CHAPTER 4
Project Alternatives

California Environmental Quality Act (CEQA) requires a lead agency to analyze a reasonable range of alternatives to a proposed project that feasibly could attain most of the basic objectives of the project while substantially reducing or eliminating its significant environmental effects. CEQA also requires an Environmental Impact Report (EIR) to evaluate a "no project" alternative. This chapter describes the process that was used to identify and screen alternatives to the Proposed Project for consideration, provides the rationale for why some alternatives were eliminated from further consideration, and describes those alternatives that were carried forward for analysis in this EIR. The potential environmental impacts of the alternatives carried forward are analyzed relative to the impacts of the Proposed Project in Chapter 5, *Environmental Analysis*. The results of the comparative analysis are summarized in Chapter 6, *Comparison of Alternatives*, which compares the conclusions of the impact analyses for each of the alternatives against the conclusions for the Proposed Project.

4.1 CEQA Context for the Consideration of Alternatives

CEQA requires that the lead agency adopt mitigation measures or alternatives, where feasible, to substantially lessen or avoid significant environmental impacts that otherwise would occur. Where a lead agency has determined that, even after adoption of all feasible mitigation measures, a project as proposed still would cause significant environmental effects that cannot be substantially lessened or avoided, the agency, prior to approving the project as mitigated, first must determine whether, with respect to such impacts, there remain any project alternatives that are both environmentally superior and feasible within the meaning of CEQA.

The CEQA Guidelines provide the following guidance for discussing project 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 (CEQA Guidelines §15126.6(a)).
- An EIR is not required to consider alternatives that are infeasible (§15126.6(a)).
- The discussion shall focus on alternatives to the project or its location that are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly (§15126.6(b)).

- The range of alternatives shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects (§15126.6(c)).

- The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project (§15126.6(d)).

CEQA Guidelines Section 15364 defines "feasible" 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." Factors considered in addressing the feasibility of potential alternatives for the Proposed Project included site suitability; economic viability; availability of infrastructure; statutory, regulatory, and other legal limitations; jurisdictional boundaries (e.g., the Applicant's service territory), and whether the Applicant has or could obtain access to potential alternative sites. None of these factors alone established a fixed limit on the scope of alternatives (CEQA Guidelines §15126.6(f)).

CEQA requires an EIR to evaluate a "no project" alternative to allow decision-makers to compare the impacts of approving a proposed project with the impacts of not approving it (CEQA Guidelines §15126.6(e)). For the Proposed Project, two "no project" scenarios are evaluated. The No Project Alternative 1 analysis evaluates the existing conditions at the time the Notice of Preparation was published as well as what reasonably would be expected to occur in the foreseeable future if the Proposed Project were not approved, and all of the existing infrastructure that has been installed associated with past project construction ("the project") would be left in place. The No Project Alternative 2 scenario includes removal of infrastructure that has been installed associated with the project. The No Project Alternatives 1 and 2 for the Proposed Project are described in Section 4.4.

4.2 Alternatives Development and Screening Process

To develop a range of alternatives for analysis, the following process was used:

- Developed an understanding of the Proposed Project, identify the need for and basic objectives of the Proposed Project, and consider the significant adverse impacts that the Proposed Project may have;

- Considered input received from the public during and after the scoping process that relates to alternatives to the Proposed Project;

- Evaluated electrical engineering data projections for the Moorpark Subtransmission System obtained from Southern California Edison (SCE);

- Identified and evaluated reasonable feasible alternative locations to the proposed subtransmission line route;

- Identified and evaluated other technologies, if any, that have the potential to avoid or substantially lessen any of the significant effects of the Proposed Project;

- Identified and evaluated whether alternative approaches, such as conservation and demand side management or distributed generation, could provide a reasonable feasible alternative to the Proposed Project; and
- Considered the scenario of not constructing the Proposed Project, i.e., No Project Alternatives 1 and 2.

The Proposed Project is described in Chapter 3, *Project Description*. Proposed Project objectives are presented in Chapter 1, *Introduction*, Section 1.3, and again below in Section 4.2.2. The process used to identify and screen alternatives to the Proposed Project is described in the following sections.

4.2.1 Alternatives Screening Methodology

The screening of alternatives to the Proposed Project was completed using a methodology that consisted of three steps:

Step 1: Clarify the description of each alternative to allow comparative evaluation.

