

2.0 PROJECT ALTERNATIVES

The California Environmental Quality Act (CEQA) and the *CEQA Guidelines* (Section 15126.6(a)) require that an environmental impact report analyze a reasonable range of alternatives to a proposed project or the location of the proposed project that would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project.¹ *CEQA Guidelines* Section 15126.6(d) requires that sufficient information about each alternative be included to allow meaningful evaluation and analysis. An Environmental Impact Report (EIR) must evaluate a “no project” alternative comparing the impacts of approving the proposed project against the impacts of not approving the proposed project (No Project Alternative).² Except for the No Project Alternative, an alternative can be eliminated from further consideration in the EIR if the alternative would not meet most of the project objectives or would not avoid or substantially lessen any of the project’s significant effects.³

The National Environmental Policy Act (NEPA) and the Council on Environmental Quality (CEQ) regulations (40 C.F.R. § 1502.14 [a]) require that an environmental impact statement explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.⁴ NEPA (40 C.F.R. § 1502.14 [b]) requires substantial analysis of each alternative, including the proposed action, so that reviewers may evaluate their comparative merits.⁵ NEPA (40 C.F.R. § 1502.14 [c]) requires consideration of a reasonable range of alternatives. Similar to the CEQA No Project Alternative, NEPA requires considering the alternative of no action by the federal lead agency.⁶ In addition, NEPA (40 C.F.R. § 1502.23) states that the merits and drawbacks of the alternatives do not need to be displayed in a monetary cost/benefit analysis, and that economic concerns should not outweigh important qualitative considerations.

2.1 System Alternatives

When considering alternatives to a proposed project, SCE first evaluates whether the existing electrical infrastructure can be modified to meet the project objectives. If not, then SCE evaluates what new infrastructure is required (System Alternatives) and where it would be located (Site and/or Route Alternatives) in order to meet project objectives. The following sections describe the methodology for screening System Alternatives.

The following sections provide information about how system alternatives are developed, evaluated, and selected.

¹ Cal. Pub. Res. Code §§ 21002, 21100(b)(4); Cal. Code Regs. tit. 14, § 15126.6.

² Cal. Code Regs. tit. 14, § 15126.6(e).

³ See Cal. Code Regs. tit. 14, § 15126.6(c).

⁴ 40 C.F.R. § 1502.14(a).

⁵ 40 C.F.R. § 1502.14(b).

⁶ 40 C.F.R. § 1502.14(d).

2.1.1 System Alternatives Screening Methodology

The development of System Alternatives consists of the four-step process summarized below:

- Step 1. Perform preliminary planning analyses to determine whether modifying electrical equipment at existing substation and transmission facilities could accommodate the proposed project objectives.
- Step 2. If proposed project objectives cannot be accommodated by modifying existing substation and transmission facilities, then develop System Alternative upgrades that consider new facilities to meet the electric system need.
- Step 3. Evaluate each System Alternative identified in Step 2 based on the following criteria:
 - The extent to which the System Alternative would substantially meet the proposed project objectives;
 - Whether the System Alternative would reduce a potentially significant environmental impact associated with the proposed project; and
 - The feasibility of a System Alternative, considering capacity limits, the ability to upgrade the system on existing sites, and economic viability.
- Step 4. If a System Alternative does not substantially meet the project objectives, is not feasible, or does not reduce a potentially significant environmental impact associated with the proposed project, then the System Alternative is eliminated from further consideration. If a System Alternative is not eliminated, it is retained for analysis in the PEA.

2.1.2 System Alternatives Considered

Consistent with Step 1, SCE first performed preliminary planning analyses to determine whether modifying electrical equipment at existing substation and transmission facilities could accommodate the proposed project objectives. SCE determined that modifying existing substation facilities would not resolve the constraint of the limited capacity associated with the existing WOD transmission lines. Upgrades to substation equipment alone would not address the transmission line capacity limitations. Next, consistent with Step 2, SCE developed multiple System Alternatives involving new transmission and substation facilities and/or equipment that could theoretically meet the electric system need and Proposed Project objectives. SCE considered a variety of factors during this step, including feasible engineering and technical solutions to meet the system needs, and the availability of existing utility ROW. Based on this process, SCE identified the following possible System Alternatives:

- Proposed Project: West of Devers Upgrade Project
- System Alternative 1: New 500/220 kV Substation and New 500 and 220 kV Transmission Lines.

- System Alternative 2: New 500 kV Transmission Line from Red Bluff to Serrano Substations and New 220 kV Transmission Lines.
- System Alternative 3: Demand Side Programs
- No Project Alternative

The components of these System Alternatives are described in more detail below.

2.1.2.1 Proposed Project: West of Devers Upgrade Project

The West of Devers Upgrade Project is the Proposed Project, as described above, and would include the following components (see Chapter 3, Project Description for full description):

- Remove all or portions of the following existing 220 kV transmission facilities:
 - Devers – El Casco;
 - El Casco – San Bernardino;
 - Devers – San Bernardino;
 - Devers – Vista No. 1 and No. 2;
 - Etiwanda – San Bernardino; and
 - San Bernardino – Vista.
- Construct the following transmission lines primarily within the existing utility ROW:
 - Devers – El Casco & Devers – San Bernardino 220 kV: Rebuild both lines totaling approximately 14 miles each with 2B-1590 ACSR conductor, constructed primarily on double-circuit towers.
 - Devers – San Bernardino 220 kV & El Casco-San Bernardino 220 kV: Rebuild both lines totaling approximately 43 and 30 miles, respectively, each with 2B-1590 ACSR conductor, constructed primarily on double-circuit towers.
 - Devers – Vista No. 1 & No. 2 220 kV: Rebuild both lines approximately 45 miles each with 2B-1590 ACSR conductor, constructed primarily on double-circuit towers.
 - Etiwanda – San Bernardino 220 kV: Rebuild approximately 3.5 miles with 2B-1590 ACSR conductor, constructed primarily on double-circuit towers.
 - San Bernardino – Vista 220 kV: Rebuild approximately 3.5 miles with 2B-1590 ACSR conductor, constructed primarily on double-circuit towers.
- Upgrade utility equipment within Devers, El Casco, San Bernardino, Vista, Timoteo, Etiwanda, and Tennessee substations.
- Install telecommunications lines and equipment for the protection, monitoring, and control of transmission lines and substation equipment.
- Remove and relocate approximately 2 miles of existing 66 kV subtransmission lines.

- Remove and relocate approximately 4 miles of existing 12 kV distribution lines.

