APPENDIX D

Alternatives Screening Report

CALIFORNIA PUBLIC UTILITIES COMMISSION

Riverside Transmission Reliability Project

Alternatives Screening Report

August ~~April~~ 2018

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CALIFORNIA PUBLIC UTILITIES COMMISSION

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Alternatives Screening Report

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EXECUTIVE SUMMARY

PURPOSE OF ALTERNATIVES SCREENING REPORT

The California Independent System Operators (CAISO) directed Riverside Public Utilities (RPU) to construct the Riverside Transmission Reliability Project (RTRP) in 2006. The City of Riverside certified a Final Environmental Impact Report (EIR) for the RTRP in 2013. Southern California Edison (SCE) submitted an application (A.15-04-013) for a Certificate of Public Convenience and Necessity (CPCN) with the California Public Utilities Commission (CPUC) to construct and operate the RTRP on April 15, 2015. SCE then revised the location and configuration of a portion of the 230-kilovolt (kV) transmission line within the City of Jurupa Valley in September 2016. The revised portions of the project, herein referred to as the Revised Project, were not analyzed in the 2013 RTRP EIR, and alternatives to the Revised Project were not previously evaluated pursuant to the requirements of the California Environmental Quality Act (CEQA). This Alternatives Screening Report (ASR) documents the screening process that was conducted by the CPUC to identify potentially feasible alternatives that would avoid or reduce significant environmental impacts of the Revised Project.

REVISED PROJECT OVERVIEW

Relocated Overhead 230-kV Transmission Line

Approximately 0.5 mile of the 230-kV overhead transmission line would be relocated to the west side of Wineville Avenue within the City of Jurupa Valley between Cantu-Galleano Ranch Road (adjacent to the tie-in to Mira Loma – Vista #1 230-kV Transmission Line) and Landon Drive.

Underground 230-kV Transmission Line

The Revised Project would include the construction of approximately 2 miles of underground transmission line located within private property, City of Jurupa Valley franchise right-of-way (ROW), and the Goose Creek Golf Club. Two new riser poles, approximately 165 feet in height, would be installed on either end of the underground transmission line segment (a total of four riser poles) to transition the line from an overhead position to underground and from the underground position back to overhead.

Distribution Line Modifications

To accommodate the proposed 230-kV transmission line, existing distribution lines located along the south side of the Santa Ana River would require relocation to comply with clearance requirements. Distribution line modifications are being considered in the Subsequent EIR where

refinements would result in an expanded or different footprint from what was considered in the 2013 RTRP EIR.

SCE PROJECT OBJECTIVES

SCE has identified the following objectives of the project:

- Increase capacity to meet existing electric system demand and anticipated future load growth
- Provide an additional point of delivery for bulk power into the Riverside Public Utilities (RPU) electrical system, thereby reducing dependence on Vista Substation and increasing overall reliability

CPUC reviewed the project objectives and revised the second project objective to more broadly reflect providing a second source of bulk power into RPU system. The basic project objectives are considered in the screening of alternatives.

OVERVIEW OF SCREENING PROCESS

Pursuant to CEQA Guidelines Section 15126.6(a), an EIR must describe a reasonable range of potentially feasible alternatives to a project, or to the location of the project, that would (1) feasibly attain most of the basic project objectives[1] and (2) avoid or reduce any of the significant effects of the project. CEQA also requires consideration of a No Project Alternative (CEQA Guidelines Section 15126.6[e]). The No Project Alternative is included in the Subsequent EIR and is therefore not addressed further in this screening process.

Each alternative was clearly defined before it was evaluated to allow a comparative evaluation of the alternative and the Revised Project. To comply with CEQA requirements, each alternative was then evaluated in three ways:

1. **Meets Most of the Basic Project Objectives.** The basic project objectives are to (i) increase capacity to meet existing and future load growth and (ii) provide an additional point of delivery for bulk power into the RPU electrical system. If an alternative did not meet at least one of the basic project objectives, it was rejected from further analysis.
2. **Potentially Feasible.** Feasibility considers factors such as limitations to permitting a high-voltage transmission line and other required electrical infrastructure, lands with legal protections, consistency with regulatory standards, whether the cost of the alternative would be prohibitive, and the consideration of available

[1] The basic project objectives are those objectives that meet the underlying fundamental purpose of the project.

technology. Alternatives that were not potentially feasible were rejected from further analysis.

3. **Avoid or Reduce Significant Environmental Impacts.** Potentially significant impacts of the Revised Project include aesthetic impacts from the riser poles proposed at Limonite Avenue and the relocated overhead alignment along Wineville Avenue, and noise and traffic impacts from construction of the underground transmission line. Alternatives that would not avoid or reduce any significant impacts of the Revised Project or that would create or substantially increase significant impacts compared to the Revised Project were rejected from further analysis.

OVERVIEW OF ALTERNATIVES CONSIDERED

Alternatives Analyzed in 2013 RTRP EIR

SCE's Revised Project is a component of the larger RTRP, which was jointly planned by SCE and the City of Riverside's RPU. The City of Riverside prepared and certified the Final EIR for the RTRP on February 5, 2013. As part of the 2013 RTRP EIR, the City of Riverside conducted a siting study in 2006 to evaluate three potential corridors for the 230-kV transmission line. Specific alternatives were considered within each corridor, including routes on Limonite Avenue, Bain Street, Van Buren, Interstate 15 (I-15), and along the Santa Ana River. None of these alternatives were considered further in this ASR because they were previously eliminated from further consideration due to environmental impacts and potential feasibility constraints. Several alternatives considered in the 2013 RTRP EIR were reevaluated in this ASR, including distributed generation, energy conservation, and demand response, because (1) technology and systems operations have changed since the 2006 siting study and (2) CPUC code requires consideration of these alternatives.

Alternatives Considered

The alternatives screening process culminated in the identification and screening of 30 potential alternatives, or combinations of alternatives, identified (1) during the 2017 public scoping process, (2) by SCE in response to CPUC request for a low-voltage alternative, and (3) by the CPUC. Alternative types include overhead and underground transmission route alternatives to SCE's proposed transmission line route and electrical system alternatives such as upgrades to other parts of the electrical system, distributed generation, energy conservation, and expansion of the low-voltage system. Four alternatives were retained for analysis in the Subsequent EIR, and 26 alternatives were eliminated from further analysis. Table ES-1 lists each project alternative included in this ASR. Figure ES-1 shows the routes for the proposed alternatives.

Table ES-1 Alternatives Considered in Screening Analysis

Alternative	Type	Rationale for Rejection
Alternatives Retained		
Alternative 1: Bellegrave – Pats Ranch Road Underground *Source: SCE and 2017 Scoping*	Transmission Route/ Underground	Alternative Retained
Alternative 2: Wineville – Limonite Underground *Source: CPUC*	Transmission Route/ Underground	Alternative Retained
Alternative 3: Relocate Northern Riser Poles *Source: CPUC*	Pole Relocation	Alternative Retained
Alternative 4: Wineville – Landon Underground *Source: CPUC*	Transmission Route/ Underground	Alternative Retained
Alternatives Rejected		
Alternative 5: Wineville Underground *Source: SCE and 2017 Scoping*	Transmission Route/ Underground	Results in greater environmental impacts and may not substantially conform to Settlement Agreement between SCE and developers.
Alternative 6: Mira Loma Substation – Van Buren in Railroad ROW *Source: 2017 Scoping and 2013 RTRP EIR*	Transmission Route	Not feasible. Neither SCE nor Union Pacific would allow transmission line to be located within railroad ROW.
Alternative 7: Eastern Alignment in Riverside *Source: 2017 Scoping and 2013 RTRP EIR*	Transmission Route	Results in greater environmental impacts.
Alternative 8: All Underground Transmission Line (Mira Loma – Vista #1 230-kV Transmission Line to Wildlife Substation) *Source: 2017 Scoping*	Underground	Results in greater environmental impacts.
Alternative 9: Limonite – Van Buren Underground *Source: 2017 Scoping*	Transmission Route/ Underground	Results in greater environmental impacts and does not reduce any impacts of the Revised Project.
Alternative 10: Idyllwild Lane, Julian Drive, and Bradford Street Underground *Source: 2017 Scoping*	Transmission Route/ Underground	Results in greater environmental impacts and does not reduce any impacts of the Revised Project.
Alternative 11: I-15 South to SR-91 East Underground *Source: 2017 Scoping*	Transmission Route/ Underground	Not regulatorily feasible. Caltrans does not allow installation of underground utilities beneath Caltrans-operated highways.

Alternative	Type	Rationale for Rejection
Alternative 12: Mountain View Substation – Agua Mansa – Mira Loma – Vista #1 230-kV Transmission Line Interconnect *Source: 2017 Scoping*	System Alternative	May not be technologically feasible. Insufficient space is available at Mountain View Substation for 230-kV substation equipment. Results in greater environmental impacts along the Santa Ana River.
Alternative 13: Battery Storage *Source: 2017 Scoping*	Non-Wire	Does not meet basic project objectives and is not technologically or economically feasible.
Alternative 14: Additional Transformer Capacity at Vista Substation *Source: 2013 RTRP EIR; CPUC*	Non-Wire	Does not meet basic project objectives.
Alternative 15: Additional Transformer Capacity at Mira Loma Substation *Source: 2013 RTRP EIR; CPUC*	Non-Wire	Does not meet basic project objectives.
Alternative 16: Expansion of Riverside Energy Resource Center *Source: 2013 RTRP EIR; CPUC*	Non-Wire	Does not meet basic project objectives.
Alternative 17: Expansion of Electrical Equipment at Mountain View Substation *Source: 2013 RTRP EIR*	Non-Wire	Does not meet basic project objectives.
Alternative 18: Shift Load at Vista Substation *Source: CPUC*	Non-Wire	Does not meet basic project objectives.
Alternative 19: Additional Generation *Source: 2013 RTRP EIR*	Non-Wire	Does not meet basic project objectives.
Alternative 20: Use of Internal RPU Generation *Source: CPUC*	Non-Wire	Does not meet basic project objectives.
Alternative 21: Distributed Generation *Source: 2013 RTRP EIR and CPUC; Public Utilities Code § 1002.3*	Non-Wire	Cannot be implemented at a scale to meet basic project objectives.
Alternative 22: Energy Efficiency and Conservation *Source: 2013 RTRP EIR and CPUC; Public Utilities Code § 1002.3*	Non-Wire	Cannot be implemented at a scale to meet basic project objectives.
Alternative 23: Demand Response *Source: CPUC; Public Utilities Code § 1002.3*	Non-Wire	Does not meet basic project objectives.
Alternative 24: Consolidate the RTRP and Circle City Project, and consolidate the Valley Ivy Glen and Alberhill System Project *Source: Office of Ratepayer Advocates (ORA) Comment Letter*	System	Does not meet basic project objectives, is not regulatorily feasible, and does not reduce any impacts of the Revised Project.

Alternative	Type	Rationale for Rejection
Alternative 25: Consolidate the Circle City Project, RTRP, Valley Ivy Glen, and Alberhill System Projects *Source: ORA Comment Letter*	System	Does not meet basic project objectives, is not regulatorily feasible, and does not reduce any impacts of the Revised Project.
Alternative 26: Modify the Circle City Project to Replace the Proposed Circle City, RTRP, Valley – Ivyglen, and Alberhill System Projects *Source: ORA Comment Letter*	System	Does not meet basic project objectives, is not regulatorily feasible, and does not reduce any impacts of the Revised Project.
Alternative 27: Deliver 66-kV Power to Riverside from multiple SCE sources and install metering *Source: CPUC*	System	Does not meet basic project objectives and does not reduce any impacts of the Revised Project.
Alternative 28: SCE Low-Voltage Alternative A – Single Source *Source: SCE*	System	Results in greater environmental impacts than the Revised Project.
Alternative 29: SCE Low-Voltage Alternative B – Three Sources *Source: SCE*	System	Results in greater environmental impacts than the Revised Project.
Alternative 30: SCE Low-Voltage Alternative C – Single Source with Solar PV and Battery Energy Storage *Source: SCE*	System	Results in greater environmental impacts than the Revised Project.

SUMMARY OF ALTERNATIVES CARRIED FORWARD

Alternative 1: Bellegrave – Pats Ranch Road Underground

The Bellegrave — Pats Ranch Road Underground Alternative route would begin and transition to an underground position immediately adjacent to the tie-in to the Mira Loma – Vista #1 230-kV Transmission Line. The transmission line would travel south within Wineville Avenue for approximately 0.7 mile, west within Bellegrave Avenue for approximately 0.2 mile, and south within Pats Ranch Road for approximately 1.2 miles. At the intersection of Pats Ranch Road and Limonite Avenue, the alternative route would follow the same underground alignment as the Revised Project.

Alternative 1 was retained for full analysis in the Subsequent EIR because it meets the basic project objectives, is feasible, would avoid the Revised Project's significant aesthetic impact from riser poles at Limonite Avenue and the placement of overhead transmission poles along Wineville Avenue, and would avoid the Revised Project's significant agricultural impact north of Limonite Avenue. Pats Ranch Road north of Limonite has not yet been constructed, and limited utilities are present in the area that could conflict with the transmission line. Bellegrave

Figure ES-1 Proposed Alternative Routes for the Subsequent EIR

(esri 2017, SCE 2017, CDFW 2016)

Avenue and Wineville Avenue are sufficiently wide to accommodate the underground transmission line and duct banks within the ROW. The alternative may result in additional construction noise and traffic impacts, increased pollutant emissions, and greater induced current effects (i.e., shock hazard, corrosion of adjacent buried utilities) than the Revised Project. Construction noise and traffic impacts from the Revised Project would not be avoided.

Alternative 2: Wineville – Limonite Underground

The Wineville – Limonite Underground Alternative route would begin and transition to an underground position immediately adjacent to the tie-in to the Mira Loma – Vista #1 230-kV Transmission Line. The transmission line would travel south for approximately 2 miles within Wineville Avenue before reaching the intersection with Limonite Avenue. At this intersection, the alternative route would turn west within Limonite Avenue for approximately 1,000 feet before turning south within Pats Ranch Road to follow the same underground alignment as the Revised Project.

Alternative 2 was retained for full analysis in the Subsequent EIR because it meets the basic project objectives, is feasible, would avoid the Revised Project's significant aesthetic impacts from riser poles at Limonite Avenue and the relocated overhead transmission alignment along Wineville Avenue, and would avoid the Revised Project's significant agricultural impact north of Limonite Avenue. Wineville Avenue is sufficiently wide to accommodate the underground transmission line and duct banks within the ROW. The alternative may result in additional construction noise and traffic impacts, increased pollutant emissions, and greater induced current effects (i.e., shock hazard, corrosion of adjacent buried utilities) than the Revised Project. Construction noise and traffic impacts from the Revised Project would not be avoided.

Alternative 3: Relocate Northern Riser Poles

Under Alternative 3, the northern riser poles adjacent to Limonite Avenue would be relocated within the Revised Project alignment to approximately 0.25 mile north-northwest of the Revised Project's riser pole positions. The transmission line would follow the Revised Project alignment underground from the relocated riser poles. Under this alternative, the riser poles would be set back from Limonite Avenue and would be located directly adjacent to the I-15 freeway.

Alternative 3 was retained for full analysis in the Subsequent EIR because it meets the basic project objectives, is feasible, and would avoid the Revised Project's significant aesthetic impact from riser poles at Limonite Avenue. The alternative would not result in any new or more severe significant environmental effects. Aesthetic impacts from placement of overhead transmission poles along Wineville Avenue as well as construction noise and traffic impacts would not be avoided.

Alternative 4: Wineville – Landon Underground

The Wineville – Landon Underground Alternative would begin and transition to an underground position immediately adjacent to the tie-in to the Mira Loma – Vista #1 230-kV Transmission Line. The transmission line would travel south underground in Wineville Avenue

for approximately 0.4 mile before turning west to continue underground in Landon Drive for approximately 0.4 mile. At the terminus of Landon Drive, the transmission line would transition from underground to an overhead position and follow SCE's proposed overhead alignment south along I-15 to the Revised Project alignment.

Alternative 4 was retained for full analysis in the Subsequent EIR because it meets the basic project objectives, is feasible, would avoid the Revised Project's significant aesthetic impact from relocation of the overhead transmission alignment along Wineville Avenue, and would avoid the Revised Project's significant agricultural impact north of Limonite Avenue. Wineville Avenue and Landon Drive are sufficiently wide to accommodate the underground transmission line and duct banks within the road ROW. The alternative may result in additional construction noise and traffic impacts, increased pollutant emissions, and greater induced current effects (i.e., shock hazard, corrosion of adjacent buried utilities) than the Revised Project. Construction noise and traffic impacts from the Revised Project would not be avoided.

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1 INTRODUCTION

1.1 PURPOSE

The California Independent System Operators (CAISO) directed Riverside Public Utilities (RPU) to construct the Riverside Transmission Reliability Project (RTRP) in 2006. The City of Riverside certified a Final Environmental Impact Report (2013 RTRP EIR) (State Clearinghouse No. 2007011113) for the RTRP in 2013. Southern California Edison (SCE; the Applicant), a regulated California utility, filed an application (A.15-04-013) for a Certificate of Public Convenience and Necessity (CPCN) with the California Public Utilities Commission (CPUC) for the RTRP on April 15, 2015. In September 2016, SCE revised the location and configuration of a portion of the 230-kilovolt (kV) transmission line within the City of Jurupa Valley (Revised Project). The Revised Project was not analyzed in the 2013 RTRP EIR, and alternatives to the Revised Project were not previously evaluated pursuant to the requirements of the California Environmental Quality Act (CEQA). This Alternatives Screening Report (ASR) documents the alternatives screening process that was conducted by the CPUC to identify alternatives that would avoid or reduce significant environmental impacts of the Revised Project.

Alternatives to the Revised Project include:

- Underground alternatives identified by SCE in their CPCN application
- Alternatives identified during the 2017 CEQA public scoping process
- Alternatives identified by the CPUC EIR team as a result of the independent review of the Revised Project impacts and meetings with affected agencies and interested parties

The alternatives screening analysis was completed to identify potentially feasible alternatives that will be carried forward in the Subsequent EIR.

This report documents:

1. The range of alternatives that was suggested and evaluated
2. The approach and methods used to screen the feasibility of these alternatives according to guidelines established under CEQA
3. The results of the alternatives screening process (i.e., which alternatives will be analyzed in the Subsequent EIR)

The ASR is incorporated as Appendix B to the Subsequent EIR to provide the basis and rationale for whether an alternative has been carried forward for full evaluation in the Subsequent EIR. For each alternative that was eliminated from further consideration, this document provides a detailed explanation of the rationale for elimination. Since full consideration of the No Project Alternative is required by CEQA, this report does not address

this alternative; rather, the No Project Alternative is defined in Chapter 3: Alternatives and assessed in Chapter 4: Environmental Analysis of the Subsequent EIR.

1.2 SUMMARY OF REVISED PROJECT

1.2.1 Revised Project Overview

The Revised Project is described in detail in Chapter 2: Project Description of the Subsequent EIR. The project revisions include:

- Relocation of an overhead 230-kV transmission line segment within the City of Jurupa Valley
- Replacement of an overhead 230-kV transmission line segment with an underground 230-kV transmission line within Jurupa Valley
- Distribution line modifications

1.2.2 Relocated Overhead 230-kV Transmission Line

Approximately 0.5 mile of the 230-kV overhead transmission line would be relocated within the City of Jurupa Valley between Cantu-Galleano Ranch Road (adjacent to the tie-in to the Mira Loma – Vista #1 230-kV Transmission Line) and Landon Drive. The transmission line would be relocated to the west side of Wineville Avenue to avoid routing conflicts with the Harmony Trails Subdivision and William Lyons TurnLeaf developments. The Revised Project would then follow the same alignment as the originally proposed RTRP route between Wineville Avenue at Landon Drive to just north of Limonite Avenue.

1.2.3 Underground 230-kV Transmission Line

The Revised Project would include the construction of approximately 2 miles of underground transmission line and telecommunication lines located within private property, City of Jurupa Valley franchise right-of-way (ROW), and the Goose Creek Golf Club. The transmission line and telecommunication lines would transition underground north of Limonite Avenue and head east for approximately 1,000 feet and then turn south and follow Pats Ranch Road to 68th Street. The line would then turn east and continue underground within 68th Street to Lucretia Street, where it would turn south and continue underground within the Goose Creek Golf Club for approximately 1,000 feet. Two new riser poles, approximately 165 feet in height, would be installed on either end of the underground transmission line segment (a total of four riser poles). The riser poles would be installed at either end of the underground alignment to transition the lines from an overhead position to underground and from the underground position back to overhead.

1.2.4 Distribution Line Modifications

As described in the 2013 RTPR EIR, the proposed 230-kV transmission line would cross SCE-owned existing low voltage local overhead distribution lines creating clearance or reliability

issues[2] that could not be addressed through simple realignment of the proposed transmission line. To accommodate the proposed 230-kV transmission line, the distribution lines would require relocation to comply with clearance requirements. Distribution line modifications were identified in the 2013 RTRP EIR; however, further design refinements have been completed since that time. Distribution line modifications are being considered in the Subsequent EIR where refinements would result in an expanded or different footprint from what was considered in the 2013 RTRP EIR.

At Distribution Line Relocations #7 and #8, eleven existing wood distribution poles would be removed, and four new steel distribution riser poles would be installed. Approximately 2,800 feet of new underground duct bank would be installed.

1.3 ADDITIONAL PROJECT IMPACTS CONSIDERED IN SUBSEQUENT EIR

Portions of the project as originally proposed may result in new significant or more severe impacts on the environment than those considered in the 2013 RTRP EIR. Impacts related to shock hazard to address new information that was not available at the time the 2013 RTRP EIR was published, and tribal concerns in response to the change in regulations (Assembly Bill 52), will be analyzed for the full project.

1.4 SUMMARY OF ALTERNATIVES

The alternatives screening process culminated in the identification and screening of 30 potential alternatives or combinations of alternatives. Alternative types include overhead and underground transmission route alternatives to SCE's proposed transmission line route and electrical system alternatives, such as upgrades to other parts of the electrical system, distributed generation, and energy conservation. Four alternatives were retained for analysis in the Subsequent EIR, and 26 alternatives were eliminated from further analysis. The rationale for screening each of these alternatives is presented in detail in this ASR in Section 4: Alternatives Descriptions and Determinations.

Table 1.4-1 lists each project alternative included in this ASR, the source recommending each alternative, and the type of alternative.

[2] Minimum horizontal and vertical clearances between transmission and power lines are required for safety purposes. Contact between two energized lines can result in electrical arcing, which could result in damage to the electrical infrastructure, possible power outages, and potential ignition of nearby vegetation that may lead to a wildfire.