Step 2: Evaluate each alternative using CEQA criteria:

- Does the alternative meet most of the basic objectives of the Proposed Project?
- Is the alternative feasible economically, environmentally, legally, socially, and technically?
- Does the alternative avoid or substantially lessen any significant effects of the Proposed Project (including consideration of whether the alternative could create significant effects potentially greater than those of the Proposed Project)?

Step 3: Determine the suitability of each alternative for full analysis in the EIR. Remove infeasible alternatives and alternatives that clearly offer no potential for overall environmental advantage from further analysis.

4.2.2 Consistency with Proposed Project Objectives

The Applicant's objectives for the Proposed Project are to (SCE, 2013):

- Add 66 kV subtransmission line capacity to meet forecasted electrical demand while providing long-term, safe, and reliable electrical service in the electric needs area (ENA).
- Maintain sufficient voltage at the 66 kV substation buses during normal and abnormal system conditions.
- Provide greater operational flexibility to transfer load between 66 kV subtransmission lines and substations serving the ENA.
- Maintain and improve system reliability within the ENA.

- Utilize existing facilities constructed to date for the project to minimize environmental impacts and shorten the construction schedule.
- Utilize existing ROW and manage existing ROW in a prudent manner in expectation of possible future needs.
- Design and construct the Proposed Project in conformance with SCE's applicable engineering, design, and construction standards for substation, transmission, subtransmission, and distribution system projects.

The CEQA Guidelines require the consideration of alternatives capable of eliminating or reducing significant environmental effects even though they may "impede to some degree the attainment of project objectives" (§15126.6(b)). Therefore, it is not required that each alternative meet all of the project's objectives. The CEQA Team has determined that the following are the basic CEQA objectives:

- Add capacity to meet forecasted electrical demand while providing long-term, safe, and reliable electrical service in the ENA.
- Maintain sufficient voltage in accordance with applicable requirements during normal and abnormal system conditions.
- Maintain system reliability within the ENA.
- Utilize existing ROW and manage existing ROW in a prudent manner in expectation of possible future needs.
- Maintain consistency with the Garamendi Principles passed in Senate Bill (SB) 2431 (Stats. 1988, Ch. 1457) by: (1) using existing ROW by upgrading existing transmission facilities, where technically and economically justifiable; and (2) encouraging the expansion of existing ROW when construction of new transmission lines is required, where technically and economically feasible (CEC, 2007a).
- Maintain consistency with California Public Utility Commission (CPUC) General Order (GO) 95.
- Design and construct the Proposed Project in conformance with SCE's applicable engineering, design, and construction standards for substation, transmission, subtransmission, and distribution system projects.

It should be noted that the CPUC considers the first two CEQA objectives to be the primary purpose for the Proposed Project. SCE would not pursue any alternative that does not accomplish at least these two objectives. Therefore, each project alternative would have to meet at least these two objectives in order to be considered a viable alternative to the Proposed Project.

In order to assess the ability of alternatives to meet forecasted electrical demand and maintain sufficient voltage, the following factors were considered: 10-year planning period demand growth projections; load projections beyond 10 years, based on estimated growth rates for Newbury, Thousand Oaks, and Pharmacy substations; and power flow studies for the Moorpark Subtransmission System. It should be noted that these data were provided to the CPUC in

response to CPUC Data Requests 3 and 4 (SCE, 2014 and 2015a, respectively) under confidential seal because they present critical infrastructure information.

4.2.3 Feasibility

CEQA Guidelines Section 15364 defines "feasible" 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.*

In addition, CEQA requires that the Lead Agency consider site suitability, economic viability, availability of infrastructure, general plan consistency, other regulatory limitations, jurisdictional boundaries, and the proponent's control over alternative sites in determining the range of alternatives to be evaluated in the EIR (CEQA Guidelines §15126.6(f)).

In assessing the reasonableness and feasibility of alternatives to the Proposed Project, the CPUC consulted with SCE in considering the relevant issues. If an alternative was found not to meet any one of the primary feasibility criteria, it was deemed infeasible without reviewing whether it met the other feasibility criteria. This screening analysis does not focus on relative economic factors or costs of the alternatives (as long as they are found to be potentially economically viable) because CEQA the Guidelines require consideration of alternatives capable of eliminating or reducing significant environmental effects even though they may be more costly (CEQA Guidelines §15126.6(b)).

4.2.4 Potential to Eliminate Significant Environmental Effects

CEQA requires that, to be analyzed fully in an EIR, an alternative must have the potential to "avoid or substantially lessen any of the significant effects of the project" (CEQA Guidelines §15126.6(a)). At the screening stage, it is neither possible, nor legally required, to evaluate all of the impacts of the alternatives in comparison to the Proposed Project with absolute certainty, nor is it possible to quantify impacts. However, it is possible to identify elements of an alternative that are likely to be the sources of impact and to relate them, to the extent possible, to general conditions in the Proposed Project area.

