry Canyon, for instance, would not be significantly affected by construction because construction in this area is
planned for the ridge above the canyon, not for the canyon bottom where most of the habitat is located. Because this species prefers to nest in willow or cottonwood forests, it may be directly affected through habitat loss from vegetation clearing, habitat degradation from the spread of non-native species, and/or direct injury or mortality if present in an area that is to be removed. Preconstruction nesting surveys and presence of a biological monitor would ideally prevent injuries or mortalities should any birds or nests be present, but complete avoidance (e.g., timing of construction for a period outside of the breeding season and/or exclusion buffers around suitable or occupied habitat) would probably be more likely to reduce the potential for take of this species.

SCE’s ATP estimated 10 acres of habitat suitable for riparian bird species within or adjacent to the ROW; however, none of this habitat was expected to be sufficient in quantity or quality to support any western yellow-billed cuckoos (Aspen 2006). SCE’s TRTP estimates a cumulatively significant and unavoidable impact (under CEQA) to western yellow-billed cuckoos as a result of its implementation (Aspen 2009). While this species has not been documented within the TRTP project area on the ANF, some of its habitat was burned during 2009’s Station Fire and any birds that may have been present in now-burned areas on the ANF could have moved into relatively undisturbed areas within the project area (USFS 2010c). Should these birds now be present within the project area, they could be affected by project construction. The Bouquet Canyon Stream Restoration and Habitat Improvement Project would likely improve habitat for this species by removing non-native plant species from the vicinity of Bouquet Creek. Fragmentation of this species’ habitat is expected to be low, as movements of individuals would not be restricted by the presence of the transmission lines, and removal of riparian habitat would be minimal. Individual western yellow-billed cuckoos, if present, may avoid construction areas during construction, but are expected to resume use again after construction is completed.

Several other projects in the area of Alternatives 2 and 2a exerted little to no effects on the western yellow-billed cuckoo. LADWP’s PP2 Tailings Removal Project, while located upslope and one mile from suitable habitat within San Francisquito Canyon and one mile northwest of Dry Canyon, did not have any effect on western yellow-billed cuckoo or its habitat due to a lack of any suitable habitat within or near the project area. LADWP’s Elizabeth Tunnel repair project did not occur within suitable habitat for this species.

General practices that would reduce short-term or long-term effects to western yellow-billed cuckoo and to riparian habitat include GP-3, GP-5, GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to western yellow-billed cuckoo include HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell’s vireo, and their
Cumulative effects on western yellow-billed cuckoo between BRRTP and past, present, and foreseeable projects in its vicinity would not be significant on all the action Alternatives.

**Southwestern Willow Flycatcher (Empidonax traillii extimus)** – The State and federal Endangered southwestern willow flycatcher is known to occur within Alternatives 2 and 2a of BRRTP, and other suitable habitat was identified on Alternatives 2 and 2a during 2008 and 2009 surveys. It has also been observed as a migrant species around Bouquet Canyon, but it is unknown whether any breeding populations are present (Aspen 2006). Willow flycatchers have been observed in San Francisquito Canyon in surveys by Tierra Madre Consultants and PCR Services Corporation, but these were not identifiable to subspecies (Tierra Madre Consultants 1999, PCR Services Corporation 2001). Destruction of riparian habitat is expected to be minimal and only as needed for construction of new access roads. Disturbance and displacement may occur to any individuals that are present and near construction, but direct injury or mortality would be unlikely unless breeding populations are in fact present. Indirect impacts may occur through the spread of non-native weed species, which would degrade the species’ native habitat.

Ten acres of suitable riparian habitat is present within or adjacent to SCE’s ATP. While southwestern willow flycatcher is not expected to be present in heavily accessed areas such as Bouquet Canyon Road, it may be present in isolated areas such as Haskell Canyon, and SCE implemented appropriate mitigation measures to minimize impacts to any potential birds as much as possible during construction (Aspen 2006). Southwestern willow flycatcher was determined to be likely to occur in TRTP Segments 5, 6, 7, 8, and 11 due to sightings of willow flycatchers of an undetermined subspecies (Aspen 2009). Additionally, TRTP is within the southwestern willow flycatcher’s historical range and still contains suitable habitat to support it. Construction adjacent to riparian areas could disrupt breeding and possibly lead to nest abandonment and subsequent mortality, but SCE would implement mitigation measures to reduce potential effects to any individuals that may be present. Prior to the Station Fire, southwestern willow flycatchers were known to use the burned areas sparingly, but if they moved into the project area following the fire, then potential impacts to individuals and habitat from TRTP would be more severe (USFS 2010c). The USFS Bouquet and San Francisquito Creeks weed removal project would have benefited the species by improving the quality of its habitat within the project area through removal of non-native plants.

Fragmentation of this species’ habitat is expected to be low, as movements of individuals would not be restricted by the presence of the transmission lines, and removal and degradation of riparian habitat would be minimal due to the implementation of mitigation measures in areas of suitable habitat. These measures would help to avoid impacts within riparian conservation areas and other areas of suitable riparian habitat. Individual least Bell’s vireos, if present, may have avoided construction areas during construction of ATP or may avoid the area during construction of TRTP or BRRTP, but are expected to resume use again following construction completion.

Several other projects in the area of Alternatives 2 and 2a exerted little to no effects on the southwestern willow flycatcher. LADWP’s PP2 Tailings Removal Project, while located upslope and one mile from suitable habitat within San Francisquito Canyon and one mile northwest of Dry Canyon, did not have any effect on southwestern willow flycatcher or its habitat due to a lack of any suitable habitat within or near the project area. LADWP’s Elizabeth...
Tunnel repair project also did not occur within suitable habitat for this species. These projects did not result in any habitat fragmentation for this species.