Table 1.4-1 Alternatives Considered in Screening Analysis

Alternative	Source	Type
Bellegrave – Pats Ranch Road Underground	SCE/2017 Scoping	Transmission Route
Wineville – Limonite Underground	CPUC	Transmission Route
Relocate Northern Riser Poles	CPUC	Riser Poles Relocation
Wineville – Landon Underground	CPUC	Transmission Route
Wineville Underground	SCE/2017 Scoping	Transmission Route
Mira Loma Substation – Van Buren in Railroad ROW	2017 Scoping	Transmission Route
Eastern Alignment in Riverside	2017 Scoping	Transmission Route
All Underground Transmission Line	2017 Scoping	Transmission Route
Limonite – Van Buren Underground	2017 Scoping	Transmission Route
Idyllwild Lane, Julian Drive, and Bradford Street Underground	2017 Scoping	Transmission Route
Interstate 15 (I-15) South, State Route 91 (SR-91) East Underground	2017 Scoping	Transmission Route
Mountain View Substation – Agua Mansa – Mira Loma – Vista #1 230-kV Transmission Line Interconnect	2017 Scoping	Transmission Route
Battery Storage	2017 Scoping	Non-Wire
Additional Transformer Capacity at Vista Substation	CPUC	Non-Wire
Additional Transformer Capacity at Mira Loma Substation	CPUC	Non-Wire
Expansion of Riverside Energy Resource Center (RERC)	CPUC	Non-Wire
Expansion of Electrical Equipment at Mountain View Substation	CPUC	Non-Wire
Shift Load at Vista Substation	CPUC	Non-Wire
Additional Generation	CPUC	Non-Wire
Use of Internal RPU Generation	CPUC	Non-Wire
Distributed Generation	Riverside/CPUC	Non-Wire
Energy Efficiency and Conservation	Riverside/CPUC	Non-Wire
Demand Response	Riverside/CPUC	Non-Wire
Consolidate the RTRP and Circle City Projects, and consolidate the Valley – Ivyglen and Alberhill System Projects	Office of Ratepayer Advocates (ORA)	System
Consolidate the Circle City, RTRP, Valley – Ivyglen, and Alberhill System Projects	ORA	System

Alternative	Source	Type
Modify the Circle City Project to Replace the Proposed Circle City, RTRP, Valley – Ivyglen, and Alberhill System Projects	ORA	System
Deliver 66-kV Power to Riverside from Multiple SCE Sources and Install Metering	CPUC	System
Low-Voltage Alternative A – Single Source	RPU and SCE	System
Low-Voltage Alternative B – Three Sources	RPU and SCE	System
Low-Voltage Alternative C – Single Source with Solar PV and Battery Energy Storage System	RPU and SCE	System

2 BACKGROUND AND PREVIOUS DOCUMENTS

This section describes the history of the RTRP and the previous evaluation of alternatives conducted by the City of Riverside and SCE.

2.1 2013 RTRP EIR

SCE's proposed transmission line is a component of the larger RTRP. The RTRP is an electrical reliability project that was jointly planned by SCE and the RPU. The RTRP would be owned and operated by both RPU and SCE. The City of Riverside, as the lead agency responsible for compliance with CEQA, determined that the RTRP could have significant impacts on the environment and issued a Notice of Preparation (NOP) for an EIR on November 18, 2009. The City of Riverside responded to public comments on the Draft EIR and certified the Final EIR on February 5, 2013 (SCH# 2007011113).

The City of Riverside conducted a siting study in 2006 that evaluated three potential corridors for the 230-kV transmission line including a western corridor, central corridor, and eastern corridor (refer to Appendix D of the 2013 RTRP EIR). Within each corridor, the City of Riverside defined specific alternatives for evaluation. The City of Riverside considered the following transmission line routing alternatives in Chapter 6: Project Alternatives of the 2013 RTRP EIR:

- Limonite Avenue Route
- Bain Street Route
- Van Buren "Offset" Route
- Eastern Route
- I-15 Route

The Van Buren "Offset" Route was evaluated in detail in the EIR, and the remaining routing alternatives were eliminated from further consideration due to environmental impacts and potential feasibility constraints; therefore, none of these alternatives are considered further in this ASR unless the alternative was suggested by the public during the 2017 scoping period. The 2013 RTRP EIR also considered and eliminated alternatives of lower voltages; non-wire alternatives, such as new and distributed generation and energy conservation; and alternative technologies including underground lines, direct current transmission systems, and alternative conductors. Distributed generation, energy conservation, and demand response alternatives are reevaluated in this ASR in Section 4: Alternatives Descriptions and Determinations because (1) technology and system operations have changed since the initial siting study and evaluation were conducted in 2006, and (2) the CPUC code requires consideration of these alternatives.

2.2 SETTLEMENT AGREEMENT

After the RTRP was approved by the City of Riverside in 2014, the City of Jurupa Valley approved the development of residential communities and commercial developments within the proposed RTRP ROW. These developments include the Lennar Homes' Riverbend Residential Community and Vernola Marketplace Apartments. Lennar Homes commenced construction in 2015. The Riverbend Residential Community includes 464 homes and a 10-acre park located on 211 acres of land east of I-15 and south of 68th Street in the City of Jurupa Valley. Construction of the Vernola Marketplace Apartments has not yet occurred. The Vernola Marketplace Apartments include 397 multifamily residential units on approximately 17.4 acres of land east of I-15 and north of 68th Street in the City of Jurupa Valley. Construction of the original RTRP transmission line route would have required SCE to claim eminent domain through these recently entitled developments to acquire the necessary ROW.

The developers of the Riverbend Residential Community and Vernola Marketplace Apartments entered into legal agreements with SCE and the City of Riverside in July and August of 2016, referred to herein as the Settlement Agreement. The Settlement Agreement included an alternative to the original alignment analyzed in the 2013 RTRP EIR, referred to as the Hybrid Route. The Hybrid Route relocated the conflicting overhead transmission line alignment into an underground duct bank in public road ROWs along the border of both developments, thereby resolving the present conflicts with these approved entitlements. As a condition of the Settlement Agreement, the parties agreed not to take any action challenging and/or opposing the Hybrid Route or Riverside and SCE's construction of the Hybrid Route; however, if the CPUC were to select a route that does not substantially conform to the Hybrid Route, the participating parties reserve the right to challenge and oppose the CPUC's selection. As defined by the Settlement Agreement, a project would "substantially conform" with the Hybrid Route if the underground portions of RTRP's transmission line were to include, but not extend beyond, 68th Street, Pats Ranch Road, and Limonite Avenue in the City of Jurupa Valley, immediately adjacent to the Riverbend Residential Community, Vernola Marketplace Apartments, and Vernola Marketplace. Minor variations in the placement, configuration, and/or design of the transmission line route north of Limonite Avenue in the City of Jurupa Valley and/or south and east of 68th Street in the Cities of Jurupa Valley and/or Riverside would "substantially conform" with the Hybrid Route under the terms of the Settlement Agreement. The Revised Project was designed by SCE to substantially conform with the Hybrid Route as described in the Settlement Agreement.

2.3 SCE LOWER VOLTAGE AND OTHER DESIGN ALTERNATIVES REPORT

CPUC Administrative Law Judge (ALJ) Hallie Yacknin issued a Ruling on August 15, 2017, directing SCE, RPU, and CAISO to prepare a joint report to the CPUC Energy Division

identifying lower voltage designs or other interim design remedies to the Proposed Project. The Ruling required the joint report to identify:

1. "lower voltage design alternative(s) to meet the project objectives, either in full or in part"
2. "any other interim solutions available to RPU that would mitigate the electrical system impacts until technological advancements in battery storage and distributed solar are feasible at the project scale"

RPU and SCE, with the help of RPU's consultant, POWER Engineers Inc. (POWER), and guidance from CAISO, developed the *RTRP Lower Voltage and Other Design Alternatives Report* (City of Riverside and Southern California Edison, 2018) in response to the ALJ's Ruling. RPU and SCE identified three potential 69-kV alternatives to the RTRP Hybrid Route that would, if found feasible, potentially meet, in whole or in part, most of the project objectives. These 69-kV alternatives are evaluated in this ASR.

3 METHODOLOGY FOR IDENTIFYING AND SCREENING ALTERNATIVES

3.1 IDENTIFICATION OF ALTERNATIVES

The range of alternatives in the screening report was identified through the CEQA scoping process and through supplemental studies and consultations that were conducted during this analysis and the preliminary environmental impact analysis for the Subsequent EIR.

The CPUC identified and assessed 30 alternatives that were suggested by the public and agencies, developed by RPU and SCE in response to the CPUC's request for a low-voltage alternative, or developed by the CPUC to reduce or avoid impacts of the Revised Project.

As discussed above, alternatives that were evaluated by the City of Riverside in the 2013 RTRP EIR and Routing Report were not reconsidered in this ASR unless the alternative was suggested by the public during the 2017 scoping period. Alternatives previously considered by the City of Riverside are described in the 2013 RTRP EIR, Chapter 6: Project Alternatives, and Appendix D: Siting Study (Riverside Public Utilities, 2012). No subsequent evaluation of alternatives considered in the 2013 RTRP EIR is required because those alternatives have already been considered within the context of CEQA.

The alternatives in this ASR were defined and evaluated by the CPUC to avoid and/or reduce the new significant impacts that would result from the Revised Project and to consider any change in circumstances since publication of the 2013 RTRP EIR.

3.2 ALTERNATIVES SCREENING METHODOLOGY

The alternatives were evaluated using a screening process consisting of three steps:

Step 1: Clearly define each alternative to allow comparative evaluation.

Step 2: Evaluate each alternative in comparison with the Revised Project using CEQA criteria (defined below).

Step 3: Based on the results of Step 2, determine the suitability of each alternative for full analysis in the EIR. If the alternative is unsuitable, eliminate it from further consideration.

3.3 CEQA REQUIREMENTS FOR ALTERNATIVES

CEQA provides guidance on selecting a reasonable range of alternatives for evaluation in an EIR. This alternatives screening and evaluation process satisfies CEQA requirements. The CEQA requirements for selection of alternatives are described below.

An important aspect of EIR preparation is the identification and assessment of reasonable alternatives that have the potential for avoiding or minimizing the impacts of a project. The CEQA Guidelines require consideration of the No Project Alternative (Section 15126.6[e]) and selection of a range of reasonable alternatives (Section 15126.6[d]). The EIR must adequately assess these alternatives to allow for a comparative analysis for consideration by decision makers. CEQA Guidelines Section 15126.6(a) state that:

> An EIR shall describe a reasonable range of alternatives to the project, or to the location of the project, which 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, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation.

To comply with CEQA requirements, each alternative that has been suggested or developed for the Revised Project has been evaluated in three ways:

3. Does the alternative accomplish all or most of the basic project objectives?
4. Is the alternative potentially feasible (from economic, environmental, legal, social, and technological standpoints)?
5. Does the alternative avoid or substantially lessen any significant effects of the Revised Project (including consideration of whether the alternative itself could create significant environmental effects potentially greater than those of the Revised Project)?

Each of these criteria is described in more detail in the following sections.

3.3.1 Basic Project Objectives

SCE Project Objectives

The purpose of the project is to provide RPU and its customers with adequate transmission capacity to serve existing and projected load, provide for long-term system capacity for load growth, and provide needed system reliability. SCE has identified the following objectives of the project:

- Increase capacity to meet existing electric system demand and anticipated future load growth
- Provide an additional point of delivery for bulk power into the RPU electrical system, thereby reducing dependence on Vista Substation and increasing overall reliability

CPUC's Evaluation of SCE Project Objectives

Having taken into consideration the objectives set forth by SCE above, the CPUC evaluated whether the project objectives proposed by SCE are the basic objectives of the project (i.e., meet the underlying fundamental project purpose). The evaluation of alternatives in this ASR

provides information on whether each alternative could feasibly accomplish the basic project objectives. Each SCE project objective is discussed below.

SCE Objective #1: Increase capacity to meet existing electrical system demand and anticipated future load growth. (CPUC Basic Project Objective)
SCE Objective #1 reflects the goal of meeting RPU's projected future demand for electricity. SCE's Vista Substation is currently the primary source of electrical energy supply for RPU electric customers. RPU receives 557 megawatts (MW) of electricity from the Vista Substation. RPU demand exceeded the capacity at Vista Substation beginning in 2006, requiring local power generation to meet demand during peak load conditions. In late August 2017, a 6-day heat wave produced consecutive maximum daily temperatures in excess of 105°F in the Riverside service area, resulting in a new Riverside peak load of 639 MW. SCE and RPU anticipate that Riverside's peak loads will continue to increase at approximately 0.5 percent per year for the next 20 years, driven by load growth in commercial and industrial uses. Riverside has an estimated 1-in-20 peak load of 669 MW by 2023, 689 MW by 2029, and 734 MW by 2038 (City of Riverside and Southern California Edison, 2018).

The Riverside Energy Resource Center (RERC) and the Springs Generating Project (Springs) were constructed within the City of Riverside to supplement the power supply from Vista Substation by generating and supplying power locally through generators. RERC hosts four gas-fired turbines, and each unit is rated at 48 MW (for a total of 192 MW). Springs hosts four 9 MW units (36 MW) that are rarely dispatched due to start-up limitations (City of Riverside and Southern California Edison, 2018). Riverside's internal generating units are brought on-line as needed (1) to support Riverside's load requirements during extreme weather conditions to provide additional capacity, (2) to prevent overload conditions on the lines and transformers, and (3) for other contingencies such as unplanned equipment, transformer, and/or line outage occurrences. While these generation resources reduce the amount of power that must flow through the transformers at Vista Substation to Riverside by generating and supplying power locally, they are "peaker" units. Permits obtained from the South Coast Air Quality Management District (SCAQMD) limit the number of hours the RERC units can operate to 1,200 hours per year and no more than two starts per day. These units are typically run less than 4 hours per day. The Springs generating units are also subject to start-up and use restrictions. Due to the limitations in use of these "peaker" units, they cannot be considered part of the base power supply for Riverside, and additional capacity is needed to meet the existing and future demand for system reliability.

SCE Objective #2: Provide an additional point of delivery for bulk power into the RPU electrical system, thereby reducing dependence on Vista Substation and increasing overall reliability. (CPUC Revised Basic Project Objective)
SCE Objective #2 reflects the goal of improving reliability by creating a secondary source of power to RPU. RPU currently receives all its power from the Vista Substation. A second source of power is required to create redundancy in the system in case there is damage to RPU's dedicated transformer banks at Vista Substation. In October 2007, service from Vista Substation to the City of Riverside was interrupted and all RPU customers, including government, school,

university, and hospital facilities within the City lost power for up to 4 hours. A secondary source of power would substantially reduce the impact of an outage at Vista Substation on the RPU customers. The CPUC revised the SCE objective #2 to reflect a broader goal of providing a second source of bulk power instead of an additional point of delivery for bulk power.

3.3.2 CPUC Guiding Principles

In addition to CEQA Guidelines and the basic project objectives as listed above, the CPUC uses the following guiding principles when considering the appropriate criteria for selecting alternatives for evaluation in an EIR:

> Public Utilities Code § 1002.3 requires CPUC to "...consider cost-effective alternatives to transmission facilities that meet the need for an efficient, reliable, and affordable supply of electricity. . .", and the CPUC's Information and Criteria List for project applications requires discussion of ". . .alternatives capable of substantially reducing or eliminating any significant environmental effects, even if these alternatives substantially impede the attainment of the project objectives, and are more costly."

The determination of whether to eliminate or retain alternatives in the Subsequent EIR was based on each alternative's ability to meet the basic project objectives as defined by CPUC, and whether the respective alternatives follow the above guiding principles.

3.3.3 Feasibility

CEQA Guidelines Section 15364 define feasibility as "...capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors." The alternatives screening analysis is largely governed by what CEQA terms the "rule of reason," meaning that the analysis should remain focused not on every possible eventuality but rather on the alternatives necessary to permit a reasoned choice. Alternatives that are potentially feasible, while still meeting the basic project objectives, will be fully analyzed in the Subsequent EIR.

According to CEQA Guidelines Section 15126.6(f)(1), the factors that may be considered when addressing the potential feasibility of alternatives include site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or other regulatory limitations, jurisdictional boundaries, and the project proponent's control over alternative sites. For the screening analysis, the potential feasibility of alternatives was assessed by considering the following factors:

- **Legal Feasibility.** Does the alternative have the potential to avoid lands that have legal protection that may prohibit or substantially limit the feasibility of permitting a high-voltage transmission line? Lands that are afforded legal protections that would prohibit the construction of the project, or require an act of Congress for permitting, are considered less feasible locations for the project. These land use designations include wilderness areas, wilderness study areas, restricted military

bases, airports, and Indian reservations. Information on potential legal constraints of each alternative has been compiled from laws, regulations, and local jurisdictions, as well as a review of federal, state, and local agency land management plans and policies.

- **Regulatory Feasibility.** Do regulatory restrictions substantially limit the likelihood of successful permitting of a high-voltage transmission line? Is the alternative consistent with regulatory standards for transmission system design, operation, and maintenance?
- **Technical Feasibility.** Is the alternative potentially feasible from a technological perspective, considering available technology? Are there any construction, operation, or maintenance constraints that cannot be overcome?
- **Economic Feasibility.** Is the alternative so costly that implementation would be prohibitive? CEQA Guidelines Section 15126.6(b) require consideration of alternatives capable of eliminating or reducing significant environmental effects even though they may "impede to some degree the attainment of the project objectives, or would be more costly." The Court of Appeals determined in *Citizens of Goleta Valley v. Board of Supervisors* ". . .The fact that an alternative may be more expensive or less profitable is not sufficient to show that the alternative is financially infeasible. What is required is evidence that the additional costs or lost profitability are sufficiently severe as to render it impractical to proceed with the project" (Citizens of Goleta Valley vs. Board of Supervisors of the County of Santa Barbara, 1988).
- **Environmental Feasibility.** Would implementation of the alternative cause substantially greater environmental damage than the Revised Project, thereby making the alternative clearly inferior from an environmental standpoint? Would the alternative reduce any significant impact of the Revised Project? This issue is primarily addressed in terms of the alternative's potential to eliminate significant effects of the Revised Project only. The 2013 RTRP EIR included alternatives to the RTRP, including the Wildlife Substation. Alternatives that would only reduce impacts of portions of the RTRP that were not revised would not meet the screening criteria for environmental feasibility.

3.3.4 Potential to Eliminate Significant Environmental Effects

A key CEQA requirement for an alternative is that it must have the potential to "avoid or substantially lessen any of the significant effects of the project" (CEQA Guidelines Section 15126.6[a]). At the screening stage, it is not possible to evaluate all the impacts of the alternatives in comparison to the Revised Project with absolute certainty, nor is it possible to quantify impacts. It is possible to identify elements of an alternative that are likely to be the sources of impacts and to relate them, to the extent possible, to general conditions in the subject area.

The Revised Project's significant environmental impacts were identified and evaluated to develop alternatives and determine whether an alternative would meet CEQA Guidelines

Section 15126.6 requirements. The potentially significant impacts of the Revised Project are described in the Subsequent EIR Sections 4.1 through 4.13, and include:

- Aesthetic impacts from the riser poles proposed on the north side of Limonite Avenue and the lattice steel tower at the intersection of Landon Drive and Wineville Avenue
- Loss of Prime Farmland within the underground alignment north of Limonite Avenue
- Noise and traffic impacts from construction of the underground transmission line on Pats Ranch Road and 68th Street

Findings in Sections 4.1 through 4.13 of the Subsequent EIR show that impacts on aesthetics, agricultural resources, noise, and traffic would be significant and unavoidable even after applying mitigation.

3.4 PUBLIC UTILITIES CODE CONSIDERATIONS FOR ALTERNATIVES

In considering SCE's application for a CPCN, the CPUC will be guided by the Public Utilities Code in addition to the requirements of CEQA. Public Utilities Code § 1002 states:

> (a) The commission, as a basis for granting any certificate pursuant to Section 1001 shall give consideration to the following factors:
>
> (1) Community values.
>
> (2) Recreational and park areas.
>
> (3) Historical and aesthetic values.
>
> (4) Influence on environment, except that in the case of any line, plant, or system or extension thereof located in another state which will be subject to environmental impact review pursuant to the National Environmental Policy Act of 1969 (Chapter 55 (commencing with Section 4321) of Title 42 of the United States Code) or similar state laws in the other state, the commission shall not consider influence on the environment unless any emissions or discharges therefrom would have a significant influence on the environment of this state.

The CPUC will consider the "community values" as expressed in the CPUC's proceeding on the project and in comments on the Draft Subsequent EIR. The CPUC anticipates that the final decision will represent a reasonable balancing of community interests, the need to protect environmental resources in the area, and the need for the project.

4 ALTERNATIVES DESCRIPTIONS AND DETERMINATIONS

The alternatives described in detail in this section include transmission line routing alternatives, underground alternatives, and electrical system and non-wire alternatives. Each alternative was evaluated using considerations described in Section 3 of this ASR.

If a potential alternative would be unable to meet the basic project objectives, would be infeasible, or would not reduce or avoid significant impacts of the Revised Project, it was eliminated from further evaluation. Alternatives that were determined to meet the CEQA alternatives screening criteria were retained for full analysis in the Subsequent EIR.

This ASR has been prepared to evaluate the impacts of the Revised Project. Alternatives to the RTRP were considered in the 2013 RTRP EIR, and only alternatives that were suggested by the public during the 2017 scoping period are considered further in the Subsequent EIR. Alternatives that are carried forward in the Subsequent EIR are limited to those that would reduce the potentially significant impacts of the Revised Project, described above in Section 3.3.4.

Alternative underground transmission line routes south of Limonite Avenue were considered; however, the underground portion of the Revised Project was defined through a Settlement Agreement, and alternative routes in this area could conflict with the terms of the Settlement Agreement.

Sections 4.2 and 4.3 below include a description of each alternative, the consideration of CEQA criteria, and the conclusions for alternative elimination or retention. Retained alternatives are addressed in Section 4.2. Eliminated alternatives are addressed in Section 4.3. The No Project Alternative is required to be considered in an EIR by CEQA; as such, it is described in Chapter 3: Alternatives and Chapter 4: Environmental Analysis of the Subsequent EIR. The No Project Alternative is not discussed further in this ASR. Information presented is based on preliminary engineering, as final engineering has not been completed for the alternatives.

4.1 SUMMARY OF ALTERNATIVES SCREENING ANALYSIS

Four of the 30 alternatives are recommended for further analysis in the Subsequent EIR. Table 4.1-1 summarizes the results of the screening analysis presented in Sections 4.2 and 4.3.