The Proposed Project would potentially result in significant environmental effects to air quality and noise exposure due to short-term construction activities. No other significant impacts that would be associated with the Proposed Project have been identified that cannot be reduced to a less-than-significant level. Based on the methodology described above, each potential alternative was evaluated for its ability to meet most of the basic Proposed Project objectives, its feasibility, and its ability to avoid or substantially lessen one or more of the potential significant effects of the Proposed Project without creating significant unmitigable impacts of its own. **Table 4-1**, *Summary of Preliminary Significant Environmental Impacts of the Proposed Project,* provides a summary of impacts by resource section.

TABLE 4-1
SUMMARY OF SIGNIFICANT UNAVOIDABLE ENVIRONMENTAL IMPACTS OF THE PROPOSED PROJECT

Issue Area	Impact
Air Quality	• Construction activities would generate exhaust emissions that could contribute substantially to a violation of an air quality standard. • Construction activities would result in emissions of nitrogen oxides that would be cumulatively considerable.
Noise	• Construction activities would generate noise levels in unincorporated Ventura County that would exceed Ventura County construction noise threshold criteria. • Construction-related nighttime noise levels would substantially increase ambient noise levels in the cities of Moorpark and Thousand Oaks.

4.3 Summary of Screening Results

Table 4-2, *Summary of alternatives screening analysis for the Moorpark-Newbury 66 kV Subtransmission line Project,* provides a composite list of the six alternatives considered, and the results of the screening analysis with respect to the criteria findings for consistency with Proposed Project objectives, feasibility, and environmental effectiveness. As shown in Table 4-2, none of the alternatives to the Proposed Project passed the screening analysis; therefore, the only alternatives carried forward for analysis in the EIR are No Project Alternatives 1 and 2 (see Sections 4.3.1 and 4.4). The alternatives eliminated from further consideration are discussed in Section 4.3.2.

4.3.1 Alternatives Evaluated in Detail in this EIR

As summarized in Table 4-2, the alternatives screening process did not identify any alternatives that would meet most of the basic Proposed Project objectives, be feasible, and avoid or substantially reduce potential environmental effects of the Proposed Project. The No Project alternatives listed below have been selected for detailed analysis in the EIR, as required by CEQA. The No Project alternatives are described in detail in Section 4.4.

- No Project Alternative 1: Leave Infrastructure in Place; and
- No Project Alternative 2: Infrastructure Removal.

4.3.2 Alternatives Eliminated from EIR Consideration

The alternatives that have been eliminated through the alternative screening process from full analysis in the EIR are listed below. As summarized in Table 4-2, these alternatives have been eliminated due to failure to meet Proposed Project objectives, infeasibility, and/or because the alternative would have greater environmental impacts than the Proposed Project. The rationale for elimination of each alternative is summarized in Table 4-2 and is described in greater detail in Section 4.5.

- Alternative 1 – Reconductoring;