2.1.2.2 System Alternative 1: New 500/220 kV Substation and New 500 and 220 kV Transmission Lines

System Alternative 1 would require construction of a new 500/220 kV substation near the City of Beaumont, a new 500 kV transmission line in new and existing ROW between Devers Substation and the new 500/220 kV substation, four (4) new 220 kV transmission lines in a new ROW between the new 500/220 kV substation to the existing WOD corridor, and upgrades to the existing WOD 220 kV transmission lines and associated existing substations between El Casco, San Bernardino, and Vista substations (see Figure 2-1, System Alternative 1). System Alternative 1 would also require acquisition of property to construct a new 500/220 kV substation that would be located near the City of Beaumont. Finally, System Alternative 1 would require construction of upgrades to the existing 220 kV transmission lines between the existing El Casco, San Bernardino, and Vista substations. System Alternative 1 would include the following components:

- Acquire approximately 23.5 miles of ROW for the new 500 kV transmission lines, approximately 7 miles of ROW for the new 220 kV transmission lines, and property rights for a new 500/220 kV substation near the City of Beaumont.
- Construct a new 500/220 kV substation near the City of Beaumont.
- Construct approximately 23.5 miles of new 500 kV single-circuit transmission line in new ROW, and approximately 5 miles of new 500 kV double-circuit transmission lines in existing ROW, between Devers Substation and the new 500/220 kV substation.
- Construct four new 220 kV transmission lines using double-circuit transmission towers in approximately 7 miles of new ROW between the new 500/220 kV substation and the existing WOD corridor near the El Casco Substation.
- Loop-in one of the existing Devers – Valley 500 kV transmission lines into the new 500/220 kV substation.
- Tear down and rebuild approximately 15 miles of existing 220 kV transmission lines and structures within the existing WOD corridor between the existing El Casco and Vista substations.
- Tear down and rebuild approximately 13 miles of existing 220 kV transmission lines and structures within the existing WOD corridor between the existing El Casco and San Bernardino substations.
- Tear down and rebuild approximately 3.5 miles of existing 220 kV transmission lines and structures within the existing WOD corridor between San Bernardino Substation and the San Bernardino Junction.
- Remove approximately 30 miles of existing 220 kV transmission lines and structures within the existing WOD corridor between El Casco and Devers substations.
- Remove and relocate approximately 11 miles of existing 115 kV subtransmission lines.

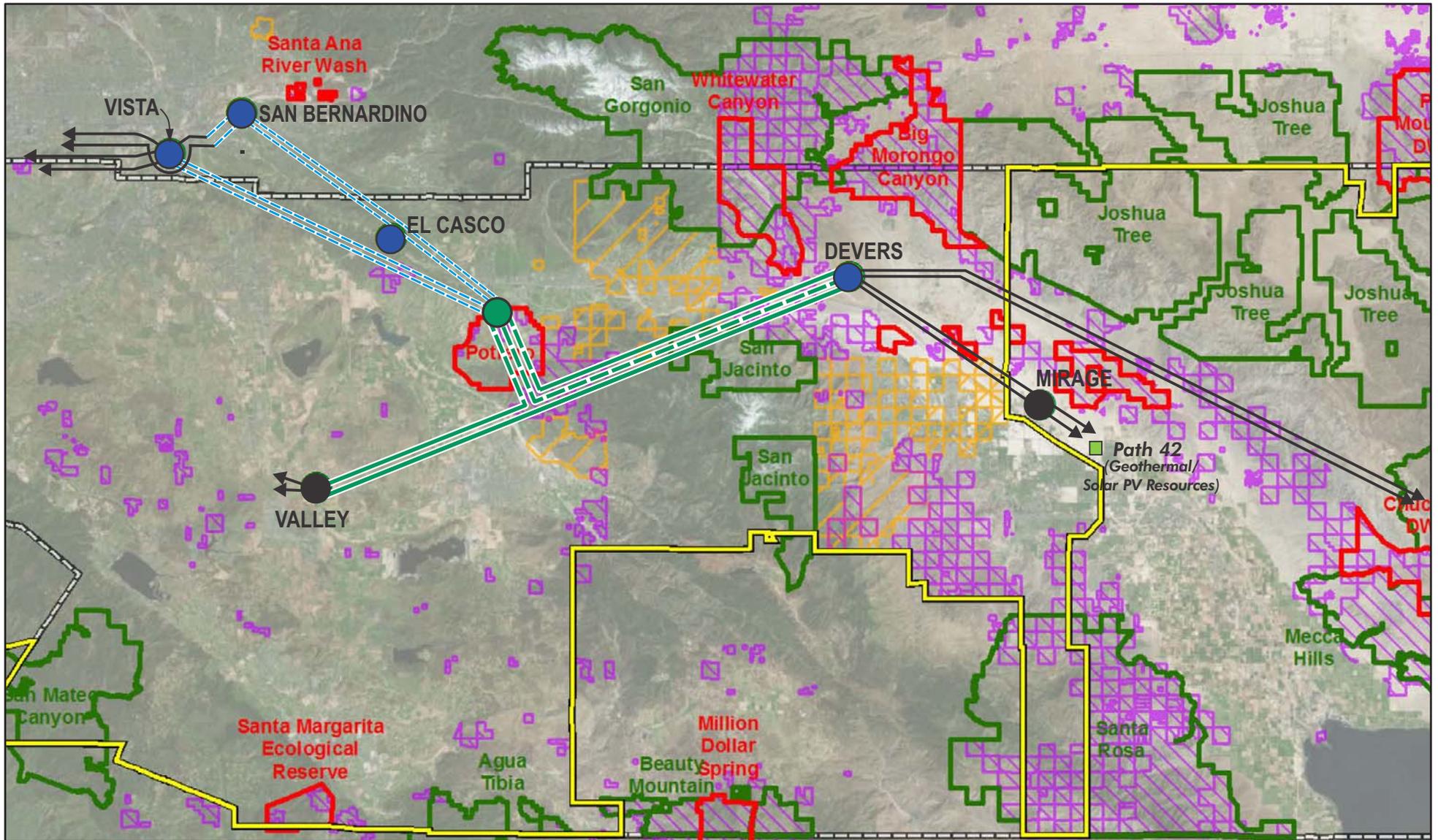


FIGURE 2-1



LEGEND

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|-----------------------------|--|----------------------------------|
| ● Existing Facilities | --- Rebuild 220 KV Trans. Line | ▨ U.S. Bureau of Land Management |
| ● West of Devers Facilities | — Existing 220 KV Trans. Line | ▨ Indian Reservation Lands |
| ■ Potential Renewables | ● New Sub. 500/220 kV/ 500kV Trans. Line | ▨ ACEC Designations |
| ▭ SCE Territory | — Existing 500 KV Trans. Line | ▨ Wilderness Area Designations |
| | --- County Boundary | |



NOT TO SCALE

SOURCE: Bing Maps (c. 2010); BLM (2012); BIA (2012); SCE (2012, 2013)
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*Southern California Edison
 West of Devers Upgrade Project
 System Alternative 1*