General practices that would reduce short-term or long-term effects to southwestern willow flycatcher and to riparian habitat include GP-3, GP-5, GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to southwestern willow flycatcher include HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell’s vireo, and their habitat). Cumulative effects on southwestern willow flycatcher between BRRTP and past, present, and foreseeable projects in its vicinity would not be significant on all the action Alternatives.

**Peregrine Falcon (Falco peregrinus)** – The State Endangered peregrine falcon is not known to occur in the BRRTP area, but has the potential to occur along several areas in the ANF due to habitat availability, although nesting habitat may be limited by a lack of cliff-type areas. Because its habitat is primarily located in riparian areas, there would likely only be a small amount of habitat loss from BRRTP, as riparian areas and water bodies would be impacted as minimally as possible.

The ATP also identified a potential for peregrine falcon to occur, although it also cited a lack of nesting habitat. Based on the alignment for the ATP transmission corridor, impacts to peregrine falcon habitat were likely negligible, as riparian habitat is scarce. Peregrine falcon was identified as present or possibly present on several segments of the TRTP, mainly as migrants. Construction in these areas may result in habitat loss depending on where the habitat is located in relation to construction plans. However, peregrine falcon has a very large yearlong range covering almost all of the California coast and about half of the eastern side of California, and a winter range covering most of California’s interior (CDFG 2008), and therefore would likely be largely unaffected by the relatively small amounts of habitat that would be lost around these project areas. Construction of all three of these transmission projects may benefit peregrine falcon by providing roosting sites or nesting sites on the towers, but at the same time may increase the risk to the species—as with all raptors—of collision, which would require appropriate mitigation and tower designs.

While not detected during any surveys, the peregrine falcon could use the Alta-Oak Creek Mojave Project site for foraging, although roosting and nesting habitat is not present (Kern County 2009). If this is the case, this project could increase collision potential and also remove foraging habitat during construction. Collision with turbines would remain a significant and unavoidable long-term impact for the Alta-Oak Creek project area. The Pacific Wind Energy Project also contains suitable foraging habitat that could be removed or degraded by project implementation and would also increase collision potential, but peregrine falcons are not known
to reside in this project area, either (Kern County 2010a). However, the Pacific Wind Energy Project also noted that, despite proposed mitigation to reduce avian collisions, effects on peregrine falcons, if they are present, would still be significant and unavoidable (Kern County 2010a).

A single peregrine falcon was observed migrating through the PdV Wind Energy Project site, and summer residents are also known to be located nearby (Kern County 2007). Foraging habitat and resting habitat are located on-site, but nesting and roosting habitat are not present. The PdV Wind Energy Project is not expected to increase collisions with its wind turbines, which would have a collision zone between 200 and 400 feet above the ground; in contrast, a study of flight behavior showed that peregrine falcons routinely fly above 400 feet and were never observed flying below this height during the study (Kern County 2007). However, any impacts to the species would still be regarded as significant due to its listing status. Loss of foraging habitat as a result of the PdV Wind Energy Project is expected to be 4% of the existing suitable habitat on-site. Additional wind projects such as the Alta East Wind Project, Avalon Wind Project, Lower West Wind Project, and Rising Tree Wind Project may increase risks of injury or mortality to peregrine falcons that are in the area.

Fragmentation of Peregrine falcon habitat related to BRRTP and other transmission line projects is expected to be minimal. Linear habitat removal along the ROW would not pose major changes to habitat use or foraging abilities and, due to the relatively low human traffic on the ROW, would be expected to pose less of a danger to foraging than existing paved roads (such as SR-14 and SR-138), which experience relatively high degrees of traffic. Additional transmission lines may result in higher likelihoods of collision if falcons are flying low, and construction of transmission lines in areas where none are currently present—such as along the northern portion of Alternative 1—may have an impact on bird migrations. Energy development projects, such as solar and wind farms, would remove large patches of habitat and would also restrict foraging in these project areas, due to the presence of units such as solar panels. Neither transmission lines nor solar and wind farms would be expected to restrict migration of falcons, but the increase in human activity around facilities for operations and/or maintenance may temporarily deter falcons from being in a particular area. It is expected that peregrine falcons, if present, would avoid the construction area during construction, but would begin using the area again after construction ceases.

General practices that would reduce short-term or long-term effects to peregrine falcon include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to peregrine falcon include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), and BIO-11 (Reduce avian collisions with and electrocutions on transmission lines). Cumulative effects on peregrine falcon between BRRTP and past, present, and foreseeable projects in its vicinity would be significant if Alternative 1 is chosen. Alternative 1 does not contain any existing transmission line corridors for a portion of its route through the Antelope Valley and would contribute to the already-significant impacts posed to this species by other projects in the area.
However, cumulative effects on Alternatives 2, 2a, and 3 are expected to be not significant based on the presence of multiple existing transmission lines along each of these Alternatives and the minimal increased collision risk that the APLIC-compliant BRRTP transmission line would present.

**California Condor (Gymnogyps californianus)** – The State and federal Endangered California condor is known to be present along Alternate 1 and the reconductoring corridor south of Haskell Canyon, and has been known to fly over Alternatives 2, 2a, and 3 at lesser frequency. Direct impacts to this species would include habitat loss and/or degradation from construction of access roads and tower sites, as well as a disruption of potential foraging habitat due to construction disturbance. Indirect impacts include injury or mortality resulting from the spread and subsequent ingestion by condors of microtrash, as well as from the increased risk of collision as a result of new transmission towers. Based on recorded observations of this species as supplied by the U.S. Fish and Wildlife Service (2009), California condors are not expected to be nesting in the project corridors and likely nest away from the proposed corridors. However, as the condor population continues to grow over time and as resources within its historic range become more limited, the probability of condors expanding outside of their current range is likely to increase.