TABLE 4-2
SUMMARY OF ALTERNATIVES SCREENING ANALYSIS FOR THE MOORPARK-NEWBURY 66 KV SUBTRANSMISSION LINE PROJECT

Alternative	Proposed Project Objectives Criteria	Feasibility Criteria	Environmental Criteria
Fails Screening			
Alternative 1 • Reconductor with higher capacity conductors 7.3 miles of the existing Moorpark-Newbury-Pharmacy 66 kV Subtransmission line, and 12.6 miles of the Newbury-Thousand Oaks 66 kV Subtransmission Line. • Reconductoring may involve replacement of up to 485 poles. *SCE has not completed an engineering study to determine the number of poles which would require replacement.*	**Fails.** The Moorpark-Newbury tap of the Moorpark-Newbury-Pharmacy line would overload in 2026,[1] and voltage violations are projected at Newbury Substation in 2015.	Meets feasibility criteria.	Unknown. This alternative would result in impacts ranging from slightly less to greater than the Proposed Project with respect to air quality, biological resources, cultural resources, and noise exposure. The level of impact is dependent on the number and location of poles requiring replacement.
Alternative 2 • Locate a portion of the subtransmission alignment to the west and north of the Moorpark-Ormond Beach 220 kV Transmission line ROW. • Option: underground the portion of the subtransmission alignment in the Santa Rosa Valley.	Meets most Proposed Project objectives, but would be inconsistent with CPUC GO 95 pertaining to unnecessary crossings of existing transmission lines. Would not conform to SCE's applicable engineering, design, and construction standards for subtransmission projects.	Overhead subtransmission line option meets feasibility criteria. Underground option is infeasible. Earthquake fault zones and excessively steep terrain render infeasible underground subtransmission installation across Santa Rosa Valley.	**Fails.** Would result in greater impacts to air quality, biological resources, and cultural resources than the Proposed Project because the number of poles and associated foundations installed would be substantially greater than the Proposed Project. Would avoid some short-term construction-related noise exposure impacts that would occur under the Proposed Project, but would generate new significant noise impacts that would not occur under the Proposed Project.
Alternative 3 • Collocate a new 66 kV subtransmission line with the existing Moorpark-Newbury-Pharmacy 66 kV line. • Option: for the portion of the subtransmission alignment on SR 118, put on the south side of the roadway.	Meets most Proposed Project objectives. Routing the line on the south side of SR 118 would be inconsistent with CPUC GO 95 pertaining to circuits occupying both sides of thoroughfares and would not conform to SCE's applicable engineering, design, and construction standards for subtransmission projects.	**Fails.** There is insufficient ROW north of SR 118 to accommodate the required pole structures. The option to put the subtransmission line on the south side of SR 118 would meet feasibility criteria.	**Fails.** Would result in greater impacts to air quality, biological resources, cultural resources, and noise exposure than the Proposed Project because the number of new double-circuit and triple-circuit poles installed would be substantially greater than the number of poles installed under the Proposed Project.

[1] This date is outside the 10-year planning window. The load estimates for beyond the 10-year planning period are based on SCE's projections of 1.6 percent, 0.1 percent, and 1.1 percent growth per year at Newbury Substation, Pharmacy Substation, and Thousand Oaks Substation, respectively, beyond the 10 year planning period (SCE, 2014).

TABLE 4-2 (Continued)
SUMMARY OF ALTERNATIVES SCREENING ANALYSIS FOR THE MOORPARK-NEWBURY 66 KV SUBTRANSMISSION LINE PROJECT

Alternative	Proposed Project Objectives Criteria	Feasibility Criteria	Environmental Criteria
Fails Screening (cont.)			
Alternative 4 • Reconnect the Camgen Generator to the Moorpark Subtransmission System.	**Fails.** Voltage violations are projected at Newbury Substation in 2015.	Unknown. Legal feasibility is uncertain and would require successful easement negotiations and new power purchase agreement with California State University, Channel Islands. Unknown impacts pertaining to the potential for overload conditions in SCE's Santa Clara System.	Meets environmental criteria; would result in reduced impacts to air quality and reduced impacts associated with noise exposure; may result in increased impacts to biological and agricultural resources compared to the Proposed Project.
Alternative 1 combined with Alternative 4 • Reconductor with higher capacity conductors 7.3 miles of the existing Moorpark-Newbury-Pharmacy 66 kV Subtransmission line, and 12.6 miles of the Newbury-Thousand Oaks 66 kV Subtransmission Line. • Reconnect the Camgen Generator to the Moorpark Subtransmission System. • Reconductoring may involve replacement of up to 485 poles. *SCE has not completed an engineering study to determine the number of poles which would require replacement.*	**Fails.** The Moorpark-Newbury tap of the Moorpark-Newbury-Pharmacy line would overload in 2026,[2] and voltage violations are projected at Newbury Substations in 2015.	Unknown. Legal feasibility is uncertain; would require successful easement negotiations and new power purchase agreement with California State University, Channel Islands. Unknown impacts pertaining to the potential for overload conditions in SCE's Santa Clara System.	Unknown. This alternative would result in impacts ranging from slightly less to greater than the Proposed Project with respect to air quality, biological resources, cultural resources, and noise exposure. The level of impact will be dependent on the number and location of poles requiring replacement.
Alternative 5 • Replace need for subtransmission lines through implementation of energy conservation programs	**Fails.** Would not serve projected demand or reliability objectives for the Proposed Project.	**Fails.** These programs are not feasible on a scale that would be suitable to replace the Proposed Project within a reasonable period of time.	Meets environmental criteria. Complete avoidance of the Proposed Project would eliminate the potential impacts of the construction, operation, and maintenance of the subtransmission lines, and no new significant impacts would be created.
Alternative 6 • Renewable or distributed energy generation • Provide local sources of electricity	**Fails.** There is limited potential for local renewable resources or distributed generation to meet the projected demand or reliability objectives for the Proposed Project.	**Fails.** Because even local renewable or distributed resources would require upgraded or new subtransmission and transmission infrastructure.	**Fails.** Large scale geothermal, wind, or solar facilities would potentially result in greater environmental impacts for aesthetics, air quality, cultural, and noise, and biological resources, and would occur in addition to the impacts from upgraded or new subtransmission and transmission infrastructure.