Table 4.1-1 Summary of Alternatives Screening Analysis

Description of Alternative	Project Objective	Potential Feasibility	Avoid/Reduce Environmental Effects	Alternative Type	Conclusion
Alternatives Retained					
Alternative 1: Bellegrave – Pats Ranch Road Underground *This alternative would begin and transition to an underground position immediately adjacent to the tie-in to the Mira Loma – Vista #1 230-kV Transmission Line. The line would travel south along Wineville Road to Bellegrave Avenue. From this intersection, the alternative would proceed west along Bellegrave Avenue to Pats Ranch Road. At Pats Ranch Road, the line would turn south to Limonite Avenue. This alternative would follow the same underground alignment as the Revised Project from Pats Ranch Road at Limonite Avenue.* Source: SCE and 2017 Scoping	Meets basic project objectives.	Meets all feasibility criteria.	Meets criteria. Would reduce potentially significant aesthetic impacts from the riser poles on Limonite Avenue and the lattice steel tower at the intersection of Landon Drive and Wineville Avenue and reduce significant impacts on agricultural resources north of Limonite Avenue.	Transmission Route/ Underground	*Retained*
Alternative 2: Wineville – Limonite Underground *This alternative would begin and transition to an underground position immediately adjacent to the tie-in to the Mira Loma – Vista #1 230-kV Transmission Line. The line would travel south along Wineville Road to Limonite Avenue. The alternative would turn west and remain underground within Limonite Avenue to Pats Ranch Road. This alternative would follow the same*	Meets basic project objectives.	Meets all feasibility criteria.	Meets criteria. Would reduce potentially significant aesthetic impacts from the riser poles on Limonite Avenue and lattice steel tower at the intersection of Landon Drive and Wineville Avenue and reduce significant impacts on agricultural resources north of Limonite Avenue.	Transmission Route/ Underground	*Retained*

Description of Alternative	Project Objective	Potential Feasibility	Avoid/Reduce Environmental Effects	Alternative Type	Conclusion
underground alignment as the Revised Project from Pats Ranch Road at Limonite Avenue. Source: CPUC					
Alternative 3: Relocate Northern Riser Poles *This alternative would relocate the riser poles at Limonite Avenue to approximately 0.25 mile north of Limonite Avenue adjacent to I-15. The additional segment of underground transmission line would follow the Revised Project alignment.* Source: CPUC	Meets basic project objectives.	Meets all feasibility criteria.	Meets criteria. Would reduce potentially significant aesthetic impacts from the riser poles on Limonite Avenue by relocating the poles further from viewers at Limonite Avenue.	Pole Relocation	*Retained*
Alternative 4: Wineville – Landon Underground *This alternative would begin and transition to an underground position immediately adjacent to the tie-in to the Mira Loma – Vista #1 230-kV Transmission Line. The line would travel south under Wineville Avenue and west under Landon Drive. At the western end of Landon Drive, the alternative would transition to an overhead position.* Source: CPUC	Meets basic project objectives.	Meets all feasibility criteria.	Meets criteria. Would reduce potentially significant aesthetic impacts from the relocated lattice steel tower at the intersection of Landon Drive and Wineville Avenue and reduce significant impacts on agricultural resources north of Limonite Avenue.	Transmission Route/ Underground	*Retained*
Alternatives Eliminated					
Alternative 5: Wineville Underground *This alternative would begin and transition to an underground*	Meets basic project objectives.	Potentially meets feasibility criteria.	Would reduce potentially significant aesthetic impacts from the riser poles on Limonite Avenue	Transmission Route/ Underground	*Eliminated*

Description of Alternative	Project Objective	Potential Feasibility	Avoid/Reduce Environmental Effects	Alternative Type	Conclusion
position immediately adjacent to the tie-in to the Mira Loma – Vista #1 230-kV Transmission Line. The line would travel south on Wineville Avenue to 68th Street. This alternative would follow the same underground alignment as the Revised Project from 68th Street and Wineville Avenue. Source: SCE and 2017 Scoping			and the relocated lattice steel tower at the intersection of Landon Drive and Wineville Avenue; however, the segment south of Limonite would result in greater traffic impacts and utility conflicts.		
Alternative 6: Mira Loma Substation – Van Buren in Railroad ROW *This alternative would travel east from the Mira Loma Substation to Van Buren Boulevard. It would extend overhead along the east side of Van Buren Boulevard within the Union Pacific Railroad ROW. The alternative would transition to underground just north of the Riverside Airport and extend underground to Wildlife Substation.* Source: 2017 Scoping and 2013 RTRP EIR	Meets basic project objectives.	Does not meet feasibility criteria due to induced current effects on railroad. Furthermore, both SCE and Union Pacific do not allow transmission lines in railroad ROW.	Potentially meets environmental criteria; would result in greater impact on hazards from induced current; would avoid the significant aesthetic impacts in Jurupa Valley, but would result in aesthetic impacts along Van Buren Boulevard and land use conflicts with the railroad.	Transmission Route	*Eliminated*
Alternative 7: Eastern Alignment in Riverside *This alternative would tie-in to the Mira Loma – Vista #1 230-kV Transmission Line at one of five locations near Agua Mansa Road between the City of Jurupa Valley and the City of Colton. This alternative would travel southwest from the tie-in, following the Santa*	Meets basic project objectives.	Potentially meets feasibility criteria.	Does not meet criteria. Would result in significant impacts on hydrology, geology, special-status species and habitats, aesthetics, and recreation from placement of structures along the Santa Ana River corridor and within a 100-year flood	Transmission Route	*Eliminated*

Description of Alternative	Project Objective	Potential Feasibility	Avoid/Reduce Environmental Effects	Alternative Type	Conclusion
Ana River for approximately 8 miles. Several routing options include routes on both the northern/western and southern/eastern sides of the Santa Ana River. All routes would follow the boundary of the 100-year floodplain of the river southwest toward Wilderness Substation. Source: 2017 Scoping and 2013 RTRP EIR			plain. Would involve a much longer alignment than the Revised Project.		
Alternative 8: All Underground Transmission Line (Mira Loma – Vista #1 230-kV Transmission Line to Wildlife Substation) *This alternative would follow the Revised Project route north of the Santa Ana River and would follow the approved 2013 RTRP route south of the river but would locate the transmission line underground in all areas. The segment of the alternative that crosses the Santa Ana River would also be located underground.* Source: 2017 Scoping	Meets basic project objectives.	Potentially meets feasibility criteria.	Does not meet criteria. Would result in substantially greater biological, cultural resource, air quality, and greenhouse gas impacts than the Revised Project. Furthermore, an underground transmission line installation south of the Santa Ana River would not reduce any impacts of the Revised Project, which are north of the river.	Underground	*Eliminated*
Alternative 9: Limonite – Van Buren Underground *This alternative would follow the Revised Project alignment to Limonite Avenue. From Limonite Avenue, the line would transition underground and travel east within Limonite Avenue to Van Buren Boulevard. At Van Buren*	Meets basic project objectives.	Potentially meets feasibility criteria.	Does not meet criteria. The underground transmission line extending east on Limonite Avenue and South on Van Buren Boulevard would not reduce a significant environmental impact of the Revised Project. This	Transmission Route/ Underground	*Eliminated*

Description of Alternative	Project Objective	Potential Feasibility	Avoid/Reduce Environmental Effects	Alternative Type	Conclusion
Boulevard, the line would travel south within Van Buren Boulevard and cross the Santa Ana River within Van Buren Boulevard. The alternative would transition to an overhead position on the south side of the Santa Ana River and travel east into the substation along the 2013 alignment route. Source: 2017 Scoping			alternative is much longer than the Revised Project segment from Limonite to the Goose Creek Golf Course. The longer underground transmission route on major roadways would result in substantially greater traffic, air quality, and potential hazards impacts.		
Alternative 10: Idyllwild Lane, Julian Drive, and Bradford Street Underground *This alternative would follow the Revised Project alignment south from the Mira Loma — Vista #1 230-kV Transmission Line tie-in and then follow the approved 2013 RTRP route. The alternative would transition to an underground position north of Tyler Street in the City of Riverside and continue underground behind the homes on Auld Street, Julian Drive, Idyllwild Lane, Rutland Avenue, and Bradford Street. It would return to an overhead position before crossing Van Buren Boulevard and following the approved 2013 RTRP route to Wilderness Substation.* Source: 2017 Scoping	Meets basic project objectives.	Potentially meets feasibility criteria.	Does not meet criteria. Idyllwild Lane, Julian Drive, and Bradford Street are located south of Santa Ana River. Underground construction in this area would not reduce impacts of the Revised Project, which would occur on the north side of the river. The alternative would also result in significant aesthetic impacts due to the need for four riser poles to accommodate transitions between an underground and overhead position.	Transmission Route/ Underground	*Eliminated*

Description of Alternative	Project Objective	Potential Feasibility	Avoid/Reduce Environmental Effects	Alternative Type	Conclusion
Alternative 11: I-15 South to SR-91 East Underground *This alterative would follow the Revised Project alignment south from the Mira Loma – Vista #1 230-kV Transmission Line tie-in along Wineville Avenue until 68th Street. At 68th Street, the alternative would diverge from the Revised Project alignment, following the I-15 corridor south approximately 6 miles until I-15 intersects with SR-91. The alternative would turn east to follow SR-91 for approximately 6.5 miles before turning north to follow Van Buren Boulevard for approximately 3.5 miles. The alternative would follow the approved 2013 RTRP route near the Santa Ana River, following the alignment east to the Wildlife Substation.* Source: 2017 Scoping	Meets basic project objectives.	Does not meet regulatory feasibility criteria. Caltrans does not allow construction of transmission lines within Caltrans-operated highways.	Does not meet criteria. The route would be substantially longer than the Revised Project and would result in increased air quality, greenhouse gas, traffic, biological, and cultural resource impacts as well as potential land use conflicts.	Transmission Route/ Underground	*Eliminated*
Alternative 12: Mountain View Substation – Agua Mansa – Mira Loma – Vista #1 230-kV Transmission Line Interconnect *This alternative would tie in to the Mira Loma – Vista #1 230-kV Transmission Line approximately 2.25 miles northeast of the intersection of Agua Mansa Road and Market Street in the City of Jurupa Valley. The alternative would run southwest parallel to Agua Mansa Road before turning*	Meets most project objectives.	May not meet technical feasibility criteria. Adequate space is not available at Mountain View Substation for additional transformers associated with a new 230-kV transmission line.	This alternative would avoid the impacts of the Revised Project but only by relocating the impacts to a different area; additionally, this alternative could result in greater aesthetic, water resource, biological resource, and cultural resource impacts than the Revised Project.	System Alternative	*Eliminated*

Description of Alternative	Project Objective	Potential Feasibility	Avoid/Reduce Environmental Effects	Alternative Type	Conclusion
south to parallel Market Street and crossing the Santa Ana River adjacent to the Market Street bridge. The alternative would then follow an existing 69-kV power line in a southwesterly direction until it reaches Mountain View Substation located at Mountain View Avenue and Sheppard Street in the City of Riverside. Source: 2017 Scoping					
Alternative 13: Battery Storage *This alternative would add battery storage facilities at existing substations in Riverside to increase Riverside's internal capacity in the event of the loss of power at Vista Substation.* *Source: 2017 Scoping*	Does not meet basic project objectives. Would not add a second source of bulk power to Riverside at the scale that is needed to address the loss of power at Vista Substation. Would not provide sufficient capacity to support existing and future load growth.	Does not meet feasibility criteria at the scale that the alternative would be needed to address the loss of power at Vista Substation.	Meets environmental criteria. Battery storage involves a limited disturbance area and would not be expected to result in significant environmental impacts.	Non-Wire	*Eliminated*
Alternative 14: Additional Transformer Capacity at Vista Substation *The expansion of Vista Substation would involve addition of a third 230/69-kV transformer bank at the substation.* Source: 2013 RTRP EIR; CPUC	Does not meet basic project objectives. Would not provide a second source of bulk power delivery to Riverside. Would not increase delivery of power to Riverside to meet demand and projected load growth.	Meets feasibility criteria.	Meets environmental criteria. Adding transformers at an existing substation would not result in significant environmental impacts.	Non-Wire	*Eliminated*

Description of Alternative	Project Objective	Potential Feasibility	Avoid/Reduce Environmental Effects	Alternative Type	Conclusion
Alternative 15: Additional Transformer Capacity at Mira Loma Substation *The expansion of Mira Loma Substation would involve addition of a fourth 230/69-kV transformer bank at the substation.* Source: 2013 RTRP EIR; CPUC	Does not meet basic project objectives. Would not provide a second source of bulk power delivery to Riverside. Would not increase delivery of power to Riverside to meet demand and projected load growth.	Meets feasibility criteria.	Meets environmental criteria. Adding transformers at an existing substation would not result in significant environmental impacts.	Non-Wire	*Eliminated*
Alternative 16: Expansion of RERC *The expansion of RERC would involve adding additional energy generation capacity at RERC.* Source: 2013 RTRP EIR; CPUC	Meets most basic project objectives. Would add additional capacity to meet existing demand and future load growth. Would not provide a second source of bulk power delivery to Riverside.	Does not meet regulatory feasibility criteria due to inability to permit additional gas-fired power plants in the area.	Meets environmental criteria. Would avoid impacts of the Revised Project but would result in greater potential long-term air quality and greenhouse gas impacts from energy generation.	Non-Wire	*Eliminated*
Alternative 17: Expansion of Electrical Equipment at Mountain View Substation *The expansion of Mountain View Substation would involve the addition of new electrical substation equipment at the substation.* Source: 2013 RTRP EIR	Does not meet basic project objectives. Would not provide a second source of bulk power delivery to Riverside. Would not increase delivery of power to Riverside to meet demand and projected load growth.	Meets feasibility criteria.	Meets environmental criteria. Adding electrical equipment to an existing substation would not result in significant environmental impacts.	Non-Wire	*Eliminated*
Alternative 18: Shift Load at Vista Substation *This non-wire alternative would shift the RPU load to Vista*	Does not meet basic project objectives. Would not provide a second source of	Meets feasibility criteria.	Meets environmental criteria; avoids all impacts associated with the Revised Project.	Non-Wire	*Eliminated*

Description of Alternative	Project Objective	Potential Feasibility	Avoid/Reduce Environmental Effects	Alternative Type	Conclusion
Substation transformers to free up capacity on transformer banks 1A and 2A. Source: CPUC	bulk power delivery to Riverside. Would not increase delivery of power to Riverside to meet demand and projected load growth.				
Alternative 19: Additional Generation *This alternative would involve the construction of additional RPU generation plants in the City of Riverside.* Source: 2013 RTRP EIR	Meets most basic project objectives. Would provide additional generation to meet current demand and projected load growth. Would not provide a second source of bulk power delivery to Riverside.	Does not meet regulatory feasibility criteria due to inability to permit additional gas-fired power plants in the area.	Does not meet environmental criteria. Avoids significant impacts associated with the Revised Project but would result in long-term air quality and greenhouse gas impacts for construction and use of additional gas-fired plants in an air basin that does not meet air quality standards.	Non-Wire	*Eliminated*
Alternative 20: Use of Internal RPU Generation *This alternative would involve using RPU existing generation during peak periods to mitigate high loading on the Vista Substation transformers.* Source: CPUC	Does not meet basic project objectives. The existing RPU generation may not be available to meet project demand and load growth due to operating limitations. Would not provide a second source of bulk power delivery to Riverside.	Would not meet feasibility criteria due to SCAQMD operational limitations on the use of "peaker" plants.	Does not meet environmental criteria. Avoids significant impacts associated with the project but would result in long-term air quality and greenhouse gas impacts from additional use of peaking units in an air basin that is not currently meeting air quality standards.	Non-Wire	*Eliminated*
Alternative 21: Distributed Generation *This alternative would involve generating renewable power to*	Does not meet basic project objectives. Would not provide a second source of bulk power delivery	Meets feasibility criteria.	Meets environmental criteria; avoids all impacts associated with the project.	Non-Wire	*Eliminated*

Description of Alternative	Project Objective	Potential Feasibility	Avoid/Reduce Environmental Effects	Alternative Type	Conclusion
offset peak loading and improve reliability. Source: 2013 RTRP EIR and CPUC; Public Utilities Code § 1002.3	to Riverside. Would not provide sufficient power to meet demand and projected load growth.				
Alternative 22: Energy Efficiency and Conservation *This alternative would increase energy efficiency and conservation to reduce system loading and demand for power.* Source: 2013 RTRP EIR and CPUC; Public Utilities Code § 1002.3	Does not meet basic project objectives. Would not provide a second source of bulk power delivery to Riverside.	Meets feasibility criteria.	Meets environmental criteria; avoids all impacts associated with the project.	Non-Wire	*Eliminated*
Alternative 23: Demand Response *This alternative would reduce demand/electricity use during periods of peak energy use.* Source: CPUC; Public Utilities Code § 1002.3	Does not meet basic project objectives. Would not provide a second source of bulk power delivery to Riverside. Would not provide sufficient capacity to meet demand and projected load growth.	Meets feasibility criteria.	Meets environmental criteria; avoids all impacts associated with the project.	Non-Wire	*Eliminated*
Alternative 24: Consolidate the RTRP and Circle City Project, and consolidate the Valley Ivy Glen and Alberhill System Project *This alternative would consolidate the RTRP with the Circle City Project and consolidate the Valley-Ivyglen Project with Alberhill System Project.* Source: ORA Comment Letter	Does not meet basic project objectives. The alternative would not provide power to the City of Riverside.	Does not meet feasibility criteria. ~~The CPUC is required to respond to the utilities applications for each project and does not have a mechanism to require the consolidation of multiple projects that have been~~	Does not meet environmental criteria. The alternative would result in substantially greater environmental impacts than the Revised Project due to the need for much longer transmission lines.	System	*Eliminated*

Description of Alternative	Project Objective	Potential Feasibility	Avoid/Reduce Environmental Effects	Alternative Type	Conclusion
		~~recommended by the CAISO.~~ The alternative does not meet regulatory feasibility criteria because it would not be feasible to obtain the necessary approvals from the CPUC and other agencies to install the needed power lines within the timeframe that the project is required.			
Alternative 25: Consolidate the Circle City Project, RTRP, Valley Ivy Glen, and Alberhill System Projects *This alternative would consolidate multiple RPU projects by constructing a loop in at Alberhill Substation to the Valley – Serrano 500-kV line. The alternative would also include the construction of Circle City Substation, which would be connected to Alberhill Substation with approximately 15 miles of 220-kV line.* Source: ORA Comment Letter	Does not meet basic project objectives. The alternative would not provide power to the City of Riverside.	Does not meet feasibility criteria. ~~The CPUC is required to respond to the utilities applications for each project and does not have a mechanism to require the consolidation of multiple projects that have been recommended by the CAISO.~~ The alternative does not meet regulatory feasibility criteria because it would not be feasible to obtain the necessary approvals from the CPUC and other agencies to install the needed power lines	Does not meet environmental criteria. The alternative would result in substantially greater environmental impacts than the Revised Project due to the need for much longer transmission lines.	System	*Eliminated*

Description of Alternative	Project Objective	Potential Feasibility	Avoid/Reduce Environmental Effects	Alternative Type	Conclusion
		within the timeframe that the project is required.			
Alternative 26: Modify the Circle City Project to Replace the Proposed Circle City, RTRP, Valley – Ivyglen, and Alberhill System Projects *This alternative would construct Circle City Substation as a 220/115/66-kV Substation and interconnect it to Mira Loma Substation with approximately 11 miles of 220-kV lines using existing and new ROW. Approximately 27 miles of 115-kV lines along I-15 freeway would be constructed to interconnect Ivyglen and Fogarty 115-kV Substations to the Circle City 220-kV Substation.* Source: ORA Comment Letter	Does not meet basic project objectives. The alternative would not provide power to the City of Riverside.	Does not meet feasibility criteria. ~~The CPUC is required to respond to the utilities applications for each project and does not have a mechanism to require substantial modifications of another project.~~ The alternative does not meet regulatory feasibility criteria because it would not be feasible to obtain the necessary approvals from the CPUC and other agencies to install the needed power lines within the timeframe that the project is required.	Does not meet environmental criteria. The alternative would result in substantially greater environmental impacts due to the construction of substantially longer transmission and power lines than the Revised Project.	System	*Eliminated*
Alternative 27: Deliver 66-kV Power to Riverside from multiple SCE sources and install metering *This alternative would use SCE's existing 66-kV power line network surrounding Riverside to provide power to Riverside. SCE would build points of interconnection to Riverside and use metering to monitor power delivery from SCE to Riverside.*	The alternative would potentially meet project objectives assuming SCE builds new power lines to interconnect with Riverside.	Does not meet regulatory feasibility criteria. The alternative would require new legal agreements between SCE and Riverside to change the way the utilities operate. The alternative would take many years to	The alternative would require additional power line infrastructure into Riverside, resulting in greater environmental impacts due to additional power lines in a number of areas.	System	*Eliminated*

Description of Alternative	Project Objective	Potential Feasibility	Avoid/Reduce Environmental Effects	Alternative Type	Conclusion
Source: CPUC		implement an agreement and define and construct the best points of connection.			
Alternative 28: Lower Voltage Alternative A – Single Source *This alternative would involve a single substation interconnection (Mira Loma), with up to three 280 MW transformers. The alternative includes installation of three double-circuit 69-kV lines and one single-circuit line for a total of seven 69-kV circuits.* Source: RPU and SCE	The alternative would potentially meet project objectives by providing additional interconnection points for bulk power delivery to Riverside.	The alternative is potentially technically feasible. The alternative does not meet regulatory feasibility criteria because it would take substantial time to obtain approvals for the new power lines in three new power line corridors. The alternative would also be significantly more expensive to implement.	The alternative would result in greater environmental impacts due to a substantial increase in project length for overhead and underground power lines.	System	*Eliminated*
Alternative 29: Lower Voltage Alternative B - Three Sources *The alternative would add 280-MW transformers at three interconnective substations (Mira Loma, Etiwanda, and Circle City) and three double-circuit 69-kV lines for a total of six 69-kV circuits (two circuits from each substation).* Source: RPU and SCE	The alternative would potentially meet project objectives by providing additional interconnection points for bulk power delivery to Riverside.	The alternative would not meet technical feasibility criteria because it would be infeasible to fit to the 230/69-kV transformers within the planned Circle City Substation. The alternative would not meet regulatory or financial feasibility due to the need to modify a substation that is currently in the CPUC approval	The alternative would result in greater environmental impacts due to a substantial increase in project length for overhead and underground power lines and transmission lines.	System	*Eliminated*

Description of Alternative	Project Objective	Potential Feasibility	Avoid/Reduce Environmental Effects	Alternative Type	Conclusion
		process and the expense in excess of $1 billion.			
Alternative 30: Lower Voltage Alternative C – Single Source with Solar PV and Battery Storage *The alternative would have a single interconnection at the Mira Loma Substation with two 280-MW transformers and two double-circuit 69-kV lines for a total of four 69-kV circuits. This alternative includes a 60-MW photovoltaic (PV) solar facility and a 240-megawatt hours battery energy storage system.* Source: RPU and SCE	The alternative would potentially meet project objectives by providing additional interconnection points for bulk power delivery to Riverside and additional power generation to meet projected load growth.	The alternative is potentially technically feasible. The alternative does not meet regulatory feasibility criteria because it would take substantial time to obtain approvals for the new power lines and solar PV battery energy storage, which would result in significant delays to the project. The alternative would also be more expensive to implement.	The alternative would result in greater environmental impacts due to a substantial increase in project length for overhead and underground power lines and area required for a solar PV and battery energy storage facility.	System	*Eliminated*

4.2 ALTERNATIVES RETAINED

4.2.1 Alternative 1: Bellegrave – Pats Ranch Road Underground

Description

The Alternative 1 route would begin and transition to an underground position immediately adjacent to the tie-in to the Mira Loma – Vista #1 230-kV Transmission Line. The transmission line would travel south along Wineville Avenue for approximately 0.7 mile, west on Bellegrave Avenue for approximately 0.2 mile, and south on Pats Ranch Road for approximately 1.2 miles. At the intersection of Pats Ranch Road and Limonite Avenue, the alternative route would connect with and follow the same underground alignment as the Revised Project. The Alternative 1 route is shown on shown on Figure 4.2-1. SCE proposed the original concept for this alternative in response to CPUC Deficiency Report #1. Several public comments requested analysis of this alternative.

Consideration of CEQA Criteria

Project Objectives

Alternative 1 would meet the basic project objectives by constructing a new 230-kV transmission line between the Mira Loma – Vista #1 230-kV Transmission Line and Wildlife Substation, thereby supplying additional power to meet current demand and projected load growth and providing a second source of bulk power to Riverside.