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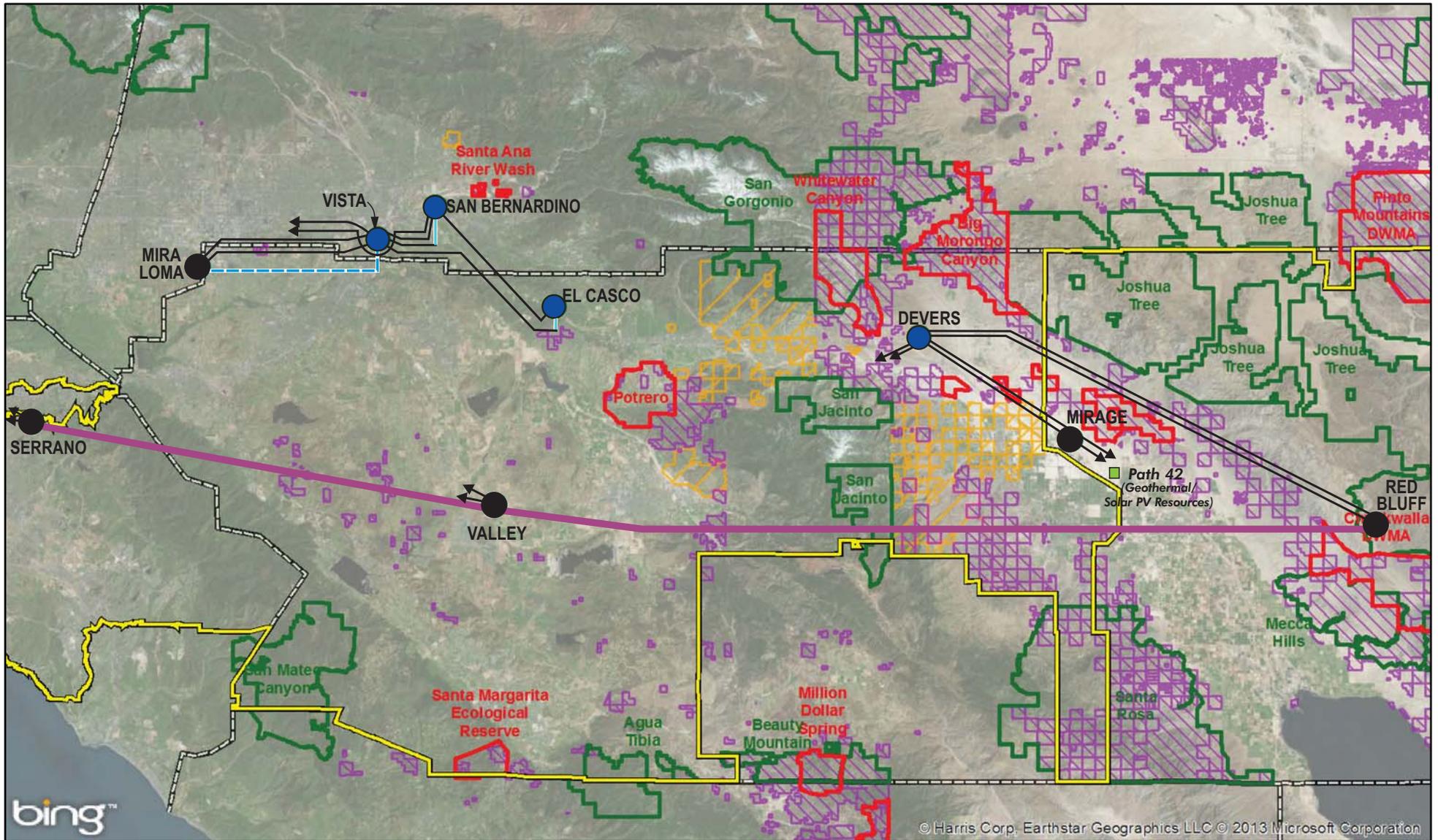
- Install telecommunication lines and equipment for protection, monitoring, and control of transmission and substation facilities.
- Upgrade utility equipment within Devers, El Casco, San Bernardino, Vista, Timoteo, Etiwanda, and Tennessee substations.
- Remove and relocate approximately 2 miles of existing 66 kV subtransmission lines.
- Remove and relocate approximately 4 miles of existing 12 kV distribution lines.

2.1.2.3 System Alternative 2: New 500 kV Transmission Line

System Alternative 2 would require construction of a new 500 kV transmission line that would be located on new ROW between the existing Red Bluff, Valley, and Serrano substations (see Figure 2-2, System Alternative 2). System Alternative 2 would also require reconfiguration of the existing 220 kV circuits between El Casco, Vista, and San Bernardino substations. Finally, System Alternative 2 would require construction of 220 kV transmission line between Mira Loma and Vista substations, and would require upgrades to Serrano Substation to increase the substation transfer capability. System Alternative 2 would include the following components:

- Acquire approximately 162 miles of ROW for a new 500 kV single-circuit transmission line.
- Acquire approximately 16 miles of ROW for a new 220 kV single-circuit transmission line.
- Construct approximately 120 miles of single-circuit 500 kV transmission line in a new ROW between Red Bluff and Valley substations.
- Construct approximately 42 miles of single-circuit 500 kV transmission line in a new ROW between Valley and Serrano substations.
- Construct approximately 16 miles of single-circuit 220 kV transmission line in a new ROW between Mira Loma and Vista substations.
- Reconfigure the existing 220 kV system between El Casco, Vista, and San Bernardino substations to form the following lines:
 - El Casco – Vista 220 kV T/L
 - San Bernardino – Vista No. 2 220 kV T/L
- Remove approximately 30 miles of existing 220 kV transmission lines and structures within the existing WOD corridor between El Casco and Devers substations.
- Remove and relocate approximately 2 miles of existing 66 kV subtransmission lines.
- Remove and relocate approximately 4 miles of existing 12 kV distribution lines.
- Install telecommunication lines and equipment for protection, monitoring, and control of transmission and substation facilities.

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LEGEND

- | | | |
|---|---|----------------------------------|
| ● Existing Facilities | --- New 220 KV Trans. Lines | ▨ U.S. Bureau of Land Management |
| ● West of Devers Facilities | — New Red Bluff-Serrano 500kV Trans. Line | ▨ Indian Reservation Lands |
| ■ Potential Renewables | ▭ SCE Territory | ▭ ACEC Designations |
| — Reconfiguration of 220 KV Trans. Line | — County Boundary | ▭ Wilderness Area Designations |



NOT TO SCALE

FIGURE 2-2

*Southern California Edison
West of Devers Upgrade Project
System Alternative 2*

SOURCE: Bing Maps (c. 2010); BLM (2012); BIA (2012); SCE (2012, 2013)
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- Upgrade utility equipment within Devers, El Casco, San Bernardino, Valley, and Vista substations.
- Install a new 500/220 kV transformer bank at Serrano Substation and modify the 220 kV switchyard configuration.