[2] This date is outside the 10-year planning window. The load estimates for beyond the 10-year planning period are based on SCE's projections of 1.6 percent, 0.1 percent, and 1.1 percent growth per year at Newbury Substation, Pharmacy Substation, and Thousand Oaks Substation, respectively, beyond the 10 year planning period (SCE, 2014).

- Alternative 2 – West Side of 220 kV ROW and option for Undergrounding;
- Alternative 3 – New 66 kV Line Collocated with the Existing Moorpark-Newbury-Pharmacy 66 kV Line;
- Alternative 4 – Reconnect the Camgen Generator to the Moorpark System;
- Alternative 5 – Demand Side Management; and
- Alternative 6 – Renewable and Distributed Generation Energy Resources.

4.4 Alternatives Evaluated in this EIR

Although no alternatives have been identified that would meet most of the basic Proposed Project objectives, be feasible, and avoid or substantially reduce potential environmental effects of the Proposed Project, CEQA requires an evaluation of a no project alternative so that decision makers can compare the impacts of approving the project with the impacts of not approving the project. According to CEQA Guidelines (§15126.6[e]), a no project alternative must include:

(a) the assumption that conditions at the time of the Notice of Preparation (i.e., baseline environmental conditions) would not be changed since the Proposed Project would not be installed, and

(b) the events or actions that would be reasonably expected to occur in the foreseeable future if the project were not approved.

The first condition is described in the EIR for each environmental discipline as the "environmental baseline," since no impacts of the Proposed Project would be created. This section defines the second condition of reasonably foreseeable actions or events. The impacts of these actions are evaluated in each issue area's analysis in Chapter 5, *Environmental Analysis*. Because some components of the project have already been installed, two No Project scenarios are evaluated in this EIR: No Project Alternative 1, where all previously installed infrastructure associated with the project would remain in place; and No Project Alternative 2, which would include removal of infrastructure previously installed for the project.

4.4.1 No Project Alternative 1

Under No Project Alternative 1, the Proposed Project would not be implemented and none of the Proposed Project objectives would be met, but all of the infrastructure already constructed for the project would remain in place. The ENA would potentially experience a shortage of electricity and the electrical system could become vulnerable to upset. The improved system reliability and operating flexibility associated with the Proposed Project would not occur. Therefore, the system would experience system-wide power flow and reliability problems due to overloading as new demand is added. Such problems would include curtailed generation, thermal overload, and blackouts.

If No Project Alternative 1 is implemented, SCE would implement operating procedures to compensate for the anticipated shortfall in the supply of electric power for the ENA. Operating procedures to relieve base case thermal overloads would include transferring load between the

substations via distribution circuits, load dropping on one or more distribution circuits, or disconnecting entire substations from the Moorpark Subtransmission System. The latter two operating measures would cause extended outages within the ENA until the base case thermal overload conditions could be eliminated.

In addition, SCE would likely be required to implement demand-side management (DSM) programs to reduce customer energy consumption and overall electricity use, including shifting energy use to off-peak periods. The CPUC supervises various DSM programs administered by the regulated utilities, and many municipal electric utilities have their own DSM programs. The combination of these programs constitutes the most ambitious overall approach to reducing electricity demand administered by any state in the nation. However, reducing demand is an essential part of SCE's operations with or without the Proposed Project and is not directly related to the Proposed Project.

4.4.2 No Project Alternative 2 – Infrastructure Removal

Under No Project Alternative 2, the Proposed Project would not be construction and none of the Proposed Project objectives would be met. In addition, the majority of the infrastructure already constructed for the project would be removed. The impacts of these actions are evaluated in each issue area's analysis in Chapter 5, *Environmental Analysis*.

The infrastructure to be removed would include:

- 22 tubular steel poles (TSPs) (pole locations 1-22);
- The base section of the TSP at pole location 23;
- 30 TSP foundations ranging from 17 to 46 feet in depth and with diameters ranging from 6 to 8 feet (pole locations 1-25 and 33-37); and
- The slurry from three foundation holes ranging from 17 to 46 feet in depth and with diameters ranging from 6 to 8 feet (pole locations 29-31).