Technical, Legal, and Regulatory Feasibility

Alternative 1 is technically feasible. Pats Ranch Road north of Limonite Avenue has an existing easement but has not yet been constructed. While there may be future utility line construction in this alignment, limited utilities are present in the area that would conflict with the underground transmission line. Bellegrave Avenue and Wineville Avenue are sufficiently wide to accommodate the underground transmission line duct banks.

Alternative 1 meets the criteria for legal and regulatory feasibility. The transmission line would be located within city streets within franchise ROW. The alternative would not conflict with any laws or regulations regarding utility locations.

Environmental Feasibility

Environmental Advantages

Alternative 1 would avoid the impacts associated with construction of the overhead transmission line and riser poles in Jurupa Valley and permanent agricultural impacts from construction of the underground transmission line north of Limonite Avenue. Potential environmental advantages include:

Figure 4.2-1 Alternative 1: Bellegrave – Pats Ranch Road Underground

Source: (esri 2017, SCE 2017, CDFW 2016)

- **Aesthetics.** Avoids installation of two large riser poles at Limonite Avenue and associated significant aesthetic impacts; reduces community visual impacts near residences that have been constructed on Wineville Avenue after the 2013 RTRP EIR.
- **Agricultural Resources.** Avoids significant impacts on Prime Farmland within the property north of Limonite Avenue.

Environmental Disadvantages

Alternative 1 would increase the length of the underground transmission line. Potential environmental disadvantages of this alternative include:

- **Air Quality and Greenhouse Gases.** Greater air quality and greenhouse gas impacts from increased construction vehicle activity to construct the underground transmission line.
- **Noise.** Greater construction noise impacts from increased construction vehicle activity to construct the underground transmission line.
- **Traffic.** Additional traffic impacts due to underground construction on Wineville Avenue and Bellegrave Avenue.
- **Utilities and Hazards.** Potentially greater utility conflicts and induced current effects (i.e., shock hazard, corrosion of adjacent buried utilities) from installation of the underground transmission line in roadways with existing utility pipelines.

Conclusion

RETAINED FOR ANALYSIS. Alternative 1 would meet the basic project objectives and is feasible. It has been retained because it would offer substantial avoidance of visual effects and permanent agricultural resource impacts in the City of Jurupa Valley.

4.2.2 Alternative 2: Wineville – Limonite Underground

Description

The Alternative 2 route would begin and transition to an underground position immediately adjacent to the tie-in to the Mira Loma – Vista #1 230-kV Transmission Line. The transmission line would travel south for approximately 2 miles on Wineville Avenue before reaching the intersection of Limonite Avenue and Wineville Avenue. At this intersection, the transmission line would turn west, following Limonite Avenue for approximately 1,000 feet before turning south on Pats Ranch Road to follow the same underground alignment as the Revised Project. The Alternative 2 alignment is shown on Figure 4.2-2.

Consideration of CEQA Criteria

Project Objectives

Alternative 2 would meet the basic project objectives by constructing a new 230-kV transmission line between the Mira Loma – Vista #1 230-kV Transmission Line and Wildlife Substation; thereby supplying additional power to meet current electrical system demand and projected load growth and providing a second source of bulk power to Riverside.

Figure 4.2-2 Alternative 2: Wineville – Limonite Underground

Source: (esri 2017, SCE 2017, CDFW 2016)

Technical, Legal, and Regulatory Feasibility
Alternative 2 is technically feasible. Wineville Avenue is sufficiently wide to accommodate the underground transmission line duct banks within the ROW.

Alternative 2 meets the criteria for legal and regulatory feasibility. The transmission line would be located within city streets within franchise ROW. The alternative would not conflict with any laws or regulations regarding utility locations.

Environmental Feasibility
Environmental Advantages
Alternative 2 would avoid impacts associated with the overhead transmission line and riser poles in Jurupa Valley and impacts on agricultural resources north of Limonite Avenue. Potential environmental advantages include:

- **Aesthetics.** Avoids installation of two large riser poles at Limonite Avenue and associated aesthetic impacts; reduces community visual impacts near residences that have been constructed on Wineville Avenue after the 2013 RTRP EIR.
- **Agricultural Resources.** Avoids impacts on Prime Farmland north of Limonite Avenue.

Environmental Disadvantages
Alternative 2 would increase the length of the underground transmission line. Potential environmental disadvantages of this alternative include:

- **Air Quality and Greenhouse Gases.** Greater air quality and greenhouse gas impacts from increased construction vehicle activity to construct the underground transmission line.
- **Noise.** Greater construction noise impacts from increased construction vehicle activity to construct the underground transmission line.
- **Traffic.** Additional traffic impacts due to underground construction on Wineville Avenue.
- **Utilities and Hazards.** Potentially greater utility conflicts and induced current effects (i.e., shock hazard, corrosion of adjacent buried utilities) from installation of the underground transmission line in roadways with existing utility pipelines.

Conclusion
RETAINED FOR ANALYSIS. Alternative 2 would meet the basic project objectives and is feasible. It has been retained because it would offer substantial avoidance of visual effects and agricultural land use conflicts in the City of Jurupa Valley.

4.2.3 Alternative 3: Relocate Northern Riser Poles

Description
Alternative 3 involves relocation of the northern riser poles adjacent to and north of Limonite Avenue, approximately 0.25 mile north-northwest of the Revised Project's riser pole positions, to a location adjacent to the I-15 ROW. The Alternative 3 transmission line would be located underground in the same alignment as the Revised Project overhead alignment. Alternative 3 would connect to the Revised Project underground alignment directly north of Limonite Avenue. Alternative 3 is shown on Figure 4.2-3.

Figure 4.2-3 Alternative 3: Relocate Northern Riser Poles

Source: (esri 2017, SCE 2017, CDFW 2016)

Consideration of CEQA Criteria

Project Objectives
Alternative 3 would meet the basic project objectives by constructing a new 230-kV transmission line between the Mira Loma – Vista #1 230-kV Transmission Line and Wildlife Substation, thereby supplying additional power to meet current demand and projected load growth and providing a second source of bulk power to Riverside.

Technical, Legal, and Regulatory Feasibility
Alternative 3 meets technical, legal and regulatory feasibility criteria. The relocation of the riser poles would simply extend the underground duct banks by 0.25 mile to the north of Limonite Avenue within undeveloped property within the Revised Project alignment. There are no underground utility conflicts within the underground alignment, and the underground route would be located outside of the proposed Caltrans I-15/Limonite Avenue interchange improvements.

Environmental Feasibility
Environmental Advantages
Alternative 3 would relocate the large riser pole structures 0.25 mile away from Limonite Avenue. Potential environmental advantages include:

- **Aesthetics.** The relocation of the riser poles would reduce the visual dominance of the structures for motorists along Limonite Avenue and exiting the I-15 freeway at the entrance to Jurupa Valley.

Environmental Disadvantages
Alternative 3 would relocate the riser poles and extend the underground duct banks by 0.25 mile. Environmental disadvantages of this alternative include additional impacts on Prime Farmland from the underground duct banks and manholes.

Conclusion
RETAINED FOR ANALYSIS. Alternative 3 would meet the basic project objectives and is feasible. It has been retained because it would reduce potentially significant visual effects at Limonite Avenue.

4.2.4 Alternative 4: Wineville – Landon Underground

Description
The Alternative 4 route would begin and transition to an underground position immediately adjacent to the tie-in to the Mira Loma – Vista #1 230-kV Transmission Line. The transmission line would travel south under Wineville Avenue for approximately 0.4 mile before turning west to continue underground within Landon Drive for approximately 0.4 mile. At the terminus of Landon Drive, the transmission line would transition to an overhead position on two new riser poles where it would follow SCE's proposed overhead alignment south along I-15 to the Revised Project alignment. The Alternative 4 alignment is shown on Figure 4.2-4.

Figure 4.2-4 Alternative 4: Wineville - Landon Underground

Source: (esri 2017, SCE 2017, CDFW 2016)

Consideration of CEQA Criteria

Project Objectives
Alternative 4 would meet the basic project objectives by constructing a new 230-kV transmission line between the Mira Loma – Vista #1 230-kV Transmission Line and Wildlife Substation, thereby supplying additional power to meet current electrical system demand and projected load growth and providing a second source of bulk power to Riverside.

Technical, Legal, and Regulatory Feasibility
Alternative 4 is technically feasible. Wineville Avenue and Landon Drive are sufficiently wide to accommodate the underground transmission line duct banks within the ROW.

Alternative 4 meets the criteria for legal and regulatory feasibility. The alternative would locate the transmission line within city streets within franchise ROW. The alternative would not conflict with any laws or regulations regarding utility locations.

Environmental Feasibility
Environmental Advantages
Alternative 4 would avoid installation of the lattice steel tower at the intersection of Landon Drive and Wineville Avenue. Potential environmental advantages include:

- **Aesthetics.** Locating the transmission line underground on Wineville Avenue would reduce community visual impacts near residences that have been constructed along Wineville Avenue after the 2013 RTRP EIR.

Environmental Disadvantages
Alternative 4 would involve more underground transmission line construction than the Revised Project. Potential environmental disadvantages of this alternative include:

- **Air Quality and Greenhouse Gases.** Greater air quality and greenhouse gas impacts from increased construction vehicle activity to construct the underground transmission line.
- **Noise.** Greater construction noise impacts from increased construction vehicle activity to construct the underground transmission line.
- **Traffic.** Additional traffic impacts due to underground construction on Wineville Avenue and Landon Drive.
- **Utilities and Hazards.** Potentially greater utility conflicts and induced current effects (i.e., shock hazard, corrosion of adjacent buried utilities) from installation of the underground transmission line in roadways with utilities lines.

Conclusion
RETAINED FOR ANALYSIS. Alternative 4 would meet the basic project objectives and is feasible. It has been retained because it would offer substantial avoidance of visual effects in the City of Jurupa Valley.

4.3 ALTERNATIVES ELIMINATED

The routing alternatives that were eliminated (Alternatives 5 through 12) are shown on Figure 4.3-1.

4.3.1 Alternative 5: Wineville Underground

Description

The Alternative 5 route would begin and transition to an underground position immediately adjacent to the tie-in to the Mira Loma – Vista #1 230-kV Transmission Line. The transmission line would travel south on Wineville Avenue to 68th Street. This alternative route would then follow the same underground alignment as the Revised Project from 68th Street and Wineville Avenue east and south through the Goose Creek Golf Course. This alternative was suggested by the public during the 2017 scoping period.

Consideration of CEQA Criteria

Project Objectives

Alternative 5 would meet the basic project objectives by constructing a new 230-kV transmission line between Mira Loma Substation and Wildlife Substation, thereby providing a second source of bulk power to Riverside and increasing capacity to meet current and projected load.

Technical, Legal, and Regulatory Feasibility

Alternative 5 potentially meets the technical, legal, and regulatory feasibility criteria; however, Alternative 5 would potentially conflict with the Settlement Agreement, which stipulated that parties to the agreement agreed to an underground transmission line from Limonite Avenue within Pats Ranch Road and 68th Street. Because Alternative 5 would locate the underground transmission line within Wineville Avenue south of Limonite Avenue, Alternative 5 may not "substantially conform" with the Hybrid Route included in the Settlement Agreement.

Environmental Feasibility

Environmental Advantages

Potential environmental advantages include:

- **Aesthetics.** Avoids installation of the large riser poles at Limonite Avenue and associated aesthetics impacts; reduces community visual impacts near residences that have been constructed on Wineville Avenue after the 2013 RTRP EIR.

Environmental Disadvantages

Potential environmental disadvantages include:

- **Air Quality, Greenhouse Gases, and Noise.** Greater construction air quality, greenhouse gas, and noise impacts from increased construction vehicle activity to construct the underground transmission line.
- **Traffic.** Additional traffic impacts due to underground construction on Wineville Avenue, which has a greater traffic volume than Pats Ranch Road.

- **Utilities and Hazards.** Potentially greater utility conflicts and induced current effects (i.e., shock hazard, corrosion of adjacent buried utilities) resulting from proximity to existing underground utilities.

Conclusion

ELIMINATED. Alternative 5 creates potentially greater environmental impacts related to construction noise, traffic, and utilities and hazards than the Revised Project underground alignment on Pats Ranch Road. The alternative may not "substantially conform" with the Settlement Agreement and could present legal conflicts. Alternative 5 has been eliminated from consideration in the Subsequent EIR.

4.3.2 Alternative 6: Mira Loma Substation – Van Buren in Railroad ROW

Description

The Alternative 6 route would start at the Mira Loma Substation and then travel east for 2 miles to Van Buren Boulevard as an overhead line. At Van Buren Boulevard, the alternative route would turn southeast, remaining overhead and running along the east side of Van Buren Boulevard within the Union Pacific Railroad ROW for approximately 5 miles. The transmission line would transition to an underground position after crossing the Santa Ana River. The underground alignment would turn east after the river crossing, following the approved 2013 RTRP alignment to reach Wildlife Substation. This alternative was considered in the 2013 RTRP EIR and was suggested by the public during the 2017 scoping period.

Consideration of CEQA Criteria

Project Objectives

The Mira Loma Substation – Van Buren in Railroad ROW alternative would meet the basic project objectives by constructing a new 230-kV transmission line between Mira Loma Substation and Wildlife Substation, thereby providing a second source of bulk power to Riverside and increasing capacity to meet current and projected load.

Technical, Legal, and Regulatory Feasibility

Alternative 6 does not meet legal and regulatory feasibility criteria. Transmission lines produce induced current effects (i.e., shock hazard) when located near railroad operations. For that reason, both SCE and Union Pacific do not allow transmission lines in a railroad ROW.

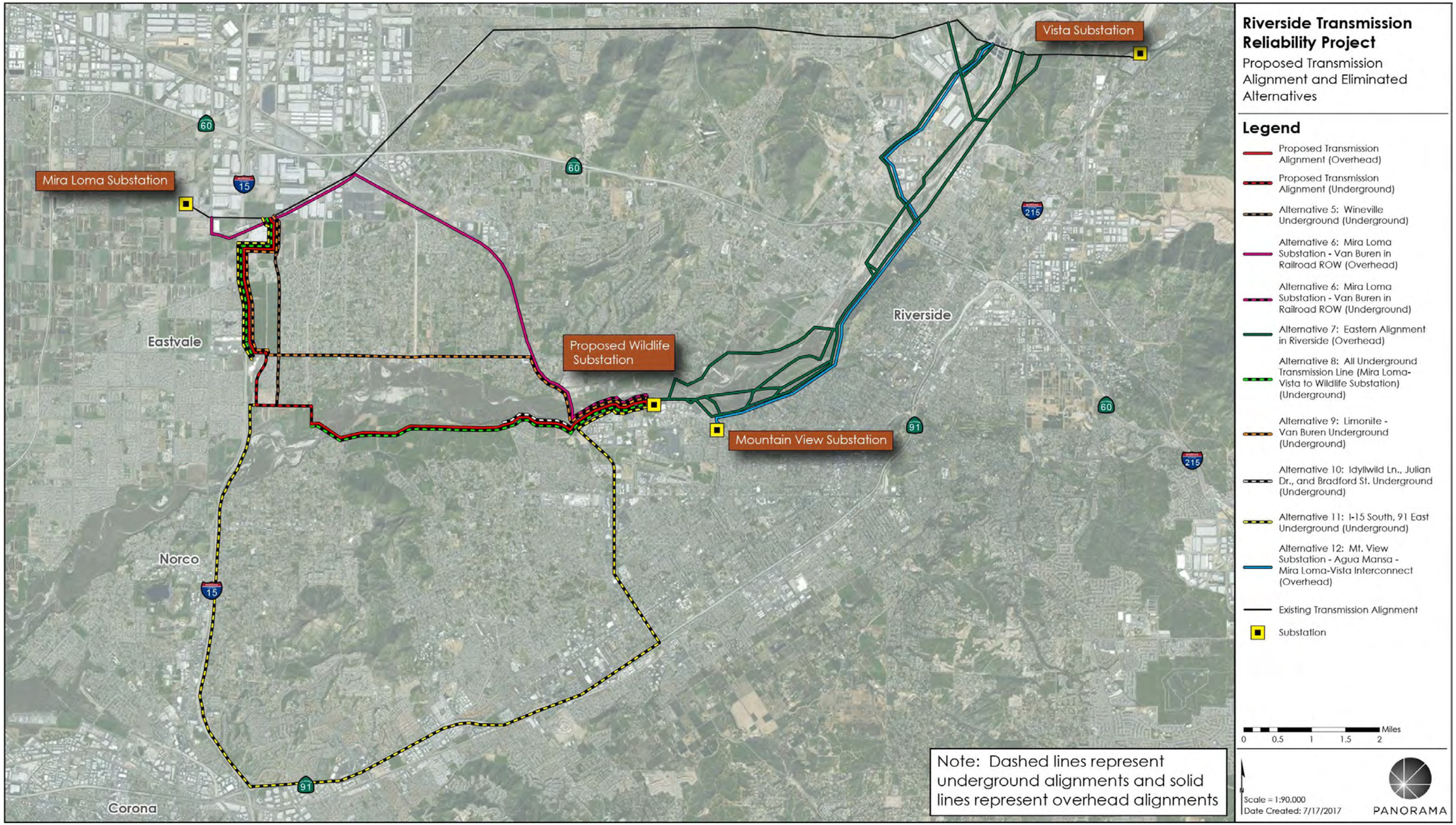
Environmental Feasibility

Environmental Advantages

Potential environmental advantages include:

- **Aesthetics.** Avoids installation of two large riser poles at Limonite Avenue and associated aesthetic impacts; reduces community visual impacts near residences that have been constructed on Wineville Avenue after the 2013 RTRP EIR.

Figure 4.3-1 Eliminated Transmission Route Alternatives



Source: *(esri 2017, SCE 2017)*

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Environmental Disadvantages
Potential environmental disadvantages include:

- **Aesthetics.** Overhead alignment along Van Buren Boulevard could have potentially significant aesthetic impacts.
- **Land Use.** Railroad ROW is not suitable for overhead transmission construction and operation.

Conclusion

ELIMINATED. Alternative 6 is not legally feasible because neither SCE nor Union Pacific Railroad would allow the transmission line to be located within the railroad ROW. Alternative 6 has been eliminated from consideration in the Subsequent EIR.

4.3.3 Alternative 7: Eastern Alignment in Riverside

Description

The Alternative 7 route would begin and tie-in to the Mira Loma – Vista #1 230-kV Transmission Line at one of five locations near Agua Mansa Road between the City of Jurupa Valley and the City of Colton. The transmission line would travel southwest from the tie-in, following the Santa Ana River south for approximately 8 miles. Several routing options would be available for this alternative, including routes on both the northern/western and southern/eastern sides of the Santa Ana River. All routes would follow the boundary of the 100-year floodplain of the river southwest toward the Wilderness Substation. This alternative was considered in the 2013 RTRP EIR and was suggested by the public during the 2017 scoping period.

Consideration of CEQA Criteria

Project Objectives
Alternative 7 would meet the basic project objectives by providing a new 230-kV transmission source between Mira Loma Substation and Wildlife Substation, thereby providing a second source of bulk power to Riverside and increasing capacity to meet current and projected load.

Technical, Legal, and Regulatory Feasibility
Alternative 7 potentially meets technical, legal, and regulatory feasibility criteria.

Environmental Feasibility
Environmental Advantages
Alternative 7 would avoid the environmental impacts of the Revised Project within Jurupa Valley by relocating those impacts. Potential environmental advantages include:

- **Aesthetics.** Avoids visual impacts from the overhead transmission line along Wineville Avenue and from the riser poles at Limonite Avenue.

Environmental Disadvantages
Alternative 7 has substantial environmental disadvantages as described in Chapter 6 of the 2013 RTRP EIR. These environmental disadvantages exceed the environmental advantages, and the

alternative does not meet environmental screening criteria. Potential environmental disadvantages include:

- **Aesthetics.** The overhead transmission line would be visible along a significant portion of the Santa Ana River, which could significantly impact viewsheds.
- **Biological Resources.** Santa Ana River habitat would be impacted by the construction and operation of the transmission line. Significant impacts on riparian and other sensitive habitats, as well as impacts on special-status species that may be present along the river, could occur that would exceed the impacts of the Revised Project.
- **Geology.** Floodplain geology would require additional engineering and foundational shoring of overhead transmission structures, which could represent a significant impact.
- **Hazards.** This alternative would be constructed within the 100-year floodplain of the Santa Ana River, exposing the transmission line to significant risk in the event of a flooding event.
- **Hydrology.** The alignment would be within a 100-year floodplain and create ground disturbance that could impact hydrological resources.
- **Recreation.** The Santa Ana River represents a major recreational resource, which could be significantly impacted by construction of an overhead line.

Conclusion

ELIMINATED. Alternative 7 was previously considered in the 2013 RTRP EIR (see Chapter 6 and Appendix D, Siting Study in the 2013 RTRP EIR); further evaluation of this alternative is not needed. This alternative would result in greater environmental impacts than the Revised Project and does not meet the environmental screening criteria. Alternative 7 has been eliminated from consideration in the Subsequent EIR.

4.3.4 Alternative 8: All Underground Transmission Line (Mira Loma – Vista #1 230-kV Transmission Line Interconnect to Wildlife Substation)

Description

The Alternative 8 route would begin and transition to an underground position immediately adjacent to the Mira Loma – Vista #1 230-kV Transmission Line interconnect. The transmission line would follow the Revised Project route from the Mira Loma – Vista #1 230-kV Transmission Line interconnect to Wildlife Substation, but all segments of the transmission line would be located underground, including the crossing of the Santa Ana River and segments south of the Santa Ana River. This alternative was suggested by the public during the 2017 scoping period.

Consideration of CEQA Criteria

Project Objectives

Alternative 8 would meet the basic project objectives by constructing a new 230-kV transmission line between Mira Loma Substation and Wildlife Substation, thereby providing a

second source of bulk power to Riverside and increasing capacity to meet current and projected load.

Technical, Legal, and Regulatory Feasibility
Alternative 8 potentially meets the technical, legal, and regulatory feasibility criteria.

Environmental Feasibility
Environmental Advantages
Potential environmental advantages include:

- **Aesthetics.** Avoids visual impacts from the overhead transmission line along Wineville Avenue and from the riser poles at Limonite Avenue.

Environmental Disadvantages
Alternative 8 has potentially significant environmental disadvantages, specifically in areas south of the Santa Ana River where the alternative does not reduce or avoid any significant impact of the Revised Project. The alternative does not meet the environmental screening criteria. Potential environmental disadvantages include:

- **Air Quality and Greenhouse Gases.** Greater air quality and greenhouse gas impacts from increased construction vehicle activity to construct the underground transmission line.
- **Biological, Cultural, and Paleontological Resources.** Underground transmission line construction requires open trench construction methods, which could have significant impacts on habitat, special-status species, cultural resources, and paleontological resources because the proposed alignment extends along the Santa Ana River corridor in undisturbed areas. Therefore, the impact on plants, wildlife, habitat, and previously undiscovered cultural and paleontological resources would be significant.
- **Geology.** An increased potential for soil loss and erosion and an increased potential for dewatering due to open trench construction methods along the entire alignment, especially along the south side of the Santa Ana River corridor in undisturbed areas, exists along this alignment.
- **Hydrology.** Underground construction across the Santa Ana River would require a horizontal directional drill installation or installation of water diversion and/or coffer dam, which would be a potentially significant impact.
- **Recreation.** Increased temporary recreation conflicts from underground transmission line construction adjacent to and within trails along the Santa Ana River.
- **Traffic.** Increased traffic and transportation impacts from additional road closures at the location of underground construction.
- **Utilities and Hazards.** Potentially greater utility conflicts and induced current effects (i.e., shock hazard, corrosion of adjacent buried utilities) from installation of the underground transmission line in roadways with existing utility pipelines.