Several projects are present in the general BRRTP area that may also have effects on this species. Both nearby transmission projects, the ATP and the TRTP, identify the possibility of California condors occurring within their respective project areas. Expected effects from both projects are largely the same as those from BRRTP, but with proper mitigation, are deemed to be at a level that is less than significant. Suitable habitat for this species is present within the three subareas of the Alta-Oak Creek Mojave Project, although the condor is expected to have a low potential to occur based on its actual known range, which does not include the Mojave Desert as anything other than a transient area (Kern County 2009). Effects to California condor as a result of the construction of the Alta-Oak Creek Mojave Project include a reduction in potential foraging habitat, disturbance from human activities and presence, exposure to micro-trash and ethylene glycol antifreeze, and collision and/or electrocution with the turbines and transmission lines. With implementation of mitigation measures, the effects on California condors from the Alta-Oak Creek Mojave Project are expected to be less than significant.

Similarly, it was determined that California condors have a low potential to occur within the Pacific Wind Energy Project area due to it being outside condor’s historical range. USFWS GPS data shows condor movement approximately three miles from the Pacific Wind Energy Project area; however, condors are currently not known to consistently utilize areas outside of their historic range and this area only represents marginal foraging habitat and no nesting habitat (Kern County 2010a). Additionally, a model developed by the Pacific Wind Energy Project proponent to determine “probability of use” by condors of areas within and adjacent to the project supports the conclusion that California condor has a low probability of occurring within the Pacific Wind Energy Project. Impacts to California condors as a result of construction of the Pacific Wind Energy Project include a reduction in potential foraging habitat, disturbance from human activities and presence, exposure to micro-trash and ethylene glycol antifreeze, and collision and/or electrocution with the turbines and transmission lines. However, unlike the Alta-Oak Creek Mojave Project, impacts from the Pacific Wind Energy Project and Catalina Renewable Energy Project are considered significant and unavoidable even after mitigation
Additional wind projects such as the Alta East Wind Project, Avalon Wind Project, Lower West Wind Project, PdV Wind Energy Project, Ridge and Rising Tree Wind Project may increase risks of injury or mortality to California condors that may enter the project areas, but because these projects are outside of the historical range of the condor, the cumulative risk is low.

Some of the projects in the area did not analyze impacts to California condor or do not currently have environmental analysis documents available. The PdV Wind Energy Project determined that California condors would not occur within the project area and does not analyze any project effects to it (Kern County 2007). The Rosamond Solar Project also did not analyze California condor (Kern County 2010b). The AV Solar Ranch One Project determines that condors are unlikely to occur in the project area except for flyovers and did not analyze any impacts to them (Los Angeles County 2010). Environmental analysis documents for other energy projects in the BRRTP vicinity are not available. It can be assumed that projects in the vicinity of the aforementioned projects would have the same likelihood of occurrence of California condors. The planned unincorporated community of Centennial would be built immediately south of California condor critical habitat on Tejon Ranch, and would likely have an effect on condors in this area. However, a draft Environmental Impact Report is not yet available for this project. Forest management projects do not all have environmental analysis documents available, but are generally unlikely to appreciably affect California condors based on their relatively small scales.

Because this species utilizes very large areas for foraging, it is not expected that it would be affected by habitat fragmentation related to BRRTP or the other transmission line projects. Solar and wind farms would remove larger areas of habitat, but California condors are not expected to occur within these project areas due to their tendency to remain within their historic range and mostly avoid the Mojave Desert.

General practices that would reduce short-term or long-term effects to California condor include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to California condor include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-18 (Protect California condor). Formal consultation is being conducted with the USFWS to determine if any additional protection measures other than those mentioned above are necessary to protect California condors. Cumulative effects on California condor between BRRTP and past, present, and foreseeable projects in its vicinity would be significant if Alternative 1 is chosen. Alternative 1 does not contain any existing transmission line corridors for a portion of its route through the Antelope Valley and would contribute to the already-significant impacts posed to this species by other projects in the area. However, cumulative effects on Alternatives 2, 2a, and 3 are not expected to be significant based on the presence of multiple existing transmission lines along each of these Alternatives and the minimal increased collision risk that the APLIC-compliant BRRTP transmission line would present.
Bald Eagle (*Haliaeetus leucocephalus*) – The State Endangered bald eagle has the potential to occur near BRRTP Alternative 1 and the new 230 kV circuit corridor, where there is a large, open body of water at Castaic Reservoir. Direct impacts to this species include habitat loss for construction of access roads and tower sites, as well as disruption from construction. Indirect impacts may include increased risk of electrocution and collision with transmission towers unless properly designed and mitigated. Overall impacts to bald eagle from BRRTP would be small due to the overall lack of suitable habitat in the Project area, the general lack of sightings on the ANF within the Project area (though it has been observed at Pyramid Lake by USFS personnel), and the degree of existing disturbance such as at the Castaic Lake State Recreation Area. No impacts from SCE’s ATP were expected and this species was not described in detail in project documents (Aspen 2006). Long-term impacts from SCE’s TRTP include increased risk of electrocution and collision as a result of new transmission lines; however, towers and lines for TRTP would be designed and constructed according to raptor-safety guidelines suggested by APLIC (2006).