2.1.2.4 System Alternative 3: Demand Side Programs

System Alternative 3 would require implementation of demand-side programs such as distributed generation and energy efficiency in order to satisfy the Purpose and Need described above.⁷ The term “distributed generation” generally refers to small-scale, on-site electricity generation such as rooftop solar panels. The term “energy efficiency” typically refers to the installation of energy efficiency technologies or measures to reduce energy usage and eliminate energy losses.⁸ The CPUC and investor-owned utilities have implemented various programs to generate electricity at or near the source of demand (distributed generation) and to reduce peak and/or overall energy demand (energy efficiency).⁹ However, the implementation of programs would not fully address the PPA and GIA obligations.

2.1.2.5 No Project Alternative

Under the No Project Alternative, the Proposed Project would not be constructed. Given that the existing WOD transmission lines limit the ability to safely and reliably deliver the output of new generation, SCE would not be able to meet its PPA and GIA obligations.

2.1.3 System Alternative Recommendation

Consistent with Steps 3 and 4 for developing System Alternatives, as described above, the identified System Alternatives are evaluated in this section based on the following criteria:

- The extent to which the System Alternative would substantially meet the basic objectives for the Proposed Project;
- Whether the System Alternative would reduce a potentially significant environmental impact associated with the Proposed Project;
- The feasibility of a System Alternative, considering capacity limits, the ability to upgrade the system on existing sites, and economic viability.

With the exception of the No Project Alternative, if a System Alternative does not substantially meet the project objectives, is not feasible, or does not reduce a potentially significant environmental impact associated with the Proposed Project, it is eliminated

⁷ California Public Utilities Code § 1002.3.

⁸ CPUC, Energy Efficiency, available at <http://www.cpuc.ca.gov/PUC/energy/Energy+Efficiency/>.

⁹ See, e.g., CPUC California, Distributed Generation in California, available at <http://www.cpuc.ca.gov/PUC/energy/DistGen/>; and Energy Efficiency, available at <http://www.cpuc.ca.gov/PUC/energy/Energy+Efficiency/>.

from further consideration. If a System Alternative is not eliminated, it is retained for analysis in the PEA.

2.1.3.1 System Alternatives Considered and Retained

Proposed Project: West of Devers Upgrade Project

The Proposed Project would:

- Increase the transmission system capacity to integrate the planned new generation in the Blythe and Desert Center areas. (Objective 1). As described in Chapter 1 Purpose and Need, the Proposed Project would increase the system transfer capacity out of Devers substation by approximately 3,200 MW, i.e., from approximately 1,600 MW to 4,800 MW.
- Utilize existing disturbed ROW for the majority of the Proposed Project route, which is expected to minimize environmental impacts and reduce costs relative to routes that would require substantial new ROW acquisition. (Objectives 2 and 3)
- Facilitate the full deliverability of renewable generation within the Blythe and Desert Center area that have requested interconnection to the electrical transmission grid, facilitate progress towards achieving California's RPS goals, and support Federal and State renewable energy development goals. (Objectives 1 and 4)
- Provide the necessary system capability to withstand sudden electrical disturbances, including the loss of a major generating facility or high-voltage transmission line, thus improving system reliability. (Objective 5)

The Proposed Project (West of Devers Upgrade Project) is retained for further analysis because it is feasible, substantially meets the project objectives, and is expected to generate less environmental impacts relative to other alternatives analyzed in this chapter.

No Project Alternative

Under the No Project Alternative, SCE would be unable to interconnect and integrate new power generation facilities in the Blythe and Desert Center areas in a safe and reliable manner. As a result, the No Project Alternative would not satisfy the project objectives or the purpose and need for the Proposed Project. In accordance with CEQA and NEPA, however, the No Project Alternative is retained for further analysis.

2.1.3.2 System Alternatives Considered and Eliminated

System Alternative 1: New 500/220 kV Substation and New 500 and 220 kV Transmission Lines

System Alternative 1 would require the acquisition of approximately 30.5 miles of new 220 and 500 kV transmission ROW to allow for the construction and ongoing maintenance of new transmission lines, in addition to any new ROW needed for construction of necessary transmission access and spur roads. Acquisition of property rights to locate and construct a new 500/220 kV substation for System Alternative 1 would also be required.

System Alternative 1 would likely cause greater environmental impacts than the Proposed Project because of the need to acquire and construct new facilities within approximately 30.5 miles of new ROW. Some of the increased environmental impacts would result from:

- Acquiring and constructing new transmission ROW through or near the San Bernardino National Forest, the San Jacinto National Mountains Monument, and the BLM San Jacinto Wilderness area.
- Siting of transmission lines through the northern edge of the Riverside County Potrero Reserve, and BLM Area of Critical Environmental Concern (ACEC).
- Siting the transmission lines through biologically sensitive areas for species such as the Coachella Valley fringe-toed lizard and Coachella Valley milk-vetch.
- Constructing new transmission access roads through hilly terrain requiring extensive grading and land disturbance that could impact sensitive biological resources.
- Siting a new substation within a Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) critical cell.
- Relocating major gas and crude oil pipe lines.
- Siting a new transmission corridor in an area with a significant concentration of earthquake faults.

System Alternative 1 would increase the system transfer capacity out of Devers substation by approximately 2,000 MW, i.e., from approximately 1,600 MW to 3,600 MW.

System Alternative 1 does not meet Objective 2 (Consistent with prudent transmission planning, maximize the use of existing transmission line rights-of-way to the extent practicable) because it would require approximately 30.5 miles of new transmission ROW, while the majority of the Proposed Project would use existing ROW. System Alternative 1 does not meet Objective 6 (Construct facilities in a timely and cost-effective manner by minimizing service interruptions to the extent practicable) because the cost for constructing System Alternative 1, including approximately 30.5 miles of new 220 kV and 500 kV transmission facilities in new

ROW and a new 500/220 kV substation, is expected to be more costly than the construction activities required for the Proposed Project. System Alternative 1 does not meet Objective 3 (Meet project need while minimizing environmental impacts) because it would assumingly create additional environmental impacts relative to the Proposed Project.

System Alternative 1 was eliminated from further consideration because it would not reduce environmental impacts compared to the Proposed Project and would not substantially meet the project objectives.