Conclusion

ELIMINATED. Alternative 8 achieves the basic project objectives and potentially meets criteria for technical, legal, and regulatory feasibility. The alternative would result in substantially greater environmental impacts than the Revised Project because the underground transmission line would be much longer than the Revised Project. Portions of the underground transmission line route located south of the Santa Ana River would not avoid or reduce any new significant effects of the project and would result in potentially significant impacts. Alternative 8 does not meet environmental screening criteria and has been eliminated from consideration in the Subsequent EIR.

4.3.5 Alternative 9: Limonite – Van Buren Underground

Description

The Alternative 9 route would follow the Revised Project alignment to Limonite Avenue. At Limonite Avenue, the transmission line would transition underground and travel east within Limonite Avenue to Van Buren Boulevard. At Van Buren Boulevard, the transmission line would travel south within Van Buren Boulevard and cross the Santa Ana River within the Van Buren Boulevard bridge. The transmission line would transition back to an overhead position on the south side of the Santa Ana River and travel east to the Wildlife Substation along the 2013 approved RTRP alignment. This alternative was suggested by the public during the 2017 scoping period.

Consideration of CEQA Criteria

Project Objectives

Alternative 9 would meet the basic project objectives by constructing a new 230-kV transmission line between Mira Loma Substation and Wildlife Substation, thereby providing a second source of bulk power to Riverside and increasing capacity to meet current and projected load.

Technical, Legal, and Regulatory Feasibility

Alternative 9 may be technically feasible. Construction of the underground transmission line within Van Buren bridge would require further engineering evaluation to verify that sufficient space is available for two double 230-kV transmission circuits within the bridge. If there is insufficient space within the bridge, the transmission line could not be located underground within Van Buren Road at the crossing of the Santa Ana River.

Alternative 9 meets the criteria for legal and regulatory feasibility. The alternative would locate the transmission line within city streets within franchise ROW. The alternative would not conflict with any laws or regulations regarding utility locations.

Environmental Feasibility

Environmental Advantages

Relocation of the underground transmission line from Pats Ranch Road and 68th Street to Limonite Avenue and Van Buren Road would not reduce any significant environmental impact of the Revised Project.

Environmental Disadvantages

Alternative 9 has substantial environmental disadvantages compared to the underground transmission line within Jurupa Valley. Potential environmental disadvantages include:

- **Air Quality and Greenhouse Gases.** Greater air quality and greenhouse gas impacts from increased construction vehicle activity to construct the underground transmission line.
- **Cultural and Paleontological Resources.** The increased length of underground transmission line construction would increase the potential to disturb buried cultural and paleontological resources.
- **Noise.** Greater construction noise impacts from increased construction vehicle activity to construct the underground transmission line.
- **Traffic and Traffic Hazards.** Additional traffic impacts due to underground construction along Limonite Avenue and Van Buren Boulevard, which have substantially higher traffic volumes and greater vehicle speeds than roadways within the Revised Project underground alignment.
- **Utilities and Hazards.** Potentially greater utility conflicts and induced current effects (i.e., shock hazard, corrosion of adjacent buried utilities) from installation of the underground transmission line in roadways with existing utility pipelines.

Conclusion

ELIMINATED. Alternative 9 achieves the basic project objectives and may be feasible. This alternative does not reduce any significant impact of the Revised Project and has the potential to create new significant impacts. The alternative does not meet the environmental screening criteria. Alternative 9 has been eliminated from consideration in the Subsequent EIR.

4.3.6 Alternative 10: Idyllwild Lane, Julian Drive, and Bradford Street Underground

Description

The Alternative 10 route would follow the approved 2013 RTRP alignment and Revised Project alignment except for a 1-mile segment that would be located underground southeast of the Revised Project on the south side of the Santa Ana River. The transmission line would transition to an underground position north of Tyler Street in the City of Riverside and continue underground north of the homes on Auld Street, Julian Drive, Idyllwild Lane, Rutland Avenue, and Bradford Street. It would return to an overhead position before crossing Van Buren Boulevard, and follow the approved 2013 RTRP route to Wildlife Substation. This alternative

was suggested by the public during the 2017 scoping period. This alternative would not modify the Revised Project.

Consideration of CEQA Criteria

Project Objectives
Alternative 10 would meet the basic project objectives by constructing a new 230-kV transmission line between Mira Loma Substation and Wildlife Substation, thereby providing a second source of bulk power to Riverside and increasing capacity to meet current and projected load.

Technical, Legal, and Regulatory Feasibility
Alternative 10 potentially meets the technical, legal, and regulatory feasibility criteria; however, further design would be required to identify a path to the suggested roads for the underground transmission line.

Environmental Feasibility
Environmental Advantages
Alternative 10 would not reduce any potentially significant environmental impact of the Revised Project because the Revised Project would not be affected by the alternative.

Environmental Disadvantages
Alternative 10 would result in additional, potentially significant impacts. The potential environmental disadvantages include:

- **Aesthetics.** The addition of four 165-foot tall riser poles along the Santa Ana River corridor and within the Santa Ana River landscape would significantly impact aesthetics for recreational trail users and residents along the river corridor.
- **Air Quality and Greenhouse Gases.** Greater air quality and greenhouse gas impacts from increased construction vehicle activity to construct the underground transmission line.
- **Biological Resources.** Underground construction of the line near the Santa Ana River could result in a potentially significant impact on riparian, other sensitive habitats, and special-status species.
- **Cultural Resources.** Construction of the underground transmission line near the Santa Ana River could result in potentially significant impacts on cultural resources due to the increased area of surface disturbance in an area that is sensitive to cultural resources.
- **Noise.** Potentially greater construction noise impacts from increased construction vehicle activity to construct the underground transmission line.

Conclusion
ELIMINATED. Alternative 10 achieves the basic project objectives and potentially meets the criteria for technical, legal, and regulatory feasibility. This alternative would not reduce any impacts of the Revised Project, and it has the potential to create significant additional environmental impacts including significant aesthetic, biological resource, cultural resource,

and noise impacts. The alternative does not meet environmental screening criteria. Alternative 10 has been eliminated from consideration in the Subsequent EIR.

4.3.7 Alternative 11: I-15 South to SR-91 East Underground

Description

The Alternative 11 transmission line would be entirely underground from the Mira Loma – Vista #1 230-kV Transmission Line interconnect to Wildlife Substation. The transmission line would follow the Revised Project alignment south from the Mira Loma tie-in at Cantu-Galleano Ranch Road and Wineville Avenue until 68th Street. At 68th Street, the transmission line would diverge from the Revised Project alignment, following the I-15 corridor south approximately 6 miles until I-15 intersects with SR-91. The transmission line would turn east and follow SR-91 for approximately 6.5 miles before turning north to follow Van Buren Boulevard for approximately 3.5 miles. The Alternative 10 route would reconnect with the approved 2013 RTRP alignment at its intersection with Van Buren Boulevard and follow the approved alignment to Wildlife Substation. This alternative was suggested by the public during the 2017 scoping period.

Consideration of CEQA Criteria

Project Objectives

Alternative 11 would meet the basic project objectives by constructing a new 230-kV transmission line between the Mira Loma Substation and Wildlife Substation, thereby providing a second source of bulk power to Riverside and increasing capacity to meet current and projected load.

Technical, Legal, and Regulatory Feasibility

This alternative has the potential to be technically and legally feasible.

Caltrans' general policy on use of its controlled access roadways does not permit longitudinal encroachments (Caltrans, 2013). SCE would have to show that there are no other potential alignment options, in which case Caltrans would work with the applicant through the Exception Permit Process. However, because other alignment options exist (as described in this ASR), Caltrans would not allow an Exception Permit for this alternative. Thus, this alternative does not pass the regulatory feasibility screening criteria.

Environmental Feasibility

Environmental Advantages

Alternative 11 has the potential to reduce potentially significant impacts from the Revised Project overhead transmission line in Jurupa Valley. Potential environmental advantages include:

- **Aesthetics.** Avoids visual impacts from the overhead transmission line along Wineville Avenue and from the riser poles at Limonite Avenue.

Environmental Disadvantages

Alternative 11 involves a substantially larger underground transmission line than the Revised Project and presents significant environmental disadvantages, including:

- **Air Quality and Greenhouse Gases.** Greater air quality and greenhouse gas impacts from increased construction vehicle activity to construct the underground transmission line. This alternative is significantly longer than the revised alignment, and increased emissions would significantly increase existing impacts.
- **Cultural and Paleontological Resources.** Potentially increased impacts on cultural and paleontological resources from a substantial increase in ground disturbance.
- **Noise.** Greater construction noise impacts from increased construction vehicle activity to construct the underground transmission line.
- **Traffic and Hazards.** Substantial traffic impacts and hazards due to underground construction in a major highway system.
- **Utilities and Public Services.** Substantial increase in water required and soil excavation and removal.

Conclusion

ELIMINATED. Alternative 11 would be technically feasible and achieves the basic project objectives; however, it does not meet the regulatory feasibility criteria. Caltrans does not allow installation of underground utilities beneath Caltrans-operated highways. The alternative would also result in substantially greater environmental impacts than the Revised Project. Alternative 11 has been eliminated from consideration in the Subsequent EIR.

4.3.8 Alternative 12: Mountain View Substation – Agua Mansa – Mira Loma – Vista 230-kV #1 Line Interconnect

Description

The Alternative 12 route would begin and tie in to the Mira Loma – Vista #1 230-kV Transmission Line interconnect approximately 2.25 miles northeast of the intersection of Agua Mansa Road and Market Street in the City of Jurupa Valley. The transmission line would run southwest parallel to Agua Mansa Road before turning south to parallel Market Street for approximately 1 mile. The transmission line would cross the Santa Ana River adjacent to the Market Street bridge. After crossing the river, the transmission line route would follow an existing 69-kV power line in a southwesterly direction, following the Santa Ana River Trail for approximately 4.25 miles and crossing Jurupa Avenue. The transmission line would then tie in to Mountain View Substation located at Mountain View Avenue and Sheppard Street in the City of Riverside. This alternative was suggested by the public during the 2017 scoping period.

Consideration of CEQA Criteria

Project Objectives

Alternative 12 could meet the basic project objectives. This alternative could provide a second source of bulk power to RPU by providing 230-kV power into the existing RPU-owned

Mountain View Substation as well as increase the power capacity to meet the current and projected load.

Technical, Legal, and Regulatory Feasibility
Alternative 12 potentially meets the technical, legal, and regulatory feasibility criteria. Mountain View Substation is not a 230-kV substation, and substantial expansion would be required to accommodate a new 230-kV transmission line. The CPUC did not assess the expansion of Mountain View Substation in this ASR; however, the siting study conducted by the City of Riverside (Appendix D of the 2013 RTRP EIR) included this alternative and described constraints to substation expansion.

Environmental Feasibility
Environmental Advantages
Alternative 12 would relocate the project and impacts of the transmission line. Potential environmental advantages include:

- **Aesthetics.** Avoids visual impacts from the overhead transmission line along Wineville Avenue and from the riser poles at Limonite Avenue.

Environmental Disadvantages
Alternative 12 is substantially longer than the Revised Project alone and would relocate the transmission line impacts to areas northeast of Mountain View Substation. Potential environmental disadvantages include:

- **Aesthetics and Recreation.** The Santa Ana River represents a major recreational resource. Recreational uses and viewsheds along the Santa Ana River could be significantly impacted by construction of an overhead transmission line.
- **Biological Resources.** This alternative would require construction in potentially sensitive habitat areas along the Santa Ana River and the vicinity of Mt. Rubidoux, potentially causing significant impacts on riparian and other sensitive habitats and special-status species.
- **Cultural Resources.** Construction of the transmission line within areas that are highly sensitive for cultural resources along the Santa Ana River could result in greater impacts on cultural resources.
- **Geology and Hydrology.** This alternative would be constructed within the 100-year floodplain of the Santa Ana River, exposing the transmission line to significant risk in the event of a flooding event.
- **Hazards.** The overhead transmission line would be located within an airport land use zone and could present a significant hazard to air traffic.

Conclusion
ELIMINATED. Alternative 12 was previously considered by the City of Riverside in the 2006 Siting Study (Appendix D of the 2013 RTRP EIR). This alternative may not meet feasibility criteria due to insufficient space within the Mountain View Substation for a 230-kV transmission line. The alternative would avoid significant visual impacts within Jurupa Valley

but would relocate those impacts and would result in greater environmental impacts along the Santa Ana River. The alternative does not meet the environmental screening criteria. Alternative 12 has been eliminated from further consideration in the Subsequent EIR.

4.3.9 Alternative 13: Battery Storage

Description

Alternative 13 involves adding battery storage systems in Riverside to improve reliability in lieu of a new 230-kV transmission line. This alternative was suggested by the public during the 2017 scoping period to offset the need for an additional high voltage transmission line into Riverside.

Consideration of CEQA Criteria

Project Objectives

Alternative 13 would not meet the basic project objectives of providing a second source of bulk energy delivery to Riverside and increasing capacity to sufficiently meet existing and projected electrical load. Riverside currently receives approximately 560 MW of electric delivery from Vista Substation (280 MW of capacity in each transformer bank A and B). If one of RPU's transformer banks at Vista Substation or the transmission line carrying electricity from Vista Substation to RPU were to be damaged, RPU would suffer the immediate loss of 280 MW or more of electricity. To meet the basic project objective, the alternative would have to deliver 280 MW of electricity to Riverside. Battery storage technology is still in its infancy. Utility scale battery storage projects that have been deployed to date include a 20 MW battery storage facility at Mira Loma Substation and 30 MW in the Imperial Energy Storage Center. Two hundred and eighty MW of battery storage is nearly ten times the capacity of the largest battery storage projects that have been deployed. Riverside could not reasonably install enough battery storage to meet the basic project objectives within a reasonable timeframe.

Technical, Legal, and Regulatory Feasibility

Battery storage technology has advanced rapidly in the last few years, and the first utility scale battery storage projects have been deployed. It may one day be feasible to employ battery storage at the scale needed for the project (280 MW or more), but the scale of the project needs substantially exceeds the scale of current battery storage projects. The largest battery storage systems deployed to date are 30 MW. It is not technically feasible to implement 280 MW of battery storage because the largest project that has ever been constructed is 250 MW short of the target. Battery storage is also expensive, and Alternative 13 could involve costs potentially greater than $500 million. In addition, the alternative may not meet regulatory feasibility criteria because jurisdictional authority over battery storage options remains undefined.

Environmental Feasibility

Environmental Advantages

Alternative 13 would avoid all impacts of the Revised Project. Potential environmental advantages include:

- **Aesthetics.** Avoids visual impacts from the overhead transmission line along Wineville Avenue and from the riser poles at Limonite Avenue.
- **Air Quality and Greenhouse Gases.** Avoids criteria pollutant and greenhouse gas emissions from construction of the Revised Project.
- **Biological Resources.** Avoids wetland and riparian impacts from underground transmission line construction in the Goose Creek Golf Course and within the Santa Ana River floodplain.
- **Cultural and Paleontological Resources.** Avoids potential impacts on previously undiscovered cultural and paleontological resources within the Revised Project alignment.
- **Geology and Hydrology.** Avoids topsoil loss and impacts within the floodplain of the Santa Ana River.
- **Land Use.** Avoids potential land use conflicts within the property north of Limonite Avenue.
- **Recreation.** Avoids impacts on recreational use of trails and the Goose Creek Golf Course.
- **Traffic.** Avoids traffic impacts associated with construction of the underground transmission line in roadways.
- **Utilities.** Avoids potential utility conflicts and induced current impacts from the underground and overhead transmission lines.

Environmental Disadvantages

Battery storage located within an existing substation would have limited environmental disadvantages due to the limited size and profile of battery storage projects. Pilot battery storage projects have experienced high incidence of combustion, which could present a potential fire hazard.

Conclusion

ELIMINATED. Alternative 13 does not meet the basic project objectives, it is not technically feasible, and it may not be economically feasible. Alternative 13 has been eliminated from consideration in the Subsequent EIR.

4.3.10 Alternative 14: Additional Transformer Capacity at Vista Substation

Description

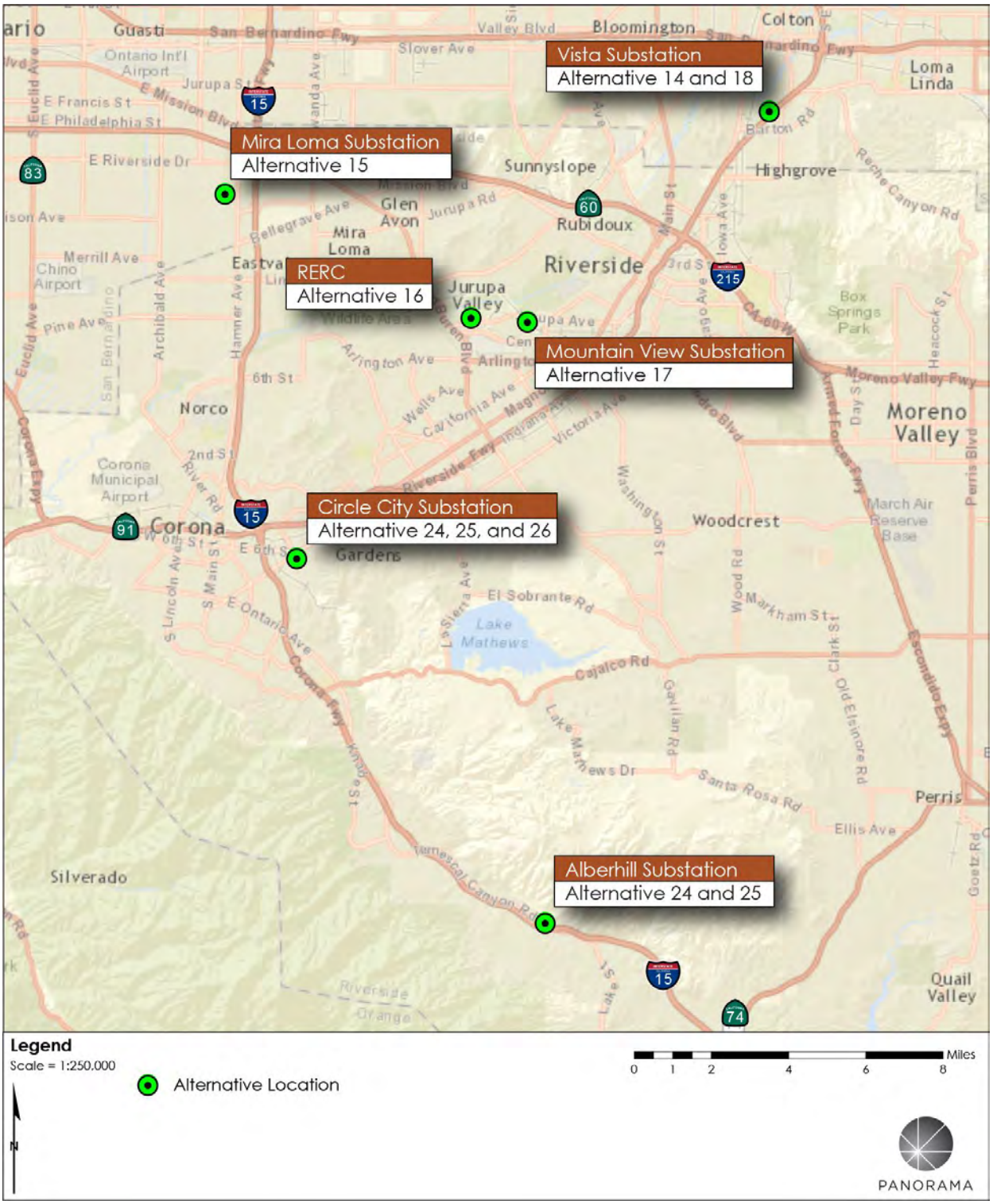
Alternative 14 would involve expanding Vista Substation with the addition of a third 230/69-kV transformer bank at the substation. Refer to Figure 4.3-2 for the location of Vista Substation. This alternative was considered in the 2013 RTRP EIR.

Consideration of CEQA Criteria

Project Objectives

Alternative 14 would not add a secondary source of bulk power; therefore, the alternative would not meet this basic project objective. The alternative would also not achieve the basic project objective of increasing capacity to meet existing and projected electrical load because

Figure 4.3-2 Substation Locations



Source: (esri 2017, SCE 2017)

capacity would still be limited by the capacity of the existing transmission line from Vista Substation.

Technical, Legal, and Regulatory Feasibility

Expansion of the existing substation may be potentially infeasible. SCE has stated that expansion of the Vista Substation is not feasible due to short circuit duty limitation. This alternative was previously evaluated by the City of Riverside in the 2013 RTRP EIR and is documented in Appendix D of the 2013 RTRP EIR.

Environmental Feasibility

Environmental Advantages

Alternative 14 would avoid all impacts of the Revised Project. Potential environmental advantages include:

- **Aesthetics.** Avoids visual impacts from the overhead transmission line along Wineville Avenue and from the riser poles at Limonite Avenue.
- **Air Quality and Greenhouse Gases.** Avoids criteria pollutant and greenhouse gas emissions from construction of the Revised Project.
- **Biological Resources.** Avoids wetland and riparian impacts from underground transmission line construction in the Goose Creek Golf Course and within the Santa Ana River floodplain.
- **Cultural and Paleontological Resources.** Avoids potential impacts on previous undiscovered cultural and paleontological resources within the Revised Project alignment.
- **Geology and Hydrology.** Avoids topsoil loss and impacts within the floodplain of the Santa Ana River.
- **Land Use.** Avoids potential land use conflicts within the property north of Limonite Avenue.
- **Recreation.** Avoids impacts on recreational use of trails and the Goose Creek Golf Course.
- **Traffic.** Avoids traffic impacts associated with construction of the underground transmission line in roadways.
- **Utilities.** Avoids potential utility conflicts and induced current impacts from the underground and overhead transmission lines.

Environmental Disadvantages

Alternative 14 would have the following environmental disadvantages:

- **Cultural and Biological Resources.** Expansion of Vista Substation could result in impacts on cultural and biological resources within the expanded substation footprint.

Conclusion

ELIMINATED. Alternative 14 does not meet the basic project objectives; therefore, the alternative has been eliminated from full consideration in the Subsequent EIR.

4.3.11 Alternative 15: Additional Transformer Capacity at Mira Loma Substation

Description

Alternative 15 would involve expanding Mira Loma Substation by adding a fourth 230/69-kV transformer bank at the substation. Mira Loma Substation is shown on Figure 4.3-2. This alternative was considered in the 2013 RTRP EIR.

Consideration of CEQA Criteria

Project Objectives

Alternative 15 would not add a secondary source of bulk power; therefore, the alternative would not meet this basic project objective. Additionally, the alternative would not achieve the basic project objective of increasing capacity to meet existing and projected electrical load because capacity would still be limited by the capacity of the existing transmission line from Vista Substation.

Technical, Legal, and Regulatory Feasibility

Alternative 15 is technically feasible and likely meets the criteria for legal and regulatory feasibility. Expansion of the transformer capacity would likely require expanding the footprint of the substation.