Habitat fragmentation is expected to be minimal. Areas along the proposed BRRTP routes where suitable bald eagle foraging habitat occurs are far enough away from the proposed and existing transmission lines that any foraging would be unlikely to be negatively impacted. There is also a lack of suitable nesting habitat within and around the Project area. Some bald eagle foraging and nesting habitat is present near Segments 6, 7, and 11 of TRTP; however, bald eagles are not known to be present in these areas (Aspen 2009). Along TRTP Segment 8, where bald eagles are known to be present, there is no foraging or nesting habitat. Suitable habitat for the bald eagle was present in the vicinity of the ATP around Bouquet Reservoir, which is three miles east of BRRTP Alternative 2, but bald eagles are not expected to occur in this area or in the Angeles National Forest (Aspen 2006).

Numerous other projects are located near Alternative 1 and the new 230 kV circuit corridor, including the construction of the Centennial Project, the Pacific Pipeline Storm Relocation, LADWP’s Castaic Power Plant Sediment Removal Project, LADWP’s PP2 Tailings Removal Project, and USFS Bouquet and San Francisquito Creeks weed removal efforts. However, none of these projects is in an area of suitable habitat for the bald eagle. The Pacific Pipeline Storm Relocation would be in areas near to the proposed Alternative 1 centerline, but would not affect flight patterns or any available nesting habitat for the bald eagle.

Compliance with the Bald and Golden Eagle Protection Act is discussed in Chapter 6 of this Final EIS/EIR. General practices that would reduce short-term or long-term effects to bald eagle include GP-8, GP-24, GP-34, GP-41, GP-42, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term or long-term effects to bald eagle include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-17 (Protect the bald eagle and golden eagle). Cumulative effects on the bald eagle between BRRTP and past, present, and foreseeable projects in its vicinity would not be significant on all the action Alternatives.
Coastal California Gnatcatcher (*Polioptila californica californica*) – The federal threatened coastal California gnatcatcher is known to be present on the BRRTP’s reconductoring corridor south of Haskell Canyon, and has a low potential to occur along Alternative 1. Direct impacts on the reconductoring corridor south of Haskell Canyon would consist of habitat loss as needed to reestablish access to transmission towers for reconductoring or to create pulling/tensioning sites or staging or storage areas. It is expected that one or two staging areas five acres in size would be located generally in the center of the Project or at either end of the transmission line route; however, locations of these areas have not yet been determined. No new towers would be built along this corridor. Human presence may also disrupt any individuals in the area, and if these individuals are nesting, this may cause them to abandon their nests, potentially resulting in mortality of the young. Indirect impacts may result from the spread of non-native weed species that may be tracked into the area by Project vehicles and equipment, as well as the deposition of dust onto vegetation that may occur, which can cause reductions in plant vigor.

LADWP’s Castaic-Olive Tower 247-5 Stream Diversion in winter 2009/2010 resulted in the removal of coastal sage scrub from the banks of Grapevine Creek, but the species was not removed from the area and was observed foraging on-site by the biological monitor following construction. Three miles of the reconductoring corridor south of Haskell Canyon immediately north of this site would fall within designated critical habitat for this species. The ATP was identified to occur within suitable patches of coastal sage scrub habitat along 4.6 miles of the transmission line. Although coastal California gnatcatchers were not known to reside within this habitat, the potential remained for habitat loss and for disruption of nesting pairs should they be present during construction (Aspen 2006). Mitigation measures, including presence/absence surveys and construction timing restrictions, were enforced during construction of the ATP to minimize potential impacts to this species.

The TRTP deemed coastal California gnatcatcher to be unlikely to occur or absent in all project segments near BRRTP; however, Segments 7 and 8 of TRTP are known to have coastal California gnatcatcher present (Aspen 2009). Out of 869 acres of coastal sage scrub habitat mapped within the TRTP project area, 38 acres—four percent—are estimated to be affected by implementation of TRTP. Impacts to this species as a result of TRTP include disruption of breeding activity, habitat loss and degradation, and increased potential for collision with transmission lines. These effects would be mitigated through preconstruction surveys and use of exclusion buffers as necessary. Effects on coastal California gnatcatcher as a result of the construction of these projects would result in habitat loss and impacts to both local and regional populations.

Habitat fragmentation associated with the BRRTP, ATP, and TRTP is expected to be low due to the relatively minor movement impediments caused by transmission lines. Vegetation would generally be removed at tower sites and on access roads, but would not otherwise prevent movement between habitat patches. The largest area of suitable habitat for the coastal California gnatcatcher within the BRRTP area is located along the southern end of the reconductoring area, where the BRRTP would pass through 2.9 miles of designated critical habitat Unit 13 and where additional occupied patches of suitable habitat are located within the Cascades Golf Course. However, LADWP’s existing transmission line transects this area and does not present a boundary to daily gnatcatcher movement. The reconductoring of the existing transmission line...
and the construction of a new line are not expected to present noticeably greater impediments to coastal California gnatcatcher movement, with the exception of the temporary disturbance associated with construction.

Suitable habitat for this species is located within the ATP project area, but this area is also subject to urbanization and ongoing development (Aspen 2006). Thus, while the new ATP transmission line may have minimal effects on habitat fragmentation, continual development may reduce existing habitat and/or present impediments to movement between patches of habitat. TRTP Segments 7 and 8 cross through designated critical habitat for this species, which is also expected to be present in these areas (Aspen 2009). While the transmission line would not present major barriers to movement since birds can fly through, under, or around the towers and transmission line, various residential development projects in the TRTP area are expected to continually fragment coastal California gnatcatcher habitat. Additional development and urbanization within the general BRRTP vicinity may continue to reduce and/or fragment suitable coastal California gnatcatcher habitat.