System Alternative 2: A New 500 kV Transmission Line

System Alternative 2 would require acquisition of approximately 162 miles of new ROW for a new 500 kV transmission line and approximately 16 miles of a new ROW for a new 220 kV transmission line. System Alternative 2 would include similar types of additional environmental impacts that are associated with construction of the transmission line elements of System Alternative 1, except for the construction of a new substation described in System Alternative 1. However, System Alternative 2 would likely result in greater environmental impacts overall than the Proposed Project because it would require acquiring and constructing within approximately 162 additional miles of new ROW in contrast to the Proposed Project where less than 5 miles would be required.

System Alternative 2 would increase the system transfer capacity from Red Bluff to Serrano substations by approximately 2,000 MW, i.e., from approximately 1,600 MW to 3,600 MW.

System Alternative 2 does not meet Objective 2 (Consistent with prudent transmission planning, maximize the use of existing transmission line rights-of-way to the extent practicable) because it would require acquisition and development of approximately 162 miles of new transmission line ROW, while the majority of the Proposed Project would use existing SCE ROW. System Alternative 2 does not meet Objective 3 (Meet project need while minimizing environmental impacts) because it would likely increase overall environmental impacts for the reasons described above. System Alternative 2 does not meet Objective 6 (Construct facilities in a timely and cost-effective manner by minimizing service interruptions to the extent practicable) because it is expected to result in greater transmission line construction costs attributable to the greater distance, the need to increase Serrano Substation transfer capability to accommodate the increase in the system capacity, and the need to acquire approximately 162 miles of new ROW.

System Alternative 2 was eliminated from further consideration because it would not minimize environmental impacts compared to the Proposed Project and would not substantially meet the project objectives.

System Alternative 3: Demand Side Programs

System Alternative 3 would not allow SCE to meet its obligation to integrate and fully deliver the output of new generation projects located in the Blythe and Desert Center areas, as discussed above. As such, System Alternative 3 would not allow SCE to meet Project Objective 1, a principal purpose of the Proposed Project, and SCE would be unable to meet its contractual obligations under the executed GIAs and PPAs described in Table 1.1, Interconnection Requests for the Blythe and Desert Center Areas, above.

Although System Alternative 3 would avoid some of the environmental impacts associated with the Proposed Project, the installation of distributed generation facilities at various locations could result in construction impacts related to traffic, noise, air emissions, aesthetics, and other environmental considerations. The uncertain scope, timing, and location of such environmental impacts are too speculative to analyze under CEQA.¹⁰ As such, it would be speculative to determine whether System Alternative 3 would minimize environmental impacts associated with the Proposed Project (Basic Objective 3).

System Alternative 3 would not allow the full deliverability of the renewable resources identified in Table 1.1, Interconnection Requests for the Blythe and Desert Center Areas, which are expected to facilitate progress towards California's RPS goals. The CPUC has identified risks and uncertainties with using demand-side programs to achieve RPS goals¹¹ and evidence does not support that RPS goals can be reached by relying only upon demand-side programs. Instead, a variety of strategies are necessary to facilitate progress towards achieving RPS goals in an efficient and cost-effective manner, including building new transmission lines to deliver renewable generation from areas that are currently transmission-constrained.¹² Because System Alternative 3 would not allow the full deliverability of renewable resources identified in Table 1.1, Interconnection Requests for the Blythe and Desert Center Areas, and would not ensure progress toward achieving RPS goals, System Alternative 3 does not meet Basic Objective 4.

¹⁰ See D.Decision10-12-052, at 23 (discussing "highly speculative" of impacts associated with distributed generation facilities).

¹¹ See CPUC California Renewable Distributed Energy Collaborative (Re-DEC), Potential Challenges to High Penetration of Distributed Renewable Generation, December 9, 2009, Renewable DG Challenges Matrix, and Summary of PV Potential Assessment in RETI and the 33% Implementation Analysis, December 9, 2009, available at <http://www.cpuc.ca.gov/PUC/energy/Renewables/Re-DEC.htm>; see also Itron, Inc., Impacts of Distributed Generation Final Report, Prepared for CPUC California Energy Division Staff, January 2010, at Chapters 4 and 5, and Appendix A, available at http://www.cpuc.ca.gov/NR/rdonlyres/750FD78D-9E2B-4837-A81A-6146A994CD62/0/ImpactsofDistributedGenerationReport_2010.pdf.

¹² See CPUC California, RPS Project Transmission Barriers, <http://www.cpuc.ca.gov/PUC/energy/Renewables/RPStransmissionbarriers.htm>; see also RETI, <http://www.energy.ca.gov/reti/>; CAISO California, Infrastructure Improvements, <http://www.caiso.com/informed/Pages/RenewablesDemandResponseIntegration/InfrastructureImprovements/Default.aspx> (discussing programs to integrate renewable resources to the grid, including new transmission improvements).

System Alternative 3 was eliminated from further consideration because it would not substantially meet the Project Objectives.

2.1.3.3 Proposed Project: West of Devers Upgrade Project

Based upon the discussion provided in Section 2.1.3.1, System Alternatives Considered and Retained, and Section 2.1.3.2, System Alternatives Considered and Eliminated, the Proposed Project: West of Devers Upgrade Project, has been selected as the preferred project alternative and is discussed further in this PEA as the Proposed Project.

The Proposed Project includes replacing the existing WOD 220 kV transmission lines and associated structures with new, higher-capacity transmission lines and structures, modifying substation equipment in existing substations, and making telecommunication system improvements. The Proposed Project would eliminate the existing constraints associated with the WOD transmission lines that otherwise limit the full deliverability of renewable and non-renewable generation resources located in the Blythe and Desert Center areas from reaching utility load centers. The major components of these facilities are summarized below. A complete description of the Proposed Project is provided in Chapter 3.0 of this document.

- Remove and upgrade the following existing 220 kV transmission lines and structures with new transmission lines and structures utilizing 2B-1590 ACSR conductor:
 - Devers – El Casco (approximately 30 miles);
 - El Casco – San Bernardino (approximately 14 miles);
 - Devers – San Bernardino (approximately 43 miles);
 - Devers – Vista No. 1 and No. 2 (approximately 45 miles each);
 - Etiwanda – San Bernardino (approximately 3.5 miles); and
 - San Bernardino – Vista (approximately 3.5 miles).
- Upgrade substation equipment within Devers, El Casco, San Bernardino, Vista, Etiwanda, Timoteo, and Tennessee substations.
- Install telecommunication lines and equipment for the protection, monitoring, and control of transmission lines and substation equipment.
- Remove and relocate approximately 2 miles of existing 66 kV subtransmission lines.
- Remove and relocate approximately 4 miles of existing 12 kV distribution lines.

2.2 Transmission Line Route Alternatives Evaluation

The following sections describe the development of line route alternatives, and the selection of the Proposed Project for the transmission and subtransmission line routes.