Environmental Feasibility

Environmental Advantages

Alternative 15 would avoid all impacts of the Revised Project. Potential environmental advantages include:

- **Aesthetics.** Avoids visual impacts from the overhead transmission line along Wineville Avenue and from the riser poles at Limonite Avenue.
- **Air Quality and Greenhouse Gases.** Avoids criteria pollutant and greenhouse gas emissions from construction of the Revised Project.
- **Biological Resources.** Avoids wetland and riparian impacts from underground transmission line construction in the Goose Creek Golf Course and within the Santa Ana River floodplain.
- **Cultural and Paleontological Resources.** Avoids potential impacts on previous undiscovered cultural and paleontological resources within the Revised Project alignment.
- **Geology and Hydrology.** Avoids topsoil loss and impacts within the floodplain of the Santa Ana River.
- **Land Use.** Avoids potential land use conflicts within the property north of Limonite Avenue.
- **Recreation.** Avoids impacts on recreational use of trails and the Goose Creek Golf Course.
- **Traffic.** Avoids traffic impacts associated with construction of the underground transmission line in roadways.

- **Utilities.** Avoids potential utility conflicts and induced current impacts from the underground and overhead transmission lines.

Environmental Disadvantages
Alternative 15 could have several environmental disadvantages associated with expansion of the substation, if required, such as impacts on cultural and biological resources within an expanded substation footprint.

Conclusion
ELIMINATED. Alternative 15 does not meet the basic objectives; therefore, this alternative has been eliminated from consideration in the Subsequent EIR.

4.3.12 Alternative 16: Expansion of Riverside Energy Resource Center Electrical Generation Capacity

Description
Alternative 16 would involve expanding electrical generation capacity at RERC. RERC currently has a generating capacity of 192 MW. Expansion of the RERC facility may require expanding the footprint of RERC to accommodate another gas fired power plant. RERC is shown on Figure 4.3-2. This alternative was considered in the 2013 RTRP EIR.

Consideration of CEQA Criteria

Project Objectives
Alternative 16 would provide supplemental power to Riverside but would not provide sufficient power to achieve the basic project objectives. RPU current receives 560 MW of power from two transformer banks at Vista Substation. If one of those transformer banks or if the transmission line were damaged, RPU would need to make up at least 280 MW of power. The existing RERC facility generates 192 MW of electricity. Power plants typically add up to 50 MW of power; RPU would need at least six power plants to make up for the loss of 280 MW of power from Vista Substation. The RERC facility does not have sufficient capacity to supply 280 MW of power even with addition of a power plant.

Technical, Legal, and Regulatory Feasibility
Alternative 16 is technically and legally feasible; however, the addition of six power plants within Riverside may not meet regulatory feasibility. Each power plant would require permits from SCAQMD and the California Energy Commission. It is infeasible to permit this many additional power plants because the air basin is not currently meeting air quality standards.

Environmental Feasibility
Environmental Advantages
Alternative 16 would avoid all impacts of the Revised Project. Potential environmental advantages include:

- **Aesthetics.** Avoids visual impacts from the overhead transmission line along Wineville Avenue and from the riser poles at Limonite Avenue.

- **Air Quality and Greenhouse Gases.** Avoids criteria pollutant and greenhouse gas emissions from construction of the Revised Project.
- **Biological Resources.** Avoids wetland and riparian impacts from underground transmission line construction in the Goose Creek Golf Course and within the Santa Ana River floodplain.
- **Cultural and Paleontological Resources.** Avoids potential impacts on previous undiscovered cultural and paleontological resources within the Revised Project alignment.
- **Geology and Hydrology.** Avoids topsoil loss and impacts within the floodplain of the Santa Ana River.
- **Land Use.** Avoids potential land use conflicts within the property north of Limonite Avenue.
- **Recreation.** Avoids impacts on recreational use of trail and the Goose Creek Golf Course.
- **Traffic.** Avoids traffic impacts associated with construction of the underground transmission line in roadways.
- **Utilities.** Avoids potential utility conflicts and induced current impacts from the underground and overhead transmission lines.

Environmental Disadvantages

Alternative 16 would have the following environmental disadvantages:

- **Air Quality and Greenhouse Gases.** Additional energy generation during peak periods would result in long-term air quality and greenhouse gas impacts. Riverside is located within an air basin that is not in attainment of air quality standards, and the additional air quality emissions could have a significant individual and cumulative impact on air quality.

Alternative 16 could have several additional environmental disadvantages associated with RERC expansion or the construction of additional power plants elsewhere, including impacts related to land use, aesthetics, traffic, noise, geology, hydrology, cultural resources, and biological resources.

Conclusion

ELIMINATED. Alternative 16 does not meet the basic project objectives; therefore, this alternative has been eliminated from consideration in the Subsequent EIR.

4.3.13 Alternative 17: Expansion of Electrical Equipment at Mountain View Substation

Description

Alternative 17 would involve adding transformer capacity at Mountain View Substation, which is managed by RPU. Mountain View Substation is shown on Figure 4.3-2. This alternative was considered in the 2013 RTRP EIR.

Consideration of CEQA Criteria

Project Objectives
Alternative 17 does not meet the basic project objective of providing a second source of bulk power to Riverside. Although the alternative increases transformer capacity at Mountain View Substation, Riverside would continue to be limited by the transmission capacity of the existing transmission lines. This alternative would not meet the project objective of increasing capacity to meet current electrical system demand and projected load growth.

Technical, Legal, and Regulatory Feasibility
Alternative 17 may meet technical, legal, and regulatory feasibility criteria; however, additional analysis would be required to identify whether sufficient space is available to add transformer capacity and to evaluate the permitted limits of the substation.

Environmental Feasibility
Environmental Advantages
Alternative 17 would avoid all impacts of the Revised Project. Potential environmental advantages include:

- **Aesthetics.** Avoids visual impacts from the overhead transmission line along Wineville Avenue and from the riser poles at Limonite Avenue.
- **Air Quality and Greenhouse Gases.** Avoids criteria pollutant and greenhouse gas emissions from construction of the Revised Project.
- **Biological Resources.** Avoids wetland and riparian impacts from underground transmission line construction in the Goose Creek Golf Course and within the Santa Ana River floodplain.
- **Cultural and Paleontological Resources.** Avoids potential impacts on previous undiscovered cultural resources and paleontological within the Revised Project alignment.
- **Geology and Hydrology.** Avoids topsoil loss and impacts within the floodplain of the Santa Ana River.
- **Land Use.** Avoids potential land use conflicts within the property north of Limonite Avenue.
- **Recreation.** Avoids impacts on recreational use of trails and the Goose Creek Golf Course.
- **Traffic.** Avoids traffic impacts associated with construction of the underground transmission line in roadways.
- **Utilities.** Avoids potential utility conflicts and induced current impacts from the underground and overhead transmission lines.

Environmental Disadvantages
Alternative 17 would have no environmental disadvantages unless the additional transformers necessitated expansion of the substation. Substation expansion, if required, could have several

environmental disadvantages, such as impacts on cultural and biological resources within an expanded substation footprint.

Conclusion

ELIMINATED. Alternative 17 does not meet the basic project objectives; therefore, this alternative has been eliminated from consideration in the Subsequent EIR.

4.3.14 Alternative 18: Shift Load at Vista Substation

Description

Alternative 18 would shift the RPU load to Vista Substation transformers to free up capacity on transformer banks 1A and 2A.

Consideration of CEQA Criteria

Project Objectives

Alternative 18 does not meet the basic project objectives. The alternative would not provide a secondary source of bulk power to Riverside. The alternative would still provide power from Vista Substation and would not improve reliability in the case of damage to the transformer banks at Vista Substation or damage to the existing 230-kV transmission line. Additionally, due to existing transmission line capacity limitations, the alternative would not increase capacity to meet current and future load.

Technical, Legal, and Regulatory Feasibility

Alternative 18 may be technically feasible if there is spare capacity in transformer banks 1A and 2A at Vista Substation. The alternative meets legal and regulatory feasibility criteria; however, it may require a new legal agreement between RPU and SCE regarding the use of Vista Substation.

Environmental Feasibility

Environmental Advantages

Alternative 18 would avoid all impacts of the Revised Project. Potential environmental advantages include:

- **Aesthetics.** Avoids visual impacts from the overhead transmission line along Wineville Avenue, and from the riser poles at Limonite Avenue.
- **Air Quality and Greenhouse Gases.** Avoids criteria pollutant and greenhouse gas emissions from construction of the Revised Project.
- **Biological Resources.** Avoids wetland and riparian impacts from underground transmission line construction in the Goose Creek Golf Course and within the Santa Ana River floodplain.
- **Cultural and Paleontological Resources.** Avoids potential impacts on previous undiscovered cultural and paleontological resources within the Revised Project alignment.
- **Geology and Hydrology.** Avoids topsoil loss and impacts within the floodplain of the Santa Ana River.

- **Land Use.** Avoids potential land use conflicts within the property north of Limonite Avenue.
- **Recreation.** Avoids impacts on recreational use of trails and the Goose Creek Golf Course.
- **Traffic.** Avoids traffic impacts associated with construction of the underground transmission line in roadways.
- **Utilities.** Avoids potential utility conflicts and induced current impacts from the underground and overhead transmission lines.

Environmental Disadvantages

Alternative 18 would not require any construction and would have no environmental disadvantages.

Conclusion

ELIMINATED. Alternative 18 does not meet the basic project objective of providing a secondary source of bulk power or increasing capacity to meet existing and future demands; therefore, this alternative has been eliminated from consideration in the Subsequent EIR.

4.3.15 Alternative 19: Additional Generation

Description

Alternative 19 would involve the construction of additional RPU power plants in the City of Riverside. This alternative is substantially similar to Alternative 16; however, the alternative is not physically limited to the RERC area. This alternative could include additional power generation anywhere within RPU's territory. This alternative was considered in the 2013 RTRP EIR.

Consideration of CEQA Criteria

Project Objectives

Alternative 19 would not provide a secondary source of bulk power to RPU. As described in Alternative 16 (above), the electrical capacity needed to provide reliability in the event of loss of one of RPU's transformer banks at Vista Substation is equivalent to multiple power plants. Electrical generation could not be reasonably deployed at a scale sufficient to meet this basic project objective. The alternative may meet the project objective of increasing capacity to meet existing and future demand.

Technical, Legal, and Regulatory Feasibility

As described in Alternative 16 (above), it is technically and legally feasible to construct power plants; however, due to existing air quality violations, it would be infeasible to permit the number of power plants that would be required under Alternative 19 to offset the loss of transformers at Vista Substation or to adequately produce the needed power during peak demand conditions.

Environmental Feasibility

Environmental Advantages

Alternative 19 would avoid all impacts of the Revised Project in Jurupa Valley. Potential environmental advantages include:

- **Aesthetics.** Avoids visual impacts from the overhead transmission line along Wineville Avenue and from the riser poles at Limonite Avenue.
- **Air Quality and Greenhouse Gases.** Avoids criteria pollutant and greenhouse gas emissions from construction of the Revised Project.
- **Biological Resources.** Avoids wetland and riparian impacts from underground transmission line construction in the Goose Creek Golf Course and within the Santa Ana River floodplain.
- **Cultural and Paleontological Resources.** Avoids potential impacts on previous undiscovered cultural resources and paleontological within the Revised Project alignment.
- **Geology and Hydrology.** Avoids topsoil loss and impacts within the floodplain of the Santa Ana River.
- **Land Use.** Avoids potential land use conflicts within the property north of Limonite Avenue.
- **Recreation.** Avoids impacts on recreational use of trails and the Goose Creek Golf Course.
- **Traffic.** Avoids traffic impacts associated with construction of the underground transmission line in roadways.
- **Utilities.** Avoids potential utility conflicts and induced current impacts from the underground and overhead transmission lines.

Environmental Disadvantages

Alternative 19 would have the following environmental disadvantages:

- **Air Quality and Greenhouse Gases.** Additional energy generation during peak periods would result in long-term air quality and greenhouse gas impacts from additional energy generation. Riverside is located within an air basin that is not in attainment of air quality standards, and the additional air quality emissions could have a significant individual and cumulative impact on air quality.

Alternative 19 could have several additional environmental disadvantages associated with the construction of additional power plants elsewhere, including impacts related to land use, aesthetics, traffic, noise, geology, hydrology, cultural resources, and biological resources.

Conclusion

ELIMINATED. Alternative 19 does not meet regulatory feasibility criteria. The existing gas-fired generation in the Riverside area has operational limitations due to air quality restrictions in the SCAQMD air permit. It is not feasible to permit substantial additional gas-fired generation in the basin. This alternative has been eliminated from consideration in the Subsequent EIR.

4.3.16 Alternative 20: Use of Internal RPU Generation

Description

Alternative 20 would use existing RPU generation during peak periods to mitigate high loading on Vista Substation transformers.

Consideration of CEQA Criteria

Project Objectives

Alternative 20 would not meet the basic project objectives because it would not create a second source of bulk power to RPU and it would not increase capacity to meet existing and future load. Existing RPU generation is already considered when evaluating system needs and reliability.

Technical, Legal, and Regulatory Feasibility

Alternative 20 meets the criteria for technical and legal feasibility. Riverside's internal generating units are brought on-line as needed to support Riverside's load requirements. While these generation resources reduce the amount of power that must flow through the transformers at Vista Substation to Riverside by generating and supplying power locally, they are "peaker" units. The number of hours the RERC units can operate is limited to 1,200 hours per year and no more than two starts per day by SCAQMD permits. These units are typically run less than 4 hours per day. The Springs generating units are also subject to start-up and use restrictions. Due to the limitations in use of these "peaker" units, they cannot be considered part of the base power supply for Riverside, and additional capacity is needed to meet the existing and future demand for system reliability. The alternative would not meet regulatory feasibility because use of the Riverside "peaker" units in excess of the currently permitted capacity would not be allowed by SCAQMD.

Environmental Feasibility

Environmental Advantages

Alternative 20 would avoid all impacts of the Revised Project. Potential environmental advantages include:

- **Aesthetics.** Avoids visual impacts from the overhead transmission line along Wineville Avenue, and from the riser poles at Limonite Avenue.
- **Air Quality and Greenhouse Gases.** Avoids criteria pollutant and greenhouse gas emissions from construction of the Revised Project.
- **Biological Resources.** Avoids wetland and riparian impacts from underground transmission line construction in the Goose Creek Golf Course and within the Santa Ana River floodplain.
- **Cultural and Paleontological Resources.** Avoids potential impacts on previous undiscovered cultural and paleontological resources within the Revised Project alignment.
- **Geology and Hydrology.** Avoids topsoil loss and impacts within the floodplain of the Santa Ana River.

- **Land Use.** Avoids potential land use conflicts within the property north of Limonite Avenue.
- **Recreation.** Avoids impacts on recreational use of trails and the Goose Creek Golf Course.
- **Traffic.** Avoids traffic impacts associated with construction of the underground transmission line in roadways.
- **Utilities.** Avoids potential utility conflicts and induced current impacts from the underground and overhead transmission lines.

Environmental Disadvantages

Alternative 20 would have the following environmental disadvantages:

- **Air Quality and Greenhouse Gases.** Additional energy generation during peak periods would result in long-term air quality and greenhouse gas impacts from additional energy generation. Riverside is located within an air basin that is not in attainment of air quality standards and the additional air quality emissions could have a significant cumulative impact on air quality.

Conclusion

ELIMINATED. Alternative 20 does not meet the basic project objectives. This alternative is part of the baseline condition. This alternative has been eliminated from consideration in the Subsequent EIR.

4.3.17 Alternative 21: Distributed Generation

Description

Alternative 21 would involve deployment of distributed (less than 20 MW) renewable energy projects within the City of Riverside. The Revised Project is needed to supply at least 557 MW to offset the transmission line from Vista Substation and at least 140 MW of power to meet current demand and expected load growth. This alternative would require at least 28 separate renewable energy projects at 20 MW each to provide the level of energy generation comparable to the Revised Project.

Distributed generation is electricity production that is on-site or close to the load center that it is intended to serve. Distributed renewables refer to the use of renewable energy resources in distributed energy generation. The generating capacity of a distributed generation source is significantly smaller than those of centrally located utility-scale energy generation sources and can range from generation at a single residence to larger installations for commercial or multi-unit housing applications.

Examples of distributed renewable generation include small-scale PV, wind, biomass, and combined cooling and/or heat and power (also known as cogeneration) systems that use renewable-based fuels, as well as fuel cells produced from renewable energy resources. Distributed renewable generation does not include utility-scale PV, solar thermal, biomass, or wind energy power stations, or hydroelectric, geothermal, and non-combined heat and power-

related waste-to-energy systems (including digester gas, landfill gas, and municipal solid waste) as load is typically not close to generation, and onsite load is negligible.

Consideration of CEQA Criteria

Project Objectives
Alternative 21 would not meet the basic project objective of providing a secondary source of bulk power. Distributed generation would provide additional power but not at a level comparable to the total size of the project or the level needed to offset the loss of a transformer bank at Vista Substation (280 MW). The alternative would also fail in achieving the basic project objective of increasing capacity for current and future demand due to similar scaling challenges.

Technical, Legal, and Regulatory Feasibility
Alternative 21 meets the criteria for technical, legal, and regulatory feasibility. As described above, CPUC policy allows for distributed generation, and there are several federal and state incentive programs designed to encourage implementation of distributed generation.

Environmental Feasibility
Environmental Advantages
Alternative 21 would avoid all environmental impacts of the Revised Project. Potential environmental advantages include:

- **Aesthetics.** Avoids visual impacts from the overhead transmission line along Wineville Avenue, and from the riser poles at Limonite Avenue.
- **Air Quality and Greenhouse Gases.** Avoids criteria pollutant and greenhouse gas emissions from construction of the Revised Project.
- **Biological Resources.** Avoids wetland and riparian impacts from underground transmission line construction in the Goose Creek Golf Course and within the Santa Ana River floodplain.
- **Cultural and Paleontological Resources.** Avoids potential impacts on previous undiscovered cultural and paleontological resources within the Revised Project alignment.
- **Geology and Hydrology.** Avoids topsoil loss and impacts within the floodplain of the Santa Ana River.
- **Land Use.** Avoids potential land use conflicts within the property north of Limonite Avenue.
- **Recreation.** Avoids impacts on recreational use of trails and the Goose Creek Golf Course.
- **Traffic.** Avoids traffic impacts associated with construction of the underground transmission line in roadways.
- **Utilities.** Avoids potential utility conflicts and induced current impacts from the underground and overhead transmission lines.

Environmental Disadvantages
Alternative 21 has no environmental disadvantages. Rooftop solar is widely encouraged due to its environmental advantages over traditional energy generation.

Conclusion
ELIMINATED. Small-scale distributed renewable generation, such as rooftop solar panels, has the potential to appreciably reduce demand on the electrical system; however, Alternative 21 could not be feasibly deployed at a scale equivalent to the project need. The alternative does not meet the basic project objectives. Alternative 21 is eliminated from consideration in the Subsequent EIR.

4.3.18 Alternative 22: Energy Efficiency and Conservation

Description
Alternative 22 would implement programs to increase energy efficiency and conservation to reduce system loading and demand for power. Energy efficiency is using less energy to perform the same service or task. Energy conservation is the act of reducing, or going without a service or task, to save energy. For example, turning off a light is energy conservation; replacing an incandescent light bulb with a different type of light bulb that uses less energy to produce the same amount of light is energy efficiency. Both conservation and efficiency can reduce the amount of energy used.

Energy efficiency and conservation programs are designed to reduce customer energy consumptions. CPUC regulatory requirements dictate that supply-side and demand-side resource options should be considered on an equal basis in a utility's plan to acquire lowest-cost resources. These programs are designed to either reduce the overall use of energy, or to shift the consumption of energy to off-peak times. Programs include the installation of high-efficiency appliances (e.g., efficient heating and cooling systems and energy efficient lighting), the installation of insulation and weatherization, and customer behavior changes (e.g., customers that turn off lights more frequently because of increased customer awareness of their electrical usage).

Consideration of CEQA Criteria

Project Objectives
Alternative 22 does not achieve the basic project objectives of providing a secondary source of bulk power to RPU. The alternative would not be implemented at a scale that would achieve the project objectives.

Technical, Legal, and Regulatory Feasibility
Energy efficiency and conservation programs are currently in place. These programs meet the criteria for technical, legal, and regulatory feasibility; however, it is not technically possible to implement Alternative 22 at the scale equivalent of the project need. Energy efficiency and conservation could not be deployed at sufficient scale to offset the loss of a transformer bank (280 MW) at Vista Substation.

Environmental Feasibility

Environmental Advantages

Alternative 22 would avoid all environmental impacts of the Revised Project. Potential environmental advantages include:

- **Aesthetics.** Avoids visual impacts from the overhead transmission line along Wineville Avenue, and from the riser poles at Limonite Avenue.
- **Air Quality and Greenhouse Gases.** Avoids criteria pollutant and greenhouse gas emissions from construction of the Revised Project.
- **Biological Resources.** Avoids wetland and riparian impacts from underground transmission line construction in the Goose Creek Golf Course and within the Santa Ana River floodplain.
- **Cultural and Paleontological Resources.** Avoids potential impacts on previous undiscovered cultural and paleontological resources within the Revised Project alignment.
- **Geology and Hydrology.** Avoids topsoil loss and impacts within the floodplain of the Santa Ana River.
- **Land Use.** Avoids potential land use conflicts within the property north of Limonite Avenue.
- **Recreation.** Avoids impacts on recreational use of trails and the Goose Creek Golf Course.
- **Traffic.** Avoids traffic impacts associated with construction of the underground transmission line in roadways.
- **Utilities.** Avoids potential utility conflicts and induced current impacts from the underground and overhead transmission lines.

Environmental Disadvantages

Alternative 22 has no environmental disadvantages.

Conclusion

ELIMINATED. Alternative 22 cannot be implemented at a scale that would achieve the basic project objectives; therefore, this alternative is eliminated from consideration in the Subsequent EIR.

4.3.19 Alternative 23: Demand Response

Description

Demand response is end-use electric customers reducing their electricity usage in a given time period or shifting that usage to another time period in response to a price signal, a financial incentive, an environmental condition, or a reliability signal. Demand response is among the CPUC's top energy priorities because it provides numerous economic and environmental benefits for California ratepayers.

Demand response enables utilities to avoid building new power plants that are used only during the peak hours of the day (typically late afternoon to early evening). Building and

operating plants that are used only on occasion (also known as "peaker plants") is expensive, and those costs are eventually passed on to utility ratepayers. Demand response also enables utilities to avoid purchasing high-priced wholesale energy by reducing the demand for that energy at particular times of the day. Wholesale energy costs are also eventually passed on to ratepayers. To the extent that those costs can be lowered by demand response, ratepayers benefit. Demand response also provides system and local reliability benefits because they enable utilities to avoid the use of rolling blackouts when there is not enough generation to satisfy demand. Finally, demand response provides environmental benefits by enabling the utilities to avoid the use of peaker plants. Peaker plants typically have higher greenhouse gas and other criteria pollutant emissions. Demand response also has the potential to integrate more renewable energy (wind, solar, etc.) into the grid.

Consideration of CEQA Criteria

Project Objectives
Alternative 23 does not meet the basic project objective of providing a second source of bulk power to RPU.