Several other projects occur near Alternative 1, the reconductoring corridor south of Haskell Canyon, and the new 230 kV circuit corridor, including the construction of the Centennial Project, the Pacific Pipeline Storm Relocation, LADWP’s Castaic Power Plant Sediment Removal Project, LADWP’s PP2 Tailings Removal Project, USFS Bouquet and San Francisquito Creeks non-native vegetation removal project, and various energy development projects located in the Mojave Desert and listed in Section 5.2.1. None of these project areas contains suitable habitat for this species and they would have no effect on the coastal California gnatcatcher.

General practices that would reduce short-term or long-term effects to coastal California gnatcatcher include GP-8, GP-24, GP-33, GP-34, GP-35, GP-41, GP-43, GP-48, and GP-49. Mitigation measures that would reduce short-term and long-term effects to coastal California gnatcatcher include HYD-1 (Use of Existing Water Crossings), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-15 (Protect coastal California gnatcatcher and its habitat). Cumulative effects on coastal California gnatcatcher between BRRTP and past, present, and foreseeable projects in its vicinity would not be significant on all the action Alternatives.

**Least Bell’s Vireo (Vireo bellii pusillus)** – The State and federal Endangered least Bell’s vireo is known to be present on BRRTP’s Alternative 1 near Castaic Lake and Castaic Lagoon and may also occur on Alternatives 2 and 2a. Direct impacts to this species would be habitat loss and/or degradation as well as mortality or injury of any birds that are in the area during construction activities on access roads and tower sites. Construction noise and presence may also disrupt or displace birds, which may lead to mortality of young if the bird is nesting at the time. Project equipment and vehicles would have the potential to carry non-native weed seeds, which may be spread and would lead to habitat degradation.
Ten acres of suitable riparian habitat is present within or adjacent to SCE’s ATP (Aspen 2006). Impacts expected to this species as a result of the ATP’s construction included disturbance from construction and temporary and permanent habitat loss. SCE’s TRTP expected least Bell’s vireo to have a possibility of occurring along Segments 6 and 11, in the southern portion of the ANF, and to be present in nests along Segments 7 and 8 in the southeastern portion of the project (Aspen 2009). On these two latter segments, it is estimated that the proposed project would result in the loss of 0.5 acre of southern willow scrub on Segment 7 and one acre of southern sycamore alder riparian woodland on Segment 8, some of which may currently or in the future be occupied by least Bell’s vireo. While no individuals are currently known to reside within the TRTP area outside of Segments 7 and 8, it is possible that following the Station Fire in 2009, any individuals that occupied areas that were burned by the fire could have moved into unburned areas within the project area (USFS 2010c). Possible effects on least Bell’s vireo resulting from TRTP include disruption of nesting, loss of young due to nest abandonment, habitat loss and degradation, and increased collision potential with new transmission lines.

The USFS Bouquet and San Francisquito Creeks Weed Removal Project occurred within suitable habitat for the least Bell’s vireo, although the species is not known to be present within the area (USFS 2010a). Because it consisted of removal of noxious weeds, there may have been a slight improvement in habitat suitability and quality. Impacts from these four projects would affect both the local and regional populations of least Bell’s vireo and/or its habitat. Fragmentation of this species’ habitat is expected to be low, as movements of individuals would not be restricted by the presence of the transmission lines, and removal and degradation of riparian habitat would be minimal due to the implementation of mitigation measures in areas of suitable habitat. These measures would help to avoid impacts within riparian conservation areas and other areas of suitable riparian habitat. Individual least Bell’s vireos, if present, may have avoided construction areas during construction of ATP or may avoid the area during construction of TRTP or BRRTP, but would be expected to resume use again following construction completion.

Several other projects occur near Alternatives 1, 2, 2a, and 3, including the construction of the Centennial Project, the Pacific Pipeline Storm Relocation, LADWP’s Castaic Power Plant Sediment Removal Project, LADWP’s PP2 Tailings Removal Project, LADWP’s Elizabeth Tunnel repair project, and various energy development projects located in the Mojave Desert and listed in Section 5.2.1. None of these project areas contains suitable habitat for this species and they would have no effect on the least Bell’s vireo or its habitat.

General practices that would reduce short-term or long-term effects to least Bell’s vireo and to riparian habitat include GP-3, GP-5, GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to least Bell’s vireo include HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), and BIO-14 (Protect western yellow-billed cuckoo, southwestern willow flycatcher, least Bell’s vireo, and their habitat). Cumulative effects
on least Bell’s vireo between BRRTP and past, present, and foreseeable projects in its vicinity would not be significant on all the action Alternatives.

Non-listed Special-status and Migratory Aerial Species – Several special-status aerial species that are not listed by the USFWS may occur in the BRRTP area, some of which are known to be present based on project surveys. These include species listed as “sensitive” by the USFS and BLM and those listed as “species of special concern” by CDFG. Specific sensitive wildlife species and species of special concern are described in greater detail in the Biological Resources Technical Report in Volume IV of this Final EIS/EIR, and MIS species are discussed in the MIS Report. In addition to these special-status species, the Project area in general is used by a large variety of migratory birds that are protected by the Migratory Bird Treaty Act. Impacts to aerial species would include habitat loss and/or degradation and possible injury or mortality if they happen to be present in a designated work area, particularly during nesting season. Species such as the burrowing owl may be crushed by construction if present in undetected burrows. Construction activity may result in dust deposition on vegetation, which would cause habitat degradation through loss of plant vigor. Individuals would likely be displaced or disturbed by construction noise and human presence.