No Project Alternative 2 would not include removal of the 27 lightweight steel (LWS) poles installed during past construction, or the energized portions of the newly installed Moorpark-Newbury-Pharmacy 66 kV Subtransmission Line conductors currently installed on those LWS poles, as these existing LWS poles currently support the energized conductors for the Moorpark-Newbury-Pharmacy subtransmission line and a distribution circuit. No Project Alternative 2 would include removal of components of the previously installed LWS poles that would not be utilized, such as extra cross arms, extra insulators, and idle conductor. It would be up to SCE to decide whether or not to remove the infrastructure already installed at Moorpark Substation and Newbury Substation as described in Sections 2.3.1 and 2.3.4. The removal of subtransmission line infrastructure is estimated to take approximately 5 months, and would be accomplished as follows:

4.4.2.1 TSP Removal

For each TSP to be removed, an adjacent work area would be required. TSP removal activities would use the existing, previously disturbed work areas established in 2010 and 2011 for TSP installation; these existing work areas would be re-graded and/or cleared of vegetation as required to provide a reasonably level and vegetation-free surface for structure removal. A crane would be positioned near the TSP. A cable from the crane would be attached to the top of the TSP, and then the crane would lift the top section of the TSP from the base section. After removal of the top section, the cable from the crane would be attached to the base section, and the base section would be unbolted from the concrete foundation and removed. The top and base sections would then be loaded on a trailer and taken to a storage site and stored for use on another project or recycling.

4.4.2.2 Foundation Removal

TSP foundation removal would likely involve removing the foundation to approximately 2 feet below the ground surface. However, if requested by the land owner, the entire foundation would be removed. Removal of the TSP foundations would likely be accomplished by breaking the concrete using jack hammers or a concrete breaker mounted on an excavator or similar vehicle. The broken concrete, bolts, and rebar would likely be removed from the foundation hole by an excavator or by hand. After removal, the resulting hole would be filled with soil, compacted, and smoothed to match the surrounding grade. Removed foundation materials would be properly disposed in accordance with applicable laws.

4.4.2.3 Slurry Removal

Slurry removal would likely occur to approximately 2 feet below the ground surface. However, if requested by the land owner, all of the slurry would be removed. The slurry would be broken up using an auger, jack hammers, or a concrete breaker mounted on an excavator or similar vehicle. The broken pieces of slurry would be removed from the foundation hole. After removal of the slurry, the resulting hole would be filled with soil, compacted, and smoothed to match the surrounding grade. Removed slurry would be properly disposed in accordance with applicable laws.

4.5 Alternatives Eliminated from Full EIR Evaluation

4.5.1 Alternative 1 – Reconductoring

4.5.1.1 Description

Alternative 1 would include reconductoring a portion (approximately 7.3 miles) of the existing Moorpark-Newbury tap of the Moorpark-Newbury-Pharmacy 66 kV Subtransmission Line between Moorpark Substation and Newbury Substation, as well as reconductoring the majority (approximately 12.6 miles) of the Newbury-Thousand Oaks 66 kV Subtransmission Line between Newbury Substation and Thousand Oaks Substation, with higher capacity conductors. See

Figure 4-1, *Alternative 1, Reconductoring*, for an illustration of the Moorpark-Newbury tap and the Newbury-Thousand Oaks line that would be reconductored. Alternative 1 would add approximately 170 A of new 66 kV subtransmission line capacity between Moorpark Substation and Newbury Substation in the Moorpark 66 kV Subtransmission System serving the ENA, which would be sufficient to avoid any projected overloads during normal operating system conditions. In addition, this alternative would temporarily address a forecasted voltage drop in excess of the acceptable five percent limit at Newbury Substation.

The conductors to be replaced are currently supported by approximately 485 poles and towers. SCE has not conducted an engineering study to determine whether any, all, or some poles and towers would need to be replaced to accommodate the new conductor. SCE has indicated that it may be necessary to replace existing 66 kV subtransmission poles and/or towers to accommodate the larger conductors and meet SCE's standards (SCE, 2015a). This alternative would also require the modification of relay protection and substation equipment at Moorpark Substation, Thousand Oaks Substation, and Newbury Substation.