As described in Chapter 1, capacity constraints with the existing West of Devers (WOD) transmission lines limit Southern California Edison's (SCE's) ability to fully deliver electricity from new and planned renewable and non-renewable generation facilities in

the Blythe and Desert Center areas. The Proposed Project is needed to facilitate the full deliverability of new electric generation resources being developed in eastern Riverside County.

Consistent with prudent transmission planning and the Garamendi Principles, SCE designed the Proposed Project to maximize use of the existing ROW to the extent practicable to minimize environmental impacts and reduce costs.¹³

When considering potential alternative routes to the Proposed Project in accordance with CEQA and NEPA, SCE evaluated whether acquiring and developing new right-of-way (ROW) would avoid or substantially lessen environmental impacts associated with the Proposed Project while meeting most of the Project Objectives. Given the existing environmental, geographic, technical and land use constraints, and the need to develop new ROW for possible route alternatives, SCE concluded there were no other route alternatives that would result in less environmental impact than the Proposed Project. For example, between Devers and Vista substations, the line route must traverse or avoid a variety of sensitive resources and existing uses, such as the San Jacinto Wilderness to the south, the San Gorgonio Wilderness to the north, lands managed by the Bureau of Land Management (BLM), the reservation trust land (the “Reservation”) of the Morongo Band of Mission Indians (“Morongo”), areas covered by the Coachella Valley Multi-Species Habitat Conservation Plans (CV-MSHCP), areas covered by the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP), Interstate 10, the Banning Airport, and a complex mix of existing development within the cities of Banning, Beaumont, Loma Linda, Grand Terrace, Colton, Calimesa, Redlands, and unincorporated areas of San Bernardino and Riverside Counties, among other uses and resources.

As described in Chapter 1.0, SCE considered several electric system alternatives involving new transmission and substation facilities that could theoretically meet the identified electric system need and project objectives. Except for the Proposed Project and No Project Alternative, the electric system alternatives identified in Chapter 1 were eliminated from further consideration because they would result in greater environmental impacts than the Proposed Project and/or would not substantially meet the project objectives.

Based on a screening level review, and consistent with prudent transmission planning and the Garamendi principles, SCE rejected potential alternative routes that would require substantial deviation from the existing WOD ROW because acquiring and constructing within a new ROW would likely increase environmental impacts and costs compared to

¹³ See Chapter 1, Section 1.4, Project Objective No. 2 (“Consistent with prudent transmission planning, maximize the use of existing transmission line rights-of-way to the extent practicable”); Project Objective No. 3 (“Meet project need while **minimizing** environmental impacts”) (emphasis added); and Project Objective No. 7 (“Construct facilities in a timely and cost-effective manner by minimizing service interruptions to the extent practicable”).

the Proposed Project based on a variety of factors, including, but not limited to, the following:¹⁴

- A new 220 kV ROW would result in increased grading and land disturbance from the development of new access roads and support facilities. An increase in grading and land disturbance would require greater use of heavy construction equipment, which could result in proportionally greater noise, air, water quality, and traffic impacts. Increased grading and land disturbance could substantially impact sensitive biological and cultural resources if the development occurs in sensitive and/or previously undisturbed areas. In contrast, the Proposed Project would primarily rely upon upgrading a network of existing access roads and maintenance facilities to support construction activities.
- A new 220 kV ROW would require new crossings through or over potentially sensitive environmental features (such as creeks or wetlands) and existing highways and railroads. New crossings could increase impacts to biological, cultural, water, land use and/or visual resources, as well as prolong the permitting process. In contrast, the Proposed Project can primarily rely upon the existing crossings associated with the existing WOD transmission facilities.
- A new 220 kV ROW could increase environmental impacts to sensitive species located within the Coachella Valley and Western Riverside County MSHCP areas, as compared to the Proposed Project, which can rely on the existing ROW.
- A new 220 kV ROW could disrupt or divide an existing community or land use because the new ROW may be located in an area without an existing utility corridor. A new 220 kV ROW would likely necessitate a greater reliance on eminent domain to obtain the necessary real property rights.
- A new 220 kV ROW would likely increase overall costs and extend the project schedule to acquire new real property rights, develop new access roads, and address environmental mitigation requirements, among other considerations.

Except as discussed below, SCE did not identify feasible 220 kV route alternatives that would substantially meet the project objectives while reducing environmental impacts associated with the Proposed Project.

2.2.1 Transmission Line Route Alternatives Considered

Within Morongo Reservation land, the Proposed Project would require developing an approximately 3 mile segment of new ROW pursuant to an agreement between SCE and Morongo. The agreement gives Morongo the right to select between two alternative routes for a portion of the existing corridor on Reservation land generally located west of

¹⁴ In 2006, the West of Devers segment was determined to be the environmentally superior alternative for a portion of SCE's Devers-Palo Verde No. 2 Transmission Line Project. *See* Final Impact Report/Environmental Impact Statement (A.05-04-015). The segment was not constructed due to legal infeasibility at the time SCE's CPCN was granted. *See* D.07-01-040.

Malki Road and extending to the westernmost boundary of the Reservation near a sand-and-gravel operation in the City of Banning area, provided the route selected is feasible.

Two WOD 220 kV Line Route Alternatives were considered for the approximate three-mile section of relocated ROW. Each 220 kV alternative includes the same common elements outside the Reservation, summarized as follows:

- Each of the WOD 220 kV Line Route Alternatives would originate at Devers Substation located northwest of the City of Palm Springs in unincorporated Riverside County, and then proceed westerly across the Reservation to El Casco Substation in the Calimesa area.
- From El Casco Substation, the corridor proceeds westerly to the San Bernardino Junction located in the Loma Linda area.
- At the San Bernardino Junction, the corridor splits in two different directions. Two 220 kV lines would continue north to San Bernardino Substation in the City of Redlands, and two would continue westerly to Vista Substation located in the City of Grand Terrace.
- The 220 kV line facilities within the corridor include Devers-Vista No. 1, Devers-Vista No. 2, Devers-El Casco, El Casco-San Bernardino, Etiwanda-San Bernardino, San Bernardino-Vista, and Devers-San Bernardino. These lines are both single-circuit and double-circuit configurations depending on the location.
- The route between Devers and Vista Substations is approximately 45 miles long.
- An additional approximately three miles of ROW exists between the San Bernardino Junction and San Bernardino Substation.