Several transmission line, wind, or solar energy projects occur near the BRRTP along the ANF, Antelope Valley, and Mojave Desert. These include the Alta East Wind Project, Avalon Wind Project, Catalina Renewable Energy Project, Beacon Solar Energy Project, Lower West Wind Project, Pacific Wind Energy Project, Pine Tree Solar Project, Alta-Oak Creek Mojave Project, PdV Wind Energy Project, AV Solar Ranch One, Ridge Rider Solar Park Project, Rosamond Solar Array, Willow Springs Solar Array Project, RE Distributed Solar Project, Rising Tree Wind Project, TRTP, ATP, and various parcels of land for which the BLM has applied to develop for wind or solar generation. Additional projects in the BRRTP area include the Antelope Valley Water Bank Project, the California High Speed Rail, the construction of the Centennial Project, the Pacific Pipeline Storm Relocation, and the ongoing Castaic Power Plant Sediment Removal.

In addition to removing habitat where applicable, wind generation projects would result in increased obstacles to birds’ flight patterns, potentially resulting in mortalities. Solar generation projects may remove foraging habitat in applicable areas by effectively blanketing large plots of land with solar panels. Transmission lines would increase electrocution and collision risks while also providing new perching or nesting opportunities for raptors. Development projects such as the unincorporated community of Centennial may remove habitat for birds such as the burrowing owl and the loggerhead shrike. Ongoing maintenance operations at Castaic Power Plant consisting of sediment removal from Castaic Creek would remove freshwater marsh habitat if this habitat continues to grow in the future following the most recent operation in fall 2009. Cumulative effects from these projects may result in the loss or degradation of habitat and reduced size of local or regional populations depending on species and project locations.

All of these actions may result in varying degrees of habitat fragmentation for different aerial species, such as bats. Transmission line projects would remove vegetation at tower sites and along ROW access roads, but would not present impediments to bird movement and migration, although they may result in increased collision and/or electrocution risk. Solar and wind development projects would remove large blocks of suitable habitat and may restrict birds from
foraging in these areas due to the flight danger (such as from wind projects). Areas of urbanization would also remove habitat and may not have the same risks to bird safety, but would instead have increased human presence, possibly discouraging or reducing bird use of these areas. Depending on the amount of suitable habitat in and around these various projects, there may be varying degrees of habitat fragmentation as a result of their implementation.

The Antelope Valley Important Bird Area is located just north of the California Aqueduct in the Antelope Valley and extends across both sides of State Route 14. West of the highway, it runs along the Tehachapi Mountains to approximately nine miles southwest of the City of Mojave; east of the highway it abuts the southwestern edges of Edwards Air Force Base. This area is important for the conservation of many aerial species, particularly migratory birds that use it as a winter stopover or as spring breeding grounds (NAS 2012). The addition of the BRRTP is unlikely to cause notable effects to avian species in this area outside of the construction phase due to the presence of existing transmission lines along Alternatives 2, 2a, and 3, as well as the reconductoring corridor (Alternative 1, however, does not have an existing transmission line corridor through the Antelope Valley). However, the addition of the numerous other wind, solar, and transmission projects mentioned above may have larger, and potentially cumulative, effects on this area. As discussed above, both wind and solar farms would result in large blocks of habitat removal, while wind farms and transmission lines could result in increased potential for collision or electrocution of aerial species. The continued development of this area could also result in increasing habitat fragmentation such that aerial species would have patchier areas of habitat than were previously present.

General practices that would reduce short-term or long-term effects to special-status aerial species that are not listed by the USFWS include GP-3, GP-5, GP-8, GP-11, GP-12, GP-17, GP-19, GP-35, GP-38, GP-45, GP-46, GP-47, GP-48, GP-49, GP-53, and GP-54. Mitigation measures that would reduce short-term or long-term effects to special-status aerial species that are not listed by the USFWS include HYD-1 (Use of Existing Water Crossings), HYD-2 (New Road Construction Over Waterways), BIO-1 (Provide restoration/compensation for impacted sensitive vegetation communities), BIO-2 (Prevent the spread of invasive weeds), BIO-3 (Incorporate riparian area avoidance and permit measures), BIO-4 (Provide restoration/compensation for affected jurisdictional areas), BIO-5 (Construction activities and vehicle operation would be conducted to minimize potential disturbance to wildlife), BIO-6 (Implement a Worker Environmental Awareness Program), BIO-7 (Impacts to raptors), BIO-8 (Avoid nesting season and limit disturbance of nesting birds [non-raptor species]), BIO-11 (Reduce avian collisions with and electrocutions on transmission lines), BIO-17 (Protect the bald eagle and golden eagle), and BIO-19 (Protect California spotted owl). Cumulative effects on non-listed special-status and migratory aerial species between BRRTP and past, present, and foreseeable projects in its vicinity would be significant for some species, such as golden eagle and burrowing owl, if Alternative 1 is chosen. Alternative 1 does not contain any existing transmission line corridors for a portion of its route through the Antelope Valley and would contribute to the already-significant impacts posed to this species by other projects in the area. However, cumulative effects on Alternatives 2, 2a, and 3 are expected to not be significant based on the presence of multiple existing transmission lines along each of these Alternatives and the minimal increased collision risk that the APLIC-compliant BRRTP transmission line would present.
Earth Resources

Introduction

This section addresses potential cumulative impacts to earth resources that would occur as a result of implementation of the proposed BRRTP. Cumulative impacts result from incremental impacts of the Proposed Action or its Alternatives when added to other past, present and reasonably foreseeable future actions within the designated region of influence. The earth resources cumulative analysis is divided into three sections based on distinct resource types: Geology, Seismicity and Soils; Mineral Resources; and Paleontology.