Technical, Legal, and Regulatory Feasibility
Demand response programs are currently in place. These programs meet the criteria for technical, legal and regulatory feasibility; however, it is not feasible to deploy demand response at a scale equivalent to the project within RPU territory.

Environmental Feasibility
Environmental Advantages
Alternative 23 would avoid all environmental impacts of the Revised Project. Potential environmental advantages include:

- **Aesthetics.** Avoids visual impacts from the overhead transmission line along Wineville Avenue, and from the riser poles at Limonite Avenue.
- **Air Quality and Greenhouse Gases.** Avoids criteria pollutant and greenhouse gas emissions from construction of the Revised Project.
- **Biological Resources.** Avoids wetland and riparian impacts from underground transmission line construction in the Goose Creek Golf Course and within the Santa Ana River floodplain.
- **Cultural and Paleontological Resources.** Avoids potential impacts on previous undiscovered cultural and paleontological resources within the Revised Project alignment.
- **Geology and Hydrology.** Avoids topsoil loss and impacts within the floodplain of the Santa Ana River.
- **Land Use.** Avoids potential land use conflicts within the property north of Limonite Avenue.
- **Recreation.** Avoids impacts on recreational use of trails and the Goose Creek Golf Course.

- **Traffic.** Avoids traffic impacts associated with construction of the underground transmission line in roadways.
- **Utilities.** Avoids potential utility conflicts and induced current impacts from the underground and overhead transmission lines.

Environmental Disadvantages
Alternative 23 has no environmental disadvantages from demand response programs.

Conclusion
ELIMINATED. Alternative 23 does not meet the basic project objectives; therefore, this alternative is eliminated from consideration in the Subsequent EIR.

4.3.20 Alternative 24: Consolidate the RTRP and Circle City Project, and Consolidate the Valley – Ivyglen and Alberhill Substation Projects

Description
Alternative 24 would involve consolidation of multiple SCE projects. The alternative would include construction of the 220/66-kV Circle City Substation in the City of Corona. Mira Loma Substation would be connected to Circle City Substation with approximately 10 miles of 220-kV line that would be located within existing and new ROW. Circle City Substation would supply power to Corona, Pedley, Data Bank, Chase, Jefferson, Cleargen, and Delgen Substations and provide part of RPU's load. This alternative would also include construction of the Alberhill 500/115-kV Substation, looping the substation in to the Valley – Serrano 500-kV line. Alberhill Substation would supply power to the five 115-kV substations (Ivyglen, Fogarty, Elsinore, Skylark, and Newcomb). The Alberhill Substation Project would eliminate the construction of the transmission line segment from Valley Substation to the tap point between Fogarty and Elsinore substations of the Valley – Ivyglen line. Circle City and Alberhill Substations are shown on Figure 4.3-2. This alternative was provided for consideration by the ORA.

Consideration of CEQA Criteria

Project Objectives
Alternative 24 does not meet the basic project objective of providing a second source of bulk power to RPU. The alternative would create an additional power source at Vista Substation, which is the main existing bulk power source to the RPU. The alternative does not supply power to Riverside and would not increase capacity for existing demand or projected load.

Technical, Legal, and Regulatory Feasibility
Alternative 24 may meet technical and legal feasibility criteria; however, engineering design issues need to be resolved to determine a specific transmission route. The first design issue is the route of a 220-kV transmission line between Mira Loma Substation and Circle City Substation. The proposed Circle City Project alignment is a lower-voltage alignment that would travel through residential, commercial, and industrial areas along existing streets within franchise, SCE ROW, and private property. To accommodate a 220-kV overhead circuit, the proposed Circle City Project pole structures would need to be taller and have larger

foundations than those of the currently proposed subtransmission line. Additional design engineering would be required to determine if there would be sufficient franchise space adjacent to city streets for a 220-kV overhead alignment with larger pole structures, particularly in residential areas. Where insufficient space exists, the transmission line would need to be located underground in city streets.

The second design issue is how to supply RPU with power from the proposed Circle City Substation. To meet the basic project objective of a second reliable source of bulk energy, a 220-kV transmission line would need to be routed from Circle City Substation in the City of Norco to the proposed Wildlife Substation in the City of Riverside. There is no existing ROW connecting these locations, and most of the land uses between these locations are residential. The most reasonable assumption for how this would be accomplished would be via an underground alignment in surface streets (e.g., Magnolia Avenue to Van Buren Boulevard). It is estimated that an underground alignment would be approximately 9 to 10 miles long, depending on the engineered route.

In lieu of routing a 220-kV transmission line to Wildlife Substation, it may be possible to supply a limited quantity of lower voltage subtransmission to parts of Riverside via other subtransmission stations connected to Circle City Substation; however, this would not represent sufficient megawatts to meet the basic project objective of providing secondary bulk power to cover an outage at Vista Substation.

This alternative does not meet regulatory feasibility criteria~~.~~ because it would not be feasible to obtain the necessary approvals from the CPUC and other agencies to install the needed power lines within the timeframe that the project is required. ~~The CPUC is required to respond to the utilities' applications for each project and does not have a mechanism to require the consolidation of multiple projects that have been recommended by the CAISO, other than denial of all of these project applications. These projects are being independently evaluated under CPUC General Order 131-D.~~

Environmental Feasibility

Environmental Advantages

Alternative 24 would avoid all impacts in the Revised Project alignment area.

Environmental Disadvantages

Alternative 24 doubles the length of the 220-kV transmission line needed to support the RPU (20 miles versus 10 miles). Potential environmental disadvantages include:

- **Aesthetics.** Creates additional aesthetic impacts by placing more transmission structures within residential communities over a longer alignment.
- **Air Quality and Greenhouse Gases.** Creates additional criteria pollutant and greenhouse gas emissions due to increased length of transmission line, particularly from underground duct bank construction.

- **Cultural Resources.** Creates additional impacts by increasing the length of the transmission line needed to meet the project objective, increasing the area of disturbance and thus increasing potential impacts on cultural resources.
- **Geology and Hydrology.** Potentially creates additional topsoil loss and impacts within adjacent streams and floodplains.
- **Land Use.** Potentially creates additional land use impacts by requiring construction of a longer transmission line that may conflict with existing land uses, particularly in residential areas.
- **Noise.** Construction noise impacts would be greater due to the longer overhead transmission line in residential areas.
- **Recreation.** Potentially creates impacts on recreational resources where such resources occur along the significantly longer transmission alignment.
- **Traffic.** Creates additional traffic impacts by requiring additional road closures to support the construction of an increased length of underground transmission line.

Conclusion

ELIMINATED. Alternative 24 does not meet any of the screening criteria. The alternative does not meet the basic project objectives, does not meet regulatory feasibility, and would result in substantially greater environmental impacts. Alternative 24 is eliminated from consideration in the Subsequent EIR.

4.3.21 Alternative 25: Consolidate the Circle City, RTRP, Valley – Ivyglen, and Alberhill System Projects

Description

Alternative 25 would involve consolidating multiple SCE projects. The Alberhill 500/220/115-kV Substation would be constructed with a loop-in to the Valley – Serrano 500-kV line in unincorporated Riverside County, northwest of the City of Lake Elsinore. Alberhill Substation would supply power to five 115-kV substations (Ivyglen, Fogarty, Elsinore, Skylark, and Newcomb), as well as to Circle City Substation in the City of Corona.

The alternative would also include the construction of the Circle City 220/66-kV Substation, which would be connected to Alberhill Substation with approximately 15 miles of 220-kV line. The connecting transmission line would be built within a new ROW along the I-15 freeway. Circle City Substation would supply power to Corona, Pedley, Data Bank, Chase, Jefferson, Cleargen, and Delgen Substations and would also provide part of RPU's load. Circle City and Alberhill Substations are shown on Figure 4.3-2. This alternative was provided for consideration by the ORA.

Consideration of CEQA Criteria

Project Objectives

Alternative 25 does not meet the basic project objective to provide a second source of bulk power delivery to RPU. Alternative 25 would not supply any power to Riverside and would not increase capacity to meet existing electrical system demand and future load growth.

Technical, Legal, and Regulatory Feasibility
Alternative 25 may meet technical and legal feasibility criteria; however, engineering design issues need to be resolved to determine a specific transmission route. Supplying RPU with power from the proposed Circle City Substation under Alternative 25 would require the same design considerations and have the same feasibility issues as those described for Alternative 24 above. To meet the basic project objective of a second reliable source of bulk energy, a 220-kV transmission line would need to be routed from Circle City Substation to the proposed Wildlife Substation in Riverside. It is estimated that an underground alignment would be approximately 9 to 10 miles long, depending on the engineered route.

The new 15-mile long ROW between the proposed Circle City and Alberhill Substations would most likely require a combined overhead and underground alignment, given land use and property ownership constraints (e.g., residential communities, Caltrans I-15 ROW). It is possible that most of the alignment could be underground in franchise ROW within Temescal Canyon Road, which parallels I-15.

The alternative does not meet regulatory feasibility criteria because it would not be feasible to obtain the necessary approvals from the CPUC and other agencies to install the needed power lines within the timeframe that the project is required.

Environmental Feasibility
Environmental Advantages
Alternative 25 would avoid all significant impacts within the Revised Project alignment.

Environmental Disadvantages
Alternative 25 more than doubles the length of the 220-kV transmission line needed to support the RPU (25 miles versus 10 miles). Potential environmental disadvantages include:

- **Aesthetics.** Creates additional aesthetic impacts placing more transmission structures within residential communities over a longer alignment.
- **Air Quality and Greenhouse Gases.** Creates additional criteria pollutant and greenhouse gas emissions due to increased length of transmission line, particularly from underground duct bank construction.
- **Cultural Resources.** Creates additional impacts by increasing the length of the transmission line needed to meet the project objective, increasing the area of disturbance and thus increasing potential impacts on cultural resources.
- **Geology and Hydrology.** Potentially creates additional topsoil loss and impacts within adjacent streams and floodplains.
- **Land Use.** Potentially creates additional land use impacts by requiring construction of a longer transmission line that may conflict with existing land uses, particularly in residential areas.
- **Noise.** Construction noise impacts would be greater due to the longer overhead transmission line in residential areas.
- **Recreation.** Potentially creates impacts on recreational resources where such resources occur along the significantly longer transmission alignment.

- **Traffic.** Creates additional traffic impacts by requiring additional road closures to support the construction of an increased length of underground transmission line.

Conclusion

ELIMINATED. Alternative 25 does not meet any of the screening criteria. The alternative does not meet the basic project objectives, does not meet regulatory feasibility, and would result in greater environmental impacts than the Revised Project. Alternative 25 is eliminated from consideration in the Subsequent EIR.

4.3.22 Alternative 26: Modify the Circle City Project to Replace the Proposed Circle City, RTRP, Valley – Ivyglen, and Alberhill System Projects

Description

Alternative 26 involves modifying the Circle City Project in the City of Corona to replace a number of SCE projects. The alternative would construct Circle City Substation as a 220/115/66-kV substation and interconnect it to Mira Loma Substation in the City of Ontario with approximately 11 miles of 220-kV lines using existing and some new ROW. Approximately 27 (17+10) miles of 115-kV lines along I-15 would be constructed to connect Ivyglen and Fogarty 115-kV Substations to the Circle City 220-kV Substation.

Circle City Substation would supply power to the Corona, Pedley, Data Bank, Chase, Jefferson, Cleargen, and Delgen Substations as well as provide part of the RPU's load. Circle City Substation would also supply power to Ivyglen and Fogarty Substations. Circle City Substation is shown on Figure 4.3-2. This alternative was provided for consideration by the Office of Ratepayer Advocates.

Consideration of CEQA Criteria

Project Objectives

Alternative 26 does not meet the basic project objectives. The alternative would not provide a second source of bulk power to RPU. Alternative 26 would not supply any power to Riverside and would not or increase capacity to meet existing electrical system demand and future load growth.

Technical, Legal, and Regulatory Feasibility

Alternative 26 may meet technical and legal feasibility criteria; however, engineering design issues need to be worked out to determine a specific transmission route. Supplying RPU with power from the proposed Circle City Substation under Alternative 26 would require the same design considerations and have the same feasibility issues as those described for Alternative 24 above. Alternative 26 as proposed does not meet the basic project objective of supplying a second source of bulk power to RPU. This alternative would only meet the basic project objective if it were modified to include a new 220-kV power line from Circle City Substation to Wildlife Substation in Riverside. It is estimated that an underground alignment would be approximately 9 to 10 miles long depending on the engineered route.

The alternative does not meet regulatory feasibility criteria because it would not be feasible to obtain the necessary approvals from the CPUC and other agencies to install the needed power lines within the timeframe that the project is required.

Environmental Feasibility

Environmental Advantages

Alternative 26 would avoid all significant impacts within the Revised Project alignment.

Environmental Disadvantages

Alternative 26 doubles the length of the 220-kV transmission line needed to support the RPU (20 miles versus 10 miles). Potential environmental disadvantages include:

- **Aesthetics.** Creates additional aesthetic impacts placing more transmission structures within residential communities over a longer alignment.
- **Air Quality and Greenhouse Gases.** Creates additional criteria pollutant and greenhouse gas emissions due to increased length of transmission line, particularly from underground duct bank construction.
- **Cultural Resources.** Creates additional impacts by increasing the length of the transmission line needed to meet the project objective, increasing the area of disturbance and thus increasing potential impacts on cultural resources.
- **Geology and Hydrology.** Potentially creates additional topsoil loss and impacts within adjacent streams and floodplains.
- **Land Use.** Potentially creates additional land use impacts by requiring construction of a longer transmission line that may conflict with existing land uses, particularly in residential areas.
- **Noise.** Construction noise impacts would be greater due to the longer overhead transmission line in residential areas.
- **Recreation.** Potentially creates impacts on recreational resources where such resources occur along the significantly longer transmission alignment.
- **Traffic.** Creates additional traffic impacts by requiring additional road closures to support the construction of an increased length of underground transmission line.

Conclusion

ELIMINATED. Alternative 26 does not meet any of the screening criteria. The alternative does not meet the basic project objectives, does not meet regulatory feasibility, and would result in substantially greater environmental impacts. Alternative 26 is eliminated from consideration in the Subsequent EIR.

4.3.23 Alternative 27: Deliver 66-kV Power to Riverside from Multiple SCE Sources and Install Metering

Description

Under Alternative 27, SCE's existing 66-kV power line network surrounding Riverside would be used to provide power to Riverside. SCE would build points of interconnection to Riverside and use metering to monitor power delivery from SCE to Riverside. This alternative would

likely involve expansions at multiple SCE substations, such as Pedley (66-kV), Chase (66-kV), Lake Mathews (66-kV), Cajalco (115-kV), and Maxwell (66-kV). Additionally, multiple new distribution, and some 60-kV power lines, would be needed to tie-in the SCE system to the RPU system in a reliable manner. This alternative essentially integrates RPU load with the SCE system at lower voltages as opposed to the current arrangement of an isolated RPU with single or double tie-in (e.g., the Proposed Project) to SCE.

Consideration of CEQA Criteria

Project Objectives
Alternative 27 potentially meets the project objectives, assuming SCE provides additional 66-kV power lines and sources of power into Riverside.

Technical, Legal, and Regulatory Feasibility
Alternative 27 is potentially feasible. This alternative would likely involve expansions at multiple SCE stations, such as Pedley (66-kV), Chase (66-kV), Lake Mathews (66-kV), Cajalco (115-kV), and Maxwell (66-kV). Additionally, multiple new distribution, and some 60-kV power lines would be needed to tie-in the SCE system to the RPU system in a reliable manner. This alternative essentially integrates RPU load with the SCE system at lower voltages as opposed to the current arrangement of an isolated RPU with single or double tie-in (Proposed Project) to SCE.

The alternative would require new legal agreements between SCE and Riverside to change the way the utilities operate. The alternative may take many years to implement an agreement and define and construct the best points of connection.

Environmental Feasibility
Environmental Advantages
Alternative 27 would avoid all significant impacts within the Revised Project alignment.

Environmental Disadvantages
Potential environmental disadvantages include:

- **Aesthetics.** Creates additional potential aesthetic impacts due to the need to construct multiple power lines in new areas to deliver adequate capacity.
- **Air Quality and Greenhouse Gases.** Creates additional criteria pollutant and greenhouse gas emissions due to the need to construct multiple new power lines.
- **Biological and Cultural Resources.** Creates additional impacts due to the need to construct multiple power lines, increasing the area of disturbance and thus creating potential impacts on biological and cultural resources.
- **Geology/Hydrology.** Creates additional impacts due to the need to construct multiple power lines.
- **Land Use.** Creates additional land use impacts due to the need to construct multiple power lines.
- **Noise.** Construction noise impacts would be created due to the need to construct multiple power lines.

- **Recreation.** Creates potential impacts on recreational resources due to the need to construct multiple power lines that may conflict with existing recreational uses.
- **Traffic.** Creates additional traffic impacts by requiring additional road closures due to the need to construct multiple power lines.

Conclusion

ELIMINATED. Alternative 27 would meet the basic project objectives but does not meet regulatory feasibility criteria due to the need to permit multiple power lines into Riverside and change the operating agreement between SCE and Riverside. Alternative 27 would result in greater environmental impacts than the Revised Project due to construction of multiple new power lines from SCE to RPU. Alternative 27 is eliminated from consideration in the Subsequent EIR.

4.3.24 Alternative 28: Lower Voltage Alternative A – Single Source

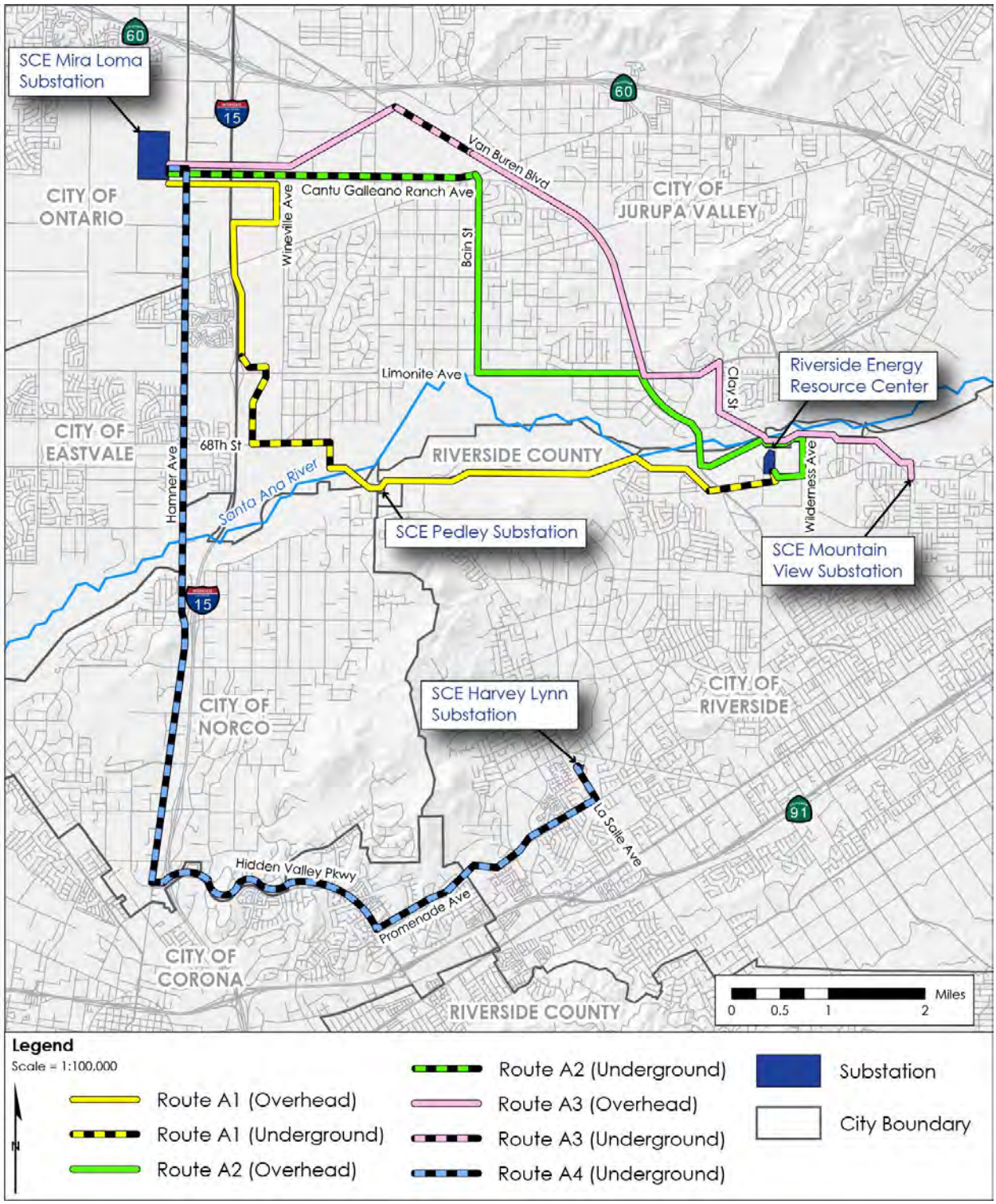
Description

Alternative 28 would supply electricity from SCE's Mira Loma Substation to Riverside as a single substation interconnection point. The initial design for this alternative includes installation of two additional 230/69-kV 280-MW transformers at Mira Loma Substation with a total capacity of 560 MW. A third 230/69-kV 280-MW transformer could be added in the future for a total capacity of 840 MW. Seven 69-kV circuits would be installed from Mira Loma Substation to Riverside. The Alternative 28 design includes three double-circuit 69-kV structures and one single-circuit 69-kV line for a total of seven 69-kV circuits. Seven 69-kV circuits are needed to have enough line capacity to meet project objectives using emergency condition ratings under single-contingency events. In the event of a single contingency event[3] that would remove two 69-kV circuits from service, the remaining five in-service 69-kV circuits would operate at their emergency ratings for a total of 840 MW of capacity (five 69-kV circuits at 168 MW).

The Alternative 28 design consists of four routes (A1, A2, A3, and A4) from Mira Loma Substation to the Riverside service territory that include both overhead and underground lines, as shown on Figure 4.3-3. The alternative includes a total of 44 miles of new power line, as shown in Table 4.3-1. Routes A1, A2, and A3 would terminate at a new Riverside 69-kV switching station located adjacent to Riverside's RERC facility. This location was selected for the RTRP Wildlife and Wilderness Substations and would be suitable for Alternative 28. Route A4 would terminate at Riverside's Harvey Lynn Substation.

[3] An example of a single contingency event would be an unplanned outage of two 69-kV circuits due to a single double-circuit structure failure either overhead or underground.

Figure 4.3-3 Lower Voltage Alternative A



Source: (City of Riverside and Southern California Edison, 2018)

Table 4.3-1 Alternative 28 - New 66-kV Power Line Segments

Alternative Segment	Overhead (miles)	Underground (miles)
A1	7.8	2.7
A2	7.7	2.1
A3	9.1	1.0
A4	0.3	13.3
Total	24.9	19.1

Source: (City of Riverside and Southern California Edison, 2018)

Consideration of CEQA Criteria

Project Objectives
Alternative 28 would potentially meet the project objectives by providing a second source of power to Riverside and providing redundancy for the Vista Substation connection to support load growth through planning year 2038.

Technical, Legal, and Regulatory Feasibility
The alternative interconnection at Mira Loma Substation was determined to be technically feasible only by extending the 230-kV switchrack at Mira Loma Substation to the east and relocating existing facilities.