2.2.1.1 220 kV Line Route Alternative 1

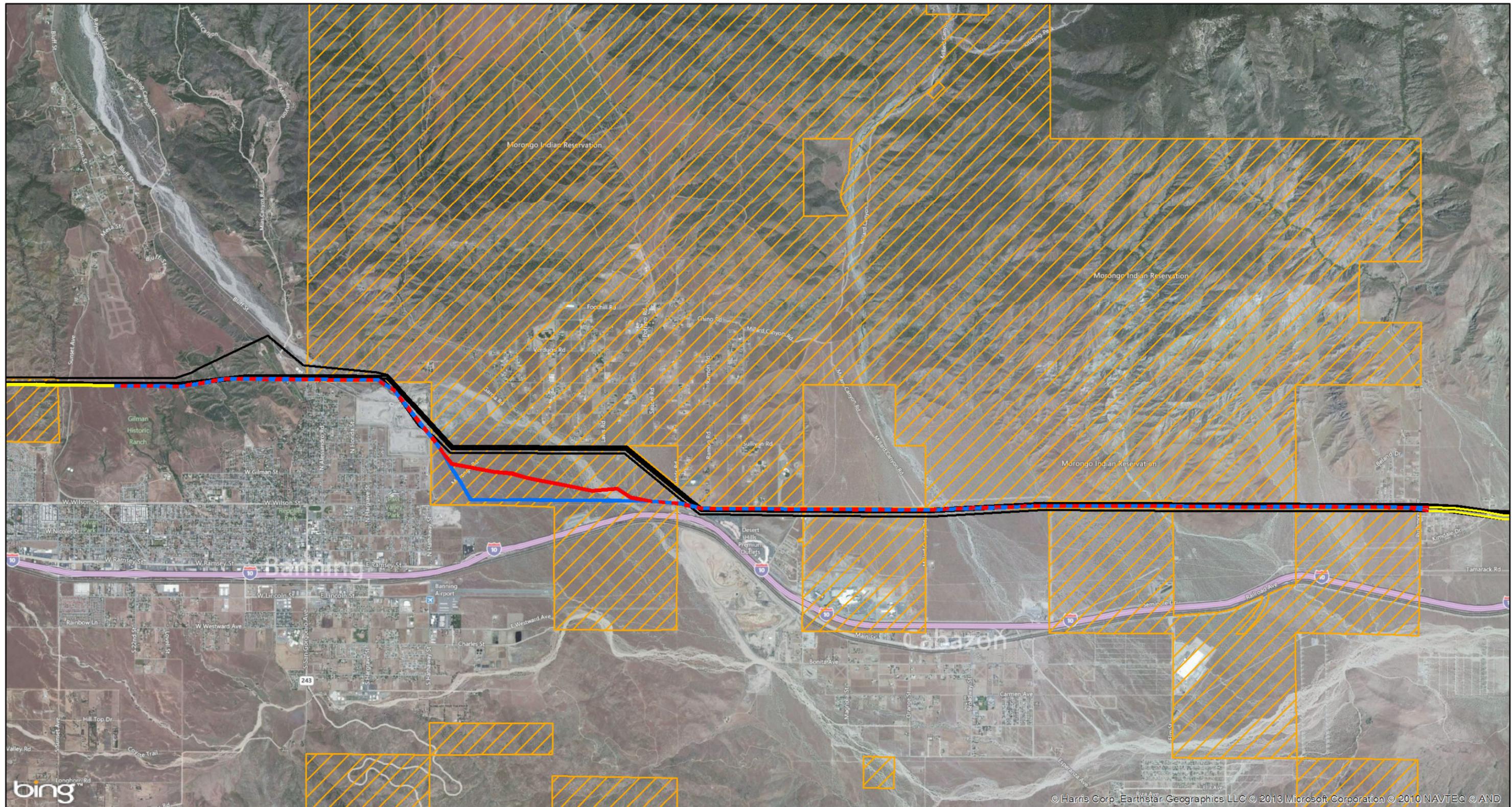
The 220 kV Line Route Alternative 1 would depart from the existing utility corridor west of Malki Road on Reservation land (see Figure 2-3, Proposed and Alternative Transmission Line Routes) and continue northwesterly from the existing corridor, rejoining the existing utility corridor immediately west of the Reservation at North Hathaway Street. This portion of Line Route Alternative 1 is approximately 3 miles long.

2.2.1.2 220 kV Line Route Alternative 2

The 220 kV Line Route Alternative 2 would depart from the existing utility corridor west of Malki Road on Reservation land (see Figure 2-3, Proposed and Alternative Transmission Line Routes) and continue westerly from the existing corridor nearly to the western edge of the Reservation boundary, then proceed northerly to rejoin the existing utility corridor immediately west of the Reservation at North Hathaway Street. This portion of Line Route Alternative 2 would be approximately 3 miles long.

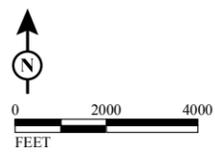
Due to the proximity of the 220 kV Line Route Alternative 2 to the Banning Airport, and associated FAA clearance requirements, this alternative may only be feasible with the closure of the Banning Airport.

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LEGEND

- Proposed 220kV Transmission Line
- Alternative 220kV Transmission Line
- Common to Both
- Existing 220kV Transmission Line
- Existing 220kV Transmission Line to be Removed
- Morongo Indian Reservation



SOURCE: SCE (4/2013); Bing Maps (2010)

I:\SCE1110\GIS\MXD\GenEnvironmental\Prop_and_Alt_TransmissionLines.mxd (9/18/2013)

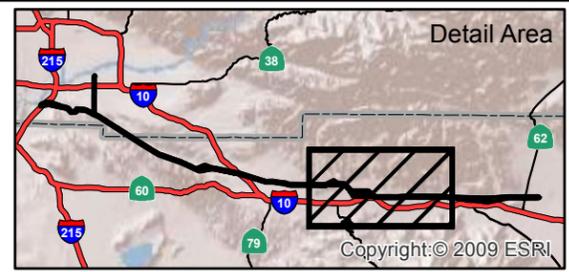


FIGURE 2-3

Southern California Edison
West of Devers Upgrade Project
Proposed and Alternative Transmission Line Routes

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2.3 Subtransmission Line Route Alternatives Evaluation

Currently, there are two existing 66 kV subtransmission lines (San Bernardino-Redlands-Tennessee and San Bernardino-Redlands-Timoteo) located on the same double-circuit structure within the existing WOD corridor between San Bernardino Substation and the San Bernardino Junction. With the development of the Proposed Project, both 66 kV subtransmission lines would need to be relocated outside of the WOD corridor to allow for sufficient space for construction of the new 220 kV structures and proper clearances for the conductor. The following sections describe the 66 kV subtransmission line route alternatives evaluated for the Proposed Project.

SCE initially explored the option of placing the two 66 kV subtransmission lines underground within the existing WOD corridor in order to accommodate the required General Order (G.O.) 95 clearances from the new 220 kV transmission structures. The presence of other underground utility infrastructure within the existing WOD corridor precludes the ability to underground these two 66 kV subtransmission lines in this location. Additionally, there would not be sufficient space on either side of the existing WOD corridor to allow for additional ROW to be acquired. As a result, this alternative was eliminated from further consideration.