Geology, Seismicity and Soils

Impact Area and Impacting Factors

Cumulative impacts for geologic resources in the Project impact area apply to highly erosion-sensitive soils and distinctive geologic features that may be impacted by the BRRTP. Impacting factors that may affect highly erosion-sensitive soils and highly distinctive geologic features could occur during grading and construction of components of the proposed BRRTP. Erosion of highly sensitive soils could also occur during long-term operation of the BRRTP.

Cumulative impacts related to the major geologic and seismic hazards that may affect the Project apply to surface fault rupture, seismic ground shaking, liquefaction, landslides, soil erosion, settlement, expansive soils, corrosive soils and groundwater. The impacting factors related to potential geologic and seismic hazards occur due to conditions that may affect the proposed Project from the natural geologic environment.

The geographic areas for considering cumulative impacts related to geologic resources and potential geologic and seismic hazards are the proposed Project study corridors, including the expanded Barren Ridge and proposed new Haskell Canyon switching station locations. This is because geologic conditions and potential resources occur at site-specific locales, and are generally not affected by activities occurring outside the corridors.

Present and Reasonable Foreseeable Actions

The cumulative impacts analysis utilized a list of present and reasonably foreseeable projects within one-half mile radius of each Alternative. The projects were reviewed to evaluate potential geologic impacts that could occur where they cross or closely parallel the BRRTP study corridors. The Cumulative Projects List, Section 5.2 (Figure 5-1) describes the major cumulative projects in the BRRTP area. Any proposed or future project that would potentially disturb or diminish the function of soils or distinctive geologic features within this impact area may contribute to a cumulative effect.

Cumulative Effects Analysis

Past and ongoing development within the proposed BRRTP area has resulted in alterations to the natural geologic conditions. Past, existing and future projects could contribute cumulative impacts to the geologic resources within the impact area by creating erosion of highly sensitive soils and alteration of distinctive geologic features. These potential impacts to geologic resources would be limited to areas within and adjacent to the boundaries of individual projects, and such impacts would have to occur in similar locations within the boundaries of the proposed...
BRRTP. However, construction of the proposed BRRTP would preclude other projects from being implemented concurrently in the same location. Therefore, proposed Project impacts related to highly erosion-sensitive soils and highly distinctive geologic features would not have the potential to combine with similar impacts from other projects, and would not have cumulative impacts.

The major geologic and seismic impacts that may affect the proposed BRRTP (surface fault rupture, seismic ground shaking, liquefaction, landslides, settlement, expansive soils, corrosive soils and groundwater) are related to outside effects from the natural environment that may impact the Project, and are not related to impacts from other past, present or future projects in the impact area. The effects of soil erosion that may impact the Project components are due to the nature of the earth materials, steepness of the terrain and other natural factors that are not related to other projects. Potential settlement, expansive soils and corrosive soils are also related to the inherent natural properties of soils underlying the Project components, and would not be due to effects from other projects. Therefore, the impacts to the BRRTP related to potential geologic and seismic hazards are not considered to be cumulative, since they are not caused by other past, present or future projects within the impact area.

**Mineral Resources**

**Impact Area**

The cumulative impacts analysis, as it relates to mineral resources affected by other past or reasonably foreseeable future actions, is located within a geographic area of one-half mile of the Alternative corridors. This is consistent with the special parameters set for the land use impact area that was used to inventory mineral resources.

**Present and Reasonable Foreseeable Actions**

Any existing or foreseeable future project or activity that would preclude the use, or disturb or diminish the function, of mineral resources within one-half mile of the Alternative corridors would contribute to the cumulative condition of the impact area.

**Cumulative Effects Analysis**

Although known sand and gravel resources, limestone and dolomite, and stone quarries are located within the general impact area, Project facilities would not be located within an active production area, and no unique geologic features or geologic features of unusual scientific value for study or interpretation would be disturbed or otherwise adversely affected by any of the Alternative corridors. Therefore, this Project would not contribute to cumulative impacts to mineral resources in the region.

**Paleontology**

**Impact Area**

The geographic areas for considering cumulative impacts related to paleontological resources are the proposed Project study corridors, including the expanded Barren Ridge and proposed new Haskell Canyon switching station locations. This is because potential resources occur at site-specific locales, and are generally not affected by activities occurring outside the corridors.
Present and Reasonable Foreseeable Actions

Table 5-10 briefly summarizes the ranges of factors within different types of projects that could affect paleontological resources.

<table>
<thead>
<tr>
<th>Project Type</th>
<th>Potential Ground Disturbance Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmission Projects</td>
<td>Access roads, vegetation clearance, structure placement</td>
</tr>
<tr>
<td>Generation Projects (Wind and Solar)</td>
<td>Access roads, vegetation clearance, turbine tower/panel foundations</td>
</tr>
<tr>
<td>Transportation and Public Facilities</td>
<td>Installation of pipeline, excavation for water bank</td>
</tr>
<tr>
<td>Recreation and Community Development</td>
<td>Excavation, clearing and grading</td>
</tr>
<tr>
<td>Local Projects</td>
<td>Excavation, construction of access roads, grading, clearing, etc.</td>
</tr>
</tbody>
</table>

Cumulative Effects Analysis

A review of the major pending projects reveals that few directly overlap with the various proposed BRRTP Alternatives. Further, when considering only those portions of the BRRTP Alternatives where moderate and/or high initial impacts to paleontological resources of major or maximum sensitivity are likely, it appears that only Alternative 1 has the potential for significant cumulative effects. In addition, although the potential to encounter paleontological resources along portions of all action Alternatives is considered high, standard conditions for monitoring and fossil recovery pertaining to paleontological resources that may be unearthed during construction of any ongoing or future projects in the area would minimize potential cumulative impacts to a level that is considered less than significant.