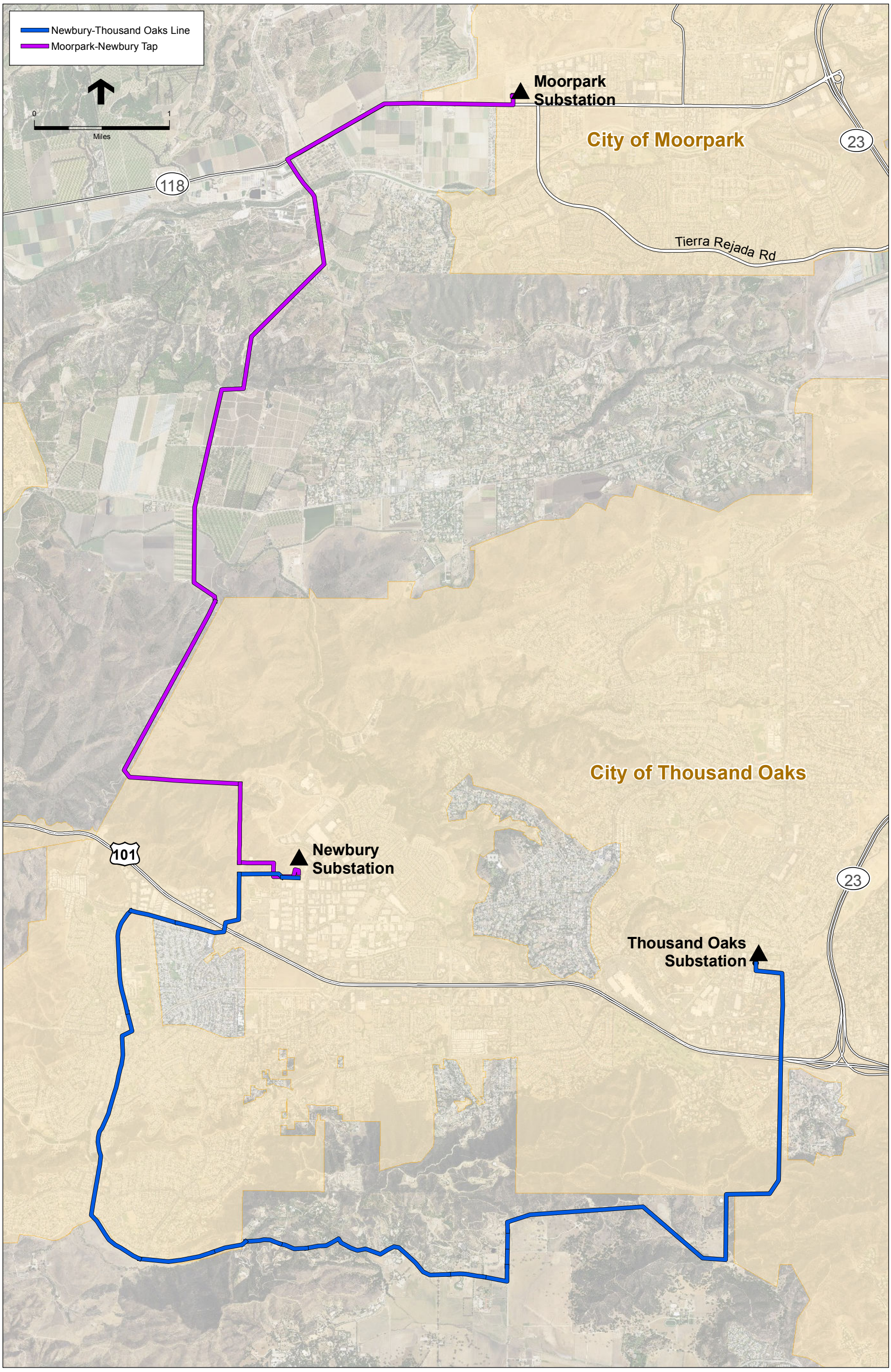
4.5.1.2 Rationale for Elimination

Meeting Proposed Project Objectives

The reconductoring of the subject 66 kV subtransmission lines would increase the normal capacity of the lines by approximately 20 MVA for a total of 125 MVA. Based on power flow analyses conducted for the base case (normal conditions) and contingency cases, it is anticipated that this additional 20 MVA would be sufficient to accommodate future load growth, but Alternative 1 would not address future voltage violations at Newbury and Pharmacy substations. Although Alternative 1 would provide a short-term correction of the exceedance of the 5 percent voltage drop limit for the base case, voltage violations under this alternative are projected to occur starting in 2026[3] under emergency conditions. Analysis indicates a 5.3 percent voltage decrease would occur at Newbury Substation during the loss of the Moorpark-Newbury-Pharmacy line and the Pharmacy Substation load in 2026 (SCE, 2014 and 2015a).

Further analysis indicates that if the Pharmacy load were to be reenergized from the Newbury Substation side (served from Thousand Oaks Substation), the voltage decay at Newbury Substation in 2015 would increase to approximately 9.0 percent (SCE, 2015c). With the assumption that the Pharmacy Substation load would be reenergized, and given the 9.0 percent voltage reduction noted in the 2015 model, voltage violations at Newbury Substation can be expected to occur the first year the alternative would be operational.

[3] SCE prepares load forecasts for its ENAs within a 10-year planning period. Within the Proposed Project area, SCE's most recent report is its 2014-2023 Peak Demand Forecast. Because a Proposed Project objective is to meet long-term (i.e., beyond 10-year) electrical service in the ENA, the analysis in this EIR looks beyond the 10-year planning period. SCE calculated normal and emergency capacities of the existing and potential new conductors beyond 2023 using data from the 2014-2023 Peak Demand Forecast, extrapolating projections beyond 2023 based on growth rates from 2014-2023.



SOURCE: SCE, 2013

Moorpark-Newbury 66 kV Subtransmission Line Project. 207584.15

Figure 4-1

Alternative 1, Reconductoring

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Alternative 1would not add sufficient capacity to meet forecasted electrical demand in the ENA after 2023 and therefore would not provide a long-term solution to maintaining sufficient voltage during abnormal system conditions. As a result, Alternative 1 is not considered to be a viable alternative to the Proposed Project and has been eliminated from full consideration in this EIR.

Feasibility

Alternative 1 would meet all feasibility criteria.

Environmental Effects

The environmental effects of Alternative 1 are unknown and would be highly variable, depending on the final design and the number of poles and/or towers that would be replaced. As described above, SCE has indicated that Alternative 1 could require replacement of subtransmission poles and/or towers to accommodate the larger conductors and meet SCE's standards (SCE, 2015a). If zero or only a small number of poles or towers required replacement, this alternative would have slightly reduced to similar short-term construction-related impacts (e.g., to air quality, biological resources, cultural resources, and noise exposure) compared to the Proposed Project, which would include replacement of 24 towers/poles.

If Alternative 1 required replacement of a much larger number of poles and/or towers compared to the Proposed Project, it would result in substantially greater short-term construction related impacts, in particular for air quality and biological resources. Site access and construction activities would occur within designated critical habitat for Lyon's pentachaeta and within habitat for the coastal California gnatcatcher, potentially resulting in impacts to these resources. Due to the increased scale of ground disturbance that would be associated with replacement of a substantial amount of the existing poles and/or towers, potential impacts to rare plants would be incrementally greater under this Alternative 1 scenario.

4.5.2 Alternative 2 – West Side of 220 kV ROW

4.5.2.1 Description

Alternative 2 would locate a portion of the new Moorpark-Newbury 66 kV Subtransmission Line on the north and west side of the Moorpark-Ormond Beach 220 kV Transmission Line ROW in Segment 2, instead of on the south and east side of the ROW as would occur under the Proposed Project. In all of the other segments, this alternative would be the same as described for the Proposed Project (SCE, 2013 and 2015a).

Figure 4-2, *Alternative 2, West Side of 220 kV ROW*, shows the alignment of Alternative 2. Just south of State Route 118 (SR 118) the alignment would cross under the existing Moorpark-Ormond Beach Transmission Line to the west side of the transmission alignment. It would parallel the existing transmission line south, west, and southwest for approximately 3.5 miles. Just south of Santa Rosa Road, Alternative 2 would cross under the Moorpark-Ormond Beach Transmission Line to the east side of the transmission line, and would rejoin with the Proposed Project, continuing to

parallel the transmission line on the east side of the corridor heading south. Alternative 2 would require installation of 23 new TSPs along this portion of Segment 2 (SCE, 2014).

Due to suggestions received from the public during the EIR scoping period, the evaluation of Alternative 2 included installing the new 66 kV subtransmission line entirely on overhead poles, and also the option to underground the new subtransmission line in the Santa Rosa Valley portion of the Moorpark-Ormond Beach 220 kV ROW, including the potential for underground perpendicular crossings of the 220 kV transmission line, and/or placing the line underground longitudinally within the 220 kV ROW in the residential areas of Santa Rosa Valley.

4.5.2.2 Rationale for Elimination

Meeting Proposed Project Objectives

Alternative 2 would meet many of the Proposed Project objectives, including adding capacity to meet forecasted electrical demand while providing long-term, safe, and reliable electrical service in the ENA; maintain sufficient voltage in accordance with applicable requirements during normal and abnormal system conditions; and maintaining system reliability within the ENA.