SCE then explored the option of placing one of the two 66 kV subtransmission lines overhead on new subtransmission structures within the existing WOD corridor and relocating the other 66 kV subtransmission line on new overhead structures outside of the WOD corridor. This route alternative was not feasible as there would not be sufficient space within the existing corridor for the 66 kV subtransmission line to be located overhead as it would not allow for proper conductor clearance from the new 220 kV transmission line structures per G.O. 95. As a result, this alternative was eliminated from further consideration.

SCE then explored the option of placing the two 66 kV subtransmission lines overhead on the same double-circuit structures outside of the existing WOD corridor. SCE determined that this option was not superior to the Proposed Project as it would result in operational vulnerability. Since the 66 kV subtransmission lines serve as the source of power for Redlands Substation, placing both lines on a single pole line outside of the utility corridor would create an unacceptable outage risk (e.g., a car could hit the pole and cause an outage). Additionally, the safe performance of any necessary repair or maintenance activities on either of the 66 kV lines (which would be double-circuited in this option) would require that each be de-energized concurrently. De-energizing both subtransmission lines simultaneously would adversely affect reliability and system operational flexibility and could result in electrical service outages. As a result, this alternative was eliminated from further consideration.

Lastly, complete undergrounding of the 66 kV subtransmission lines outside of the WOD corridor was not considered as an option as it would likely create additional environmental impacts when compared to other feasible alternatives. Placing subtransmission lines underground requires extensive excavation that would likely result in greater ground disturbance and increased air emissions when compared to overhead

construction. Additionally, roadways within the vicinity of the proposed relocated 66 kV subtransmission lines are known to be congested underground, thus complicating the potential to place the subtransmission lines underground. Maintenance for underground lines would not be as efficient when compared to overhead lines because it is more difficult to locate and repair problems that arise, potentially prolonging outage. When compared to overhead construction, the complete undergrounding of the subtransmission line outside of the WOD corridor would be considered inferior from a technical perspective. As a result, this alternative was eliminated from further consideration.

2.3.1 Subtransmission Line Route Alternatives Considered

The subtransmission line route alternatives considered for the project include the relocation of a portion of both the San Bernardino-Redlands-Timoteo and San Bernardino-Redlands-Tennessee 66 kV subtransmission lines.

2.3.1.1 Subtransmission Line Route Alternative 1

Subtransmission Line Route Alternative 1 proposes to remove and relocate a portion of both the existing San Bernardino-Redlands-Tennessee and San Bernardino-Redlands-Timoteo 66 kV subtransmission lines outside of the existing WOD corridor to accommodate the proposed 220 kV transmission line alignment within the existing WOD corridor.

San Bernardino-Redlands-Tennessee

A 3.2-mile-long portion of the existing San Bernardino-Redlands-Tennessee 66 kV Subtransmission Line would be relocated in franchise or newly acquired ROW east of the existing WOD corridor.

The proposed single circuit San Bernardino-Redlands-Tennessee 66 kV Subtransmission Line Route would generally travel southeasterly from San Bernardino Substation located in the City of Redlands where it would connect to the existing San Bernardino-Redlands-Tennessee 66 kV Subtransmission Line at Barton Road in the City of Redlands. The approximate length of this line route would be 4 miles. The proposed 66 kV subtransmission line route relocation would primarily be placed on overhead structures, except for approximately 800 feet of underground line route immediately exiting San Bernardino Substation.

The relocated single-circuit San Bernardino-Redlands-Tennessee 66 kV Subtransmission Line would connect to the existing San Bernardino Substation. The relocated 66 kV subtransmission line would exit San Bernardino Substation to the east along West San Bernardino Avenue to the corner of Marigold Avenue. The 66 kV subtransmission line would then continue east along the south side of West San Bernardino Avenue to Nevada Avenue, where it would extend south to Interstate 10. The 66 kV subtransmission line would span Interstate 10; and from the south side of Interstate 10 it would extend south along Nevada Avenue to Citrus Avenue. The 66 kV subtransmission line would then extend east on Citrus Avenue to Iowa Avenue. From Iowa Avenue, the 66 kV

subtransmission line would extend south along Iowa Avenue where it would connect to the existing San Bernardino-Redlands-Tennessee 66 kV Subtransmission Line.

San Bernardino-Redlands-Timoteo

A 3.2-mile-long portion of the existing San Bernardino-Redlands-Timoteo 66 kV Subtransmission Line would be relocated in franchise or newly acquired ROW east of the existing WOD corridor.

The proposed single-circuit San Bernardino-Redlands-Timoteo 66 kV Subtransmission Line would be located between the existing San Bernardino Substation in the City of Redlands and Timoteo Substation in the City of Loma Linda. The proposed 66 kV subtransmission line route would be approximately 2 miles in length.

The relocated single-circuit San Bernardino-Redlands-Timoteo 66 kV Subtransmission Line would connect to the existing San Bernardino Substation. The relocated 66 kV subtransmission line would exit San Bernardino Substation to the east along West San Bernardino Avenue to the corner of Marigold Avenue. The 66 kV subtransmission line would then extend south for approximately 1,350 feet along a private property line to Almond Avenue. From this location, the 66 kV subtransmission line would then extend west on Almond Avenue for approximately 600 feet. The 66 kV subtransmission line would extend south for 1,250 feet along an existing property line to Lugonia Avenue. From this location the 66 kV subtransmission line would proceed south to Interstate 10, where it would cross the freeway. From the south side of Interstate 10, the subtransmission line would extend south along Bryn Mawr Avenue and then east along Redlands Boulevard until it reaches an alley, where it would proceed south until it reaches Mountain View Avenue, where it would connect to the existing Timoteo Substation.

2.3.2 Transmission and Subtransmission Line Route Recommendations

The 220 kV Line Route Alternative 1 would be the preferred 220 kV transmission line route for the Proposed Project. The 220 kV Line Route Alternative 2 may only be feasible with the closure of the Banning Airport. At this time, the closure of the Banning Airport is uncertain. As such, the 220 kV Line Route Alternative 1 is the preferred line route alternative although the 220 kV Line Route Alternative 2 will be retained and fully described in this PEA. The proposed Subtransmission Line Route Alternative 1 is the preferred subtransmission line route as part of the Proposed Project because the other options were found infeasible or considered inferior to Subtransmission Line Route Alternative 1.

2.4 Identification of Proposed Project

The Proposed Project would consist of the 220 kV Line Route Alternative 1 and Subtransmission Line Route Alternative 1, both of which are described in further detail in

Chapter 3 of this PEA. The No Project Alternative and the 220 kV Line Route Alternative 2 are retained for analysis in this PEA in accordance with CEQA and NEPA.

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