Water Resources

Impact Area

The Alternative routes are located within two watersheds, the Antelope-Fremont Valleys watershed and the Santa Clara River watershed. Since the BRRTP and other projects in the region have potential to affect the entire watershed, as opposed to affecting only a smaller geographic area or subwatershed, these two watersheds define the impact area for this cumulative effects analysis.

Direct and Indirect Impacts Summary

Construction and operation of the BRRTP Alternatives would potentially impact water quality of numerous named and unnamed streams within subwatersheds crossed by the BRRTP through ground-disturbing activities, including clearing and grading for structure installation work areas, and access construction. Potentially affected streams include Pine Tree Canyon Creek, which drains from the Tehachapi Mountains; also Portal Canyon Creek, San Francisquito Canyon Creek, Bee Canyon Creek, and other streams, named and unnamed, that drain from the mountains within the ANF and have associated Riparian Conservation Areas, sensitive wildlife species, or both.

Disturbed soils accelerate erosion and increase sediment in stormwater runoff to receiving waters, causing increased turbidity and sedimentation. Additionally, fuel, oil, and other fluids...
used in construction vehicles, equipment, and heavy machinery could enter streams and contaminate water. Project-related ground disturbance could potentially alter drainage patterns within the work areas and result in soil erosion leading to increased sedimentation or increase of the rate or amount of surface water runoff. Grading activities could also potentially create additional sources of runoff, including polluted runoff.

Dewatering during construction activities could potentially release contaminated groundwater to surface water channels or drainage features. Construction of the Project could also result in adversely impacting wetlands by removing or degrading wetland soils, damaging or removing wetland plants, or disrupting wetland hydrology. The Project would also result in placement of structures within a 100-year floodplain.

Many of the present and reasonably foreseeable projects described above involve grading activities, including large-scale grading activities that would continue for years after the BRRTP is completed. These projects would have potential to affect the impact area by altering drainage patterns, accelerating erosion, and adding additional sediment to local drainages.

Compacted or new paved areas, including railroad beds, would potentially increase the rate or amount of stormwater runoff, or create additional sources of stormwater runoff. Polluted runoff could be introduced to the impact area as oil products, collect on new paved surfaces, and are washed into the system with stormwater runoff. Projects using improper dewatering procedures could release contaminated groundwater into drainages within the impact area.

Along the foothills and drainages of the Tehachapi Mountains and the San Andreas Rift Zone are Palustrine Emergent (PEM) and Palustrine Forested (PFO) wetlands that could be filled by at least one project, and could be impacted by altered soils, vegetation, or hydrology resulting from other projects.

Most of the projects described above cross or are located within FEMA 100-year floodplains, and would place structures within a 100-year floodplain, potentially impeding or redirecting flood flows.

**Cumulative Effects Evaluation**

Whenever multiple activities at a single site, or activities at multiple sites, produce similar or complementary changes to environmental parameters or watershed processes, the resulting impacts can be cumulatively significant, even if they are individually insignificant. For example, soil compaction resulting from construction vehicles driving over a natural surface decreases pore space and collapses conduits between pores, reducing soil porosity and permeability, and increasing runoff rates, which causes erosion. Likewise, replacement of natural surfaces with impermeable material allows a high stormwater runoff ratio and increases both peak flows and total flow volume. Removal of topsoil, which leaves mineral soil exposed, also increases the rate of stormwater flow, which in turn creates more erosion (Reid 1993). Increased and eroding stormwater flows carry increased sediment load into drainages, which increases turbidity. When these processes are occurring at multiple sites, sediment load can increase turbidity such that water temperature can increase, which in turn decreases the level of dissolved oxygen, which can lead to increased stress or death of aquatic animals.
Polluted stormwater runoff could introduce petroleum products or pathogens, or otherwise alter water chemistry, including pH levels. Runoff from multiple sources could lead to water quality impacts that exceed water quality objective thresholds. In addition, some introduced chemicals can alter the mobility or chemical composition of chemicals already present, and may contribute to nutrient deficiencies or inhibit the ability of plants to make use of available nutrients. Introduced chemicals may be deposited within streams, and repeated addition of chemicals may cause a cumulative increase in concentration (Reid 1993).

When topography is altered for construction purposes, the change in natural contours can change local and downstream hydrology. Altered hydrology can decrease water availability to wetlands, which would impact wetland plant populations and eventually create upland conditions. Altered hydrology can also modify the timing and amount of storm runoff, which could change base flows, peak flows, and flood seasonality. In response to these changes, flood frequencies could change, stream channels could be aggraded, incised, or widened, and the size distribution of streambed sediment would be modified (Reid 1993). These effects would not be limited to the physical environment, but would also affect wetland and riparian plant populations and aquatic animal populations. Changes in flood frequency and distribution could also affect human populations.

Impacts that are individually less than significant are cumulatively significant if they contribute incrementally to a cumulative impact that is already significant. For example, if a project results in sedimentation impacts that are less than significant on a project-level basis, the cumulative impact from sedimentation can be significant if the sediment is released into a stream that has not yet recovered from previous sedimentation impacts. Potential impacts to water resources resulting from construction and operation of the BRRTP would be less than significant. Even with implementation of mitigation measures and GPs, however, they would have a cumulative effect on the watersheds in which they occur as they add to the impacts of past and contemporary projects, and as the impacts of future projects are added to them. While Project-level mitigation measures and GPs are not sufficient to negate cumulative watershed effects, effectively implemented they are an important component of a broader watershed-scale approach to recovery from human activities.
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