The alternative involves installation of underground and overhead transmission lines within franchise ROW, Union Pacific Railroad ROW, and private parcels. Installation of the power line likely meets legal feasibility criteria; however, the alternative would be substantially more expensive to implement. The alternative does not meet regulatory feasibility criteria because it would not be feasible to obtain the necessary approvals from the CPUC and other agencies to install the needed power lines within the timeframe that the project is required.

Environmental Feasibility
Environmental Advantages
The alternative would reduce significant visual, noise, and traffic impacts in the Revised Project area by using lower voltage and lower profile 69-kV overhead power lines in the Revised Project alignment instead of the Revised Project's 230-kV transmission lines.

Environmental Disadvantages
Potential environmental disadvantages would result from installation of power lines in three new corridors in addition to the power line in the Revised Project area. These environmental disadvantages include:

- **Aesthetics.** Alternative 28 would require construction of 18 miles of new overhead power lines in new corridors in addition to installation of overhead power line in the Revised Project corridor. The additional overhead lines and structures would result in greater aesthetic impacts than the Revised Project.

- **Biological and Cultural Resources.** Alternative 28 would require approximately 34 miles more new power line construction than the Revised Project. The additional length of power line would result in greater impacts on habitat for special-status species and greater potential impacts on significant cultural resources.
- **Traffic.** The additional segments of underground power line within roadways and longer stretch of overhead power line construction adjacent to roadways would have greater traffic impacts than the Revised Project.
- **Air Quality and Greenhouse Gases.** The substantially longer power line (additional 34 miles) is expected to require increased vehicle activity and earth disturbance, resulting in potentially greater criteria pollutant and greenhouse gas emissions.
- **Noise.** The alternative would result in greater noise impacts due to the substantially longer segment of new power line and construction adjacent to three schools.
- **Geology and Hydrology.** The additional length of new power lines would result in greater ground disturbance and potential for sedimentation and topsoil loss.

Conclusion

ELIMINATED. Alternative 28 would meet the basic project objectives. The alternative is potentially feasible but would conflict with substation planning criteria, would be more expensive, and would require more time to implement than the Revised Project. The alternative would result in greater environmental impacts due to the additional 34 miles of new power line required to support the alternative. Alternative 28 is eliminated from consideration in the Subsequent EIR.

4.3.25 Alternative 29: Lower Voltage Alternative B – Three Sources

Description

Alternative 29 would modify the design for a proposed SCE distribution substation (Circle City) to add a 230-kV interconnection and 230/69-kV transformer. A double-circuit 69-kV power line would be installed between Circle City Substation and Freeman Substation. Alternative 29 would also require new double-circuit 69-kV power lines to interconnect between Mira Loma Substation and Harvey Lynn Substation, and Mountain View Substation and Etiwanda Substation. A single circuit would be installed between Kaiser Substation and Harvey Lynn Substation. Alternative 29 would add seven 69-kV circuits to Riverside.

Alternative 29 would also require the construction of a new 230-kV transmission line feed to the proposed Circle City Substation similar to the 230-kV line included in the Revised Project. The 230-kV feed necessary for Alternative 29 is not included in the currently proposed plan for Circle City Substation. The 230-kV interconnection to Circle City Substation would be a minimum of 2 miles longer than the 230-kV line included in the Revised Project. An alignment and detailed design for the 230-kV interconnection to Circle City Substation has not been developed for this ASR. The discussion of potential environmental impacts from Alternative 29

includes typical impacts to be expected from installation of a 230-kV transmission line and level of magnitude of those impacts for comparison to the Revised Project.

The miles of new 66-kV and 230-kV circuits required for Alternative 29 are summarized in Table 4.3-2. The locations of the Alternative 29 additional power line segments are shown on Figure 4.3-4.. Alternative 29 would require approximately 30 miles of new 66-kV power line and more than 11 miles of new 230-kV transmission line.

Consideration of CEQA Criteria

Project Objectives
Alternative 29 would potentially meet the project objectives by providing a second source of 230-kV power from Circle City to Riverside and providing redundancy for the Vista Substation connection to support current and project load. However, Alternative 29 presents significant reliability constraints by reducing the number of source lines to some substations and the creation of radial load pockets that cannot be paralleled. Alternative 29 would supply sufficient power to meet existing and project load growth.

Technical, Legal, and Regulatory Feasibility
The alternative does not meet technical feasibility criteria. Alternative 29 would require upgrading the proposed Circle City Substation from a distribution substation to a 230-kV substation. The alternative would also require installation of 230/69-kV transformers. Sufficient space does not exist within the planned footprint of Circle City Substation to accommodate the required upgrades for a 230-kV transmission line. The alternative would also require modifications to Mira Loma and Etiwanda Substations, and the alternative would present significant logistical constraints due to limited space at both substations. These constraints are substantial enough that the modifications may not be technically feasible.

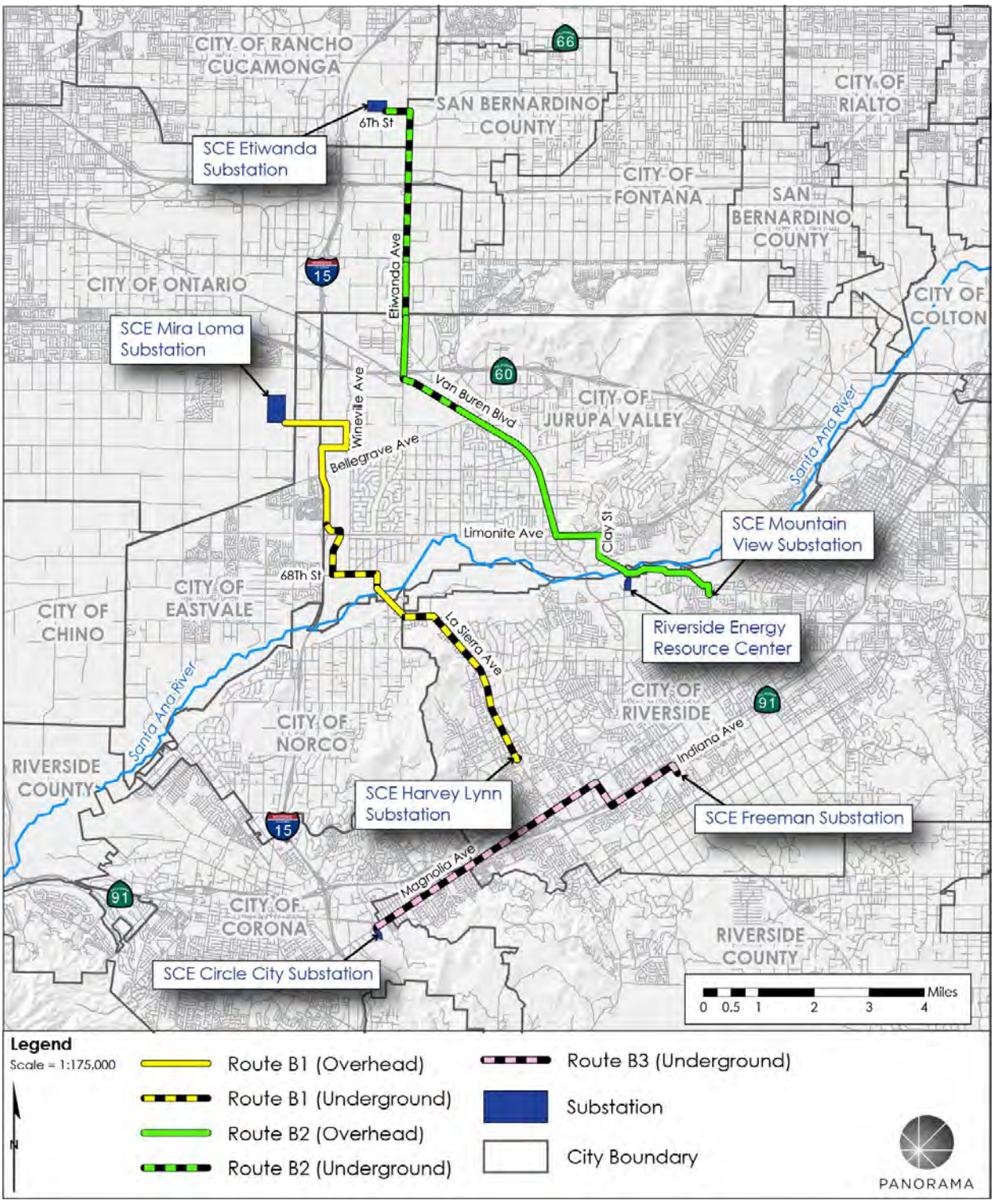
The alternative would likely meet legal feasibility for installation of the new 230-kV and 66-kV circuits but would require new ROW and easements. The alternative would not meet regulatory feasibility criteria because it would require CPUC approval to modify and upgrade a substation that has not yet been approved by the CPUC. Due to the long-term planning process

Table 4.3-2 Alternative 29 – New Power Linea and Transmission Line Segments

Segment	Line Voltage	Overhead (miles)	Underground (miles)
B1	66-kV	4.5	5.8
B2	66-kV	8.2	4.7
B3	66-kV	--	7.1
Subtotal New 66-kV Circuits		12.7	17.6
Circle City Substation	230-kV	>11 miles	

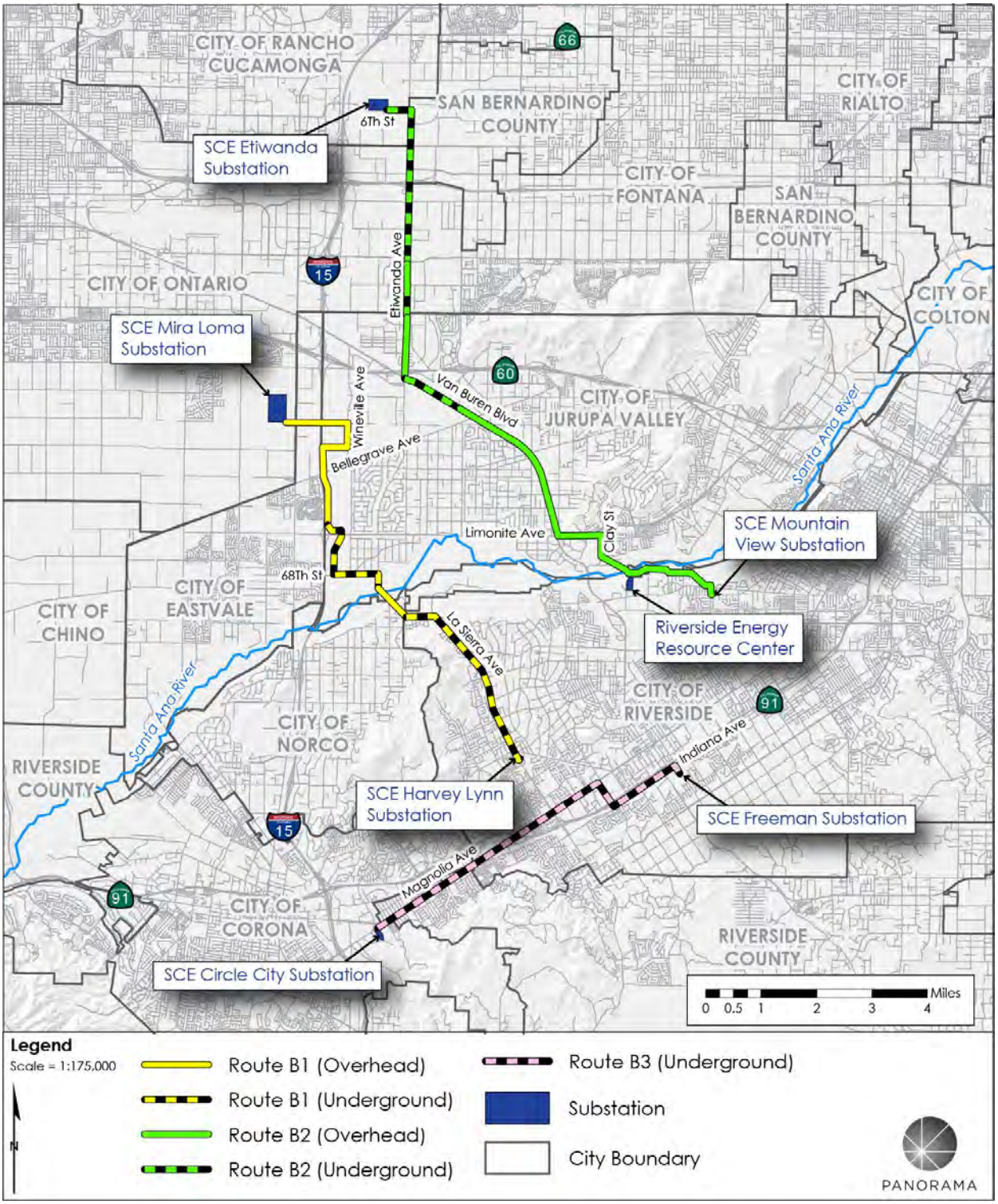
Source: (City of Riverside and Southern California Edison, 2018)

Figure 4.3-4 Lower Voltage Alternative B



Source:

Figure 4.3-4 Lower Voltage Alternative B



Source: (City of Riverside and Southern California Edison, 2018)

for substations, the upgrade of the Circle City Substation is likely infeasible within the timeframe that the project is required. While not expressly considered in this ASR, this alternative would exceed financial feasibility criteria because it would cost more than $1 billion (City of Riverside and Southern California Edison, 2018).

Environmental Feasibility

Environmental Advantages

The alternative would reduce significant visual, noise, and traffic impacts in the Revised Project area by using lower voltage and lower profile 66-kV overhead power lines in the Revised Project alignment instead of the Revised Project's 230-kV transmission lines.

Environmental Disadvantages

Potential environmental disadvantages would result from installation of a longer 230-kV transmission line than the Revised Project, and installation of power lines in two new corridors in addition to the power line in the Revised Project area. These environmental disadvantages include:

- **Aesthetics.** Alternative 29 would require 12.7 miles of new overhead power lines and more than 11 miles of new transmission lines in new corridors in addition to installation of overhead power line in the Revised Project corridor. The additional overhead lines and structures would result in greater aesthetic impacts than the Revised Project.
- **Biological and Cultural Resources.** Alternative 29 would require approximately 32 miles of new power line and transmission line in new areas in addition to the power line segment in the Revised Project area. The additional length of power line would result in greater impacts on habitat for special-status species and greater potential impacts on significant cultural resources.
- **Traffic.** The additional segments of underground power line within roadways and longer stretch of overhead power line construction adjacent to roadways would have greater traffic impacts than the Revised Project.
- **Hazards.** The longer 230-kV transmission line to Circle City Substation would have a greater potential for conflicts with air traffic hazards and would have a greater potential to result in shock hazards.
- **Air Quality and Greenhouse Gases.** The substantially longer power and transmission lines (additional 32 miles) would require increased vehicle activity and earth disturbance, resulting in greater criteria pollutant and greenhouse gas emissions.
- **Noise.** The alternative would result in greater noise impacts due to the substantially longer segment of new power line and construction adjacent to more sensitive receptors, including schools.
- **Geology and Hydrology.** The additional length of new power lines would result in greater ground disturbance and potential for sedimentation and topsoil loss.

- **Recreation.** The additional power and transmission lines would result in greater potential conflicts with recreational uses and impacts to recreational areas.

Conclusion

ELIMINATED. Alternative 29 potentially meets project objectives but does not meet technical or regulatory feasibility criteria and would be financially infeasible. The alternative would result in greater impacts than the Revised Project and would not meet environmental screening criteria due to the installation of a longer 230-kV transmission line and approximately 30 miles of new power lines. Alternative 29 is eliminated from consideration in the Subsequent EIR.

4.3.26 Alternative 30: Lower Voltage Alternative C – Single Source with Solar PV and Battery Energy Storage

Description

Alternative 30 would provide electrical power from a single 230/69-kV substation (Mira Loma) source with two double-circuit 69-kV lines to Riverside in the same locations as routes A1 and A2 in Alternative 28, above. The locations of these two circuits are shown on Figure 4.3-5. Alternative 30 would install a total of 20.3 miles of new power lines. The total firm delivery capacity from SCE to Riverside under Alternative C would be 500 MW. Large-scale utility solar generation, including battery storage, would provide up to 60 MW of non-firm capacity. This would bring the total capacity of Alternative C to 560 MW, but the additional 60 MW would provide substantially less capacity than its rated capability for serving load and for peak shaving purposes.

A detailed description of the necessary supplemental internal generation (large-scale utility solar and battery energy storage) associated with this alternative is not included because the siting for such a large-scale project is likely infeasible in the Riverside area.

Consideration of CEQA Criteria

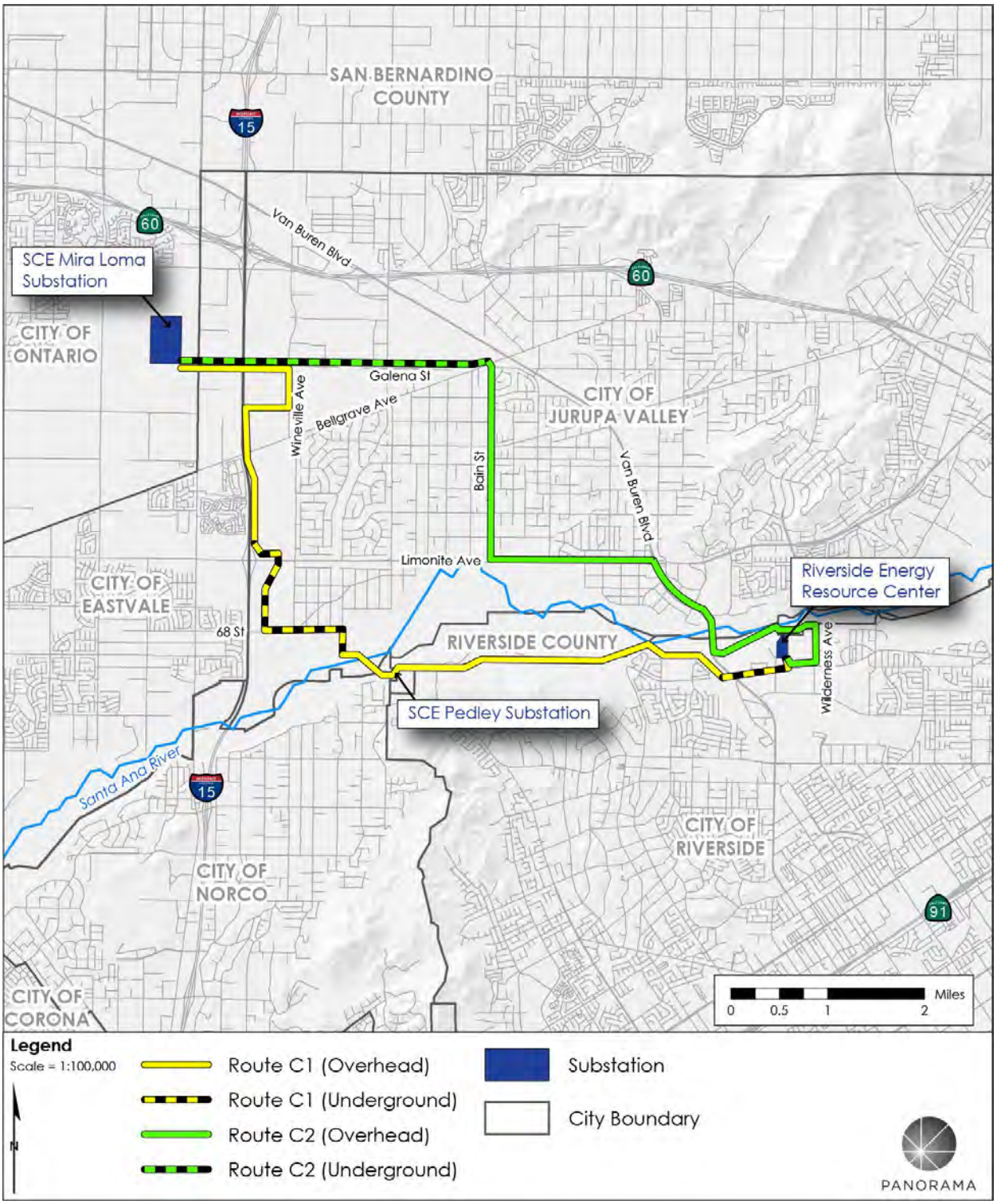
Project Objective

Alternative 30 would potentially meet project objectives by providing a second source of power to Riverside and providing increased capacity to support current and projected load growth.

Technical, Legal, and Regulatory Feasibility

Installation of the two double-circuit power lines is likely technically feasible. It is also likely technically feasible to construct 60 MW of solar PV and battery storage, but this installation would require substantial time for planning and engineering, which would not be feasible within the time constraints of the project. The solar PV and battery storage would likely need to be located outside of Riverside territory due to the space required for 60 MW of solar PV generation and limitations on available land in the City of Riverside. The import of solar PV power would still require additional electrical transmission to get the power into Riverside. The alternative therefore does not meet regulatory feasibility. Alternative 30 would also result in greater expense than the Revised Project.

Figure 4.3-5 Lower Voltage Alternative C



Source: (City of Riverside and Southern California Edison, 2018)

Environmental Feasibility

Environmental Advantages

Alternative 30 would reduce significant visual, noise, and traffic impacts in the Revised Project area by using lower voltage and lower profile 69-kV overhead power lines in the Revised Project alignment instead of the Revised Project's 230-kV transmission lines.

Environmental Disadvantages

Potential environmental disadvantages would result from installation of power lines in new corridors in addition to the power line in the Revised Project area. These environmental disadvantages include:

- **Aesthetics.** Alternative 30 would require construction of more than 10 miles of new overhead power lines in a new corridor in addition to installation of the overhead power line in the Revised Project corridor. The additional overhead line and structures would result in greater aesthetic impacts than the Revised Project.
- **Biological and Cultural Resources.** Alternative 30 would require approximately 10 more miles of new power line construction than the Revised Project. The solar PV facility and battery energy storage would result in greater land disturbance. The additional length of power line and area required for the solar PV facility and battery energy storage system would result in greater impact on habitat for special-status species and greater potential impacts on significant cultural resources.
- **Traffic.** The additional segments of underground power line within roadways and longer stretch of overhead power line construction adjacent to roadways would have greater traffic impacts than the Revised Project.
- **Air Quality and Greenhouse Gases.** The longer power line and additional construction for the solar PV facility and battery energy storage system is expected to require increased vehicle activity and earth disturbance, resulting in potentially greater criteria pollutant and greenhouse gas emissions.
- **Noise.** The alternative would result in greater noise impacts due to the substantially longer segment of new power line and construction adjacent to schools.
- **Geology and Hydrology.** The additional length of new power lines would result in greater ground disturbance and potential for sedimentation and topsoil loss.

Conclusion

ELIMINATED. Alternative 30 potentially meets project objectives. Alternative 30 does not meet regulatory feasibility criteria because it would require substantial time to permit the additional power line segments and solar PV and battery energy storage system. The alternative would also require transformer capacity in excess of planning criteria for Mira Loma Substation. Alternative 30 would not meet environmental screening criteria due to greater environmental impacts from the increased length of required power lines and need for a solar PV and battery energy storage system. Alternative 30 is eliminated from consideration in the Subsequent EIR.

5 REFERENCES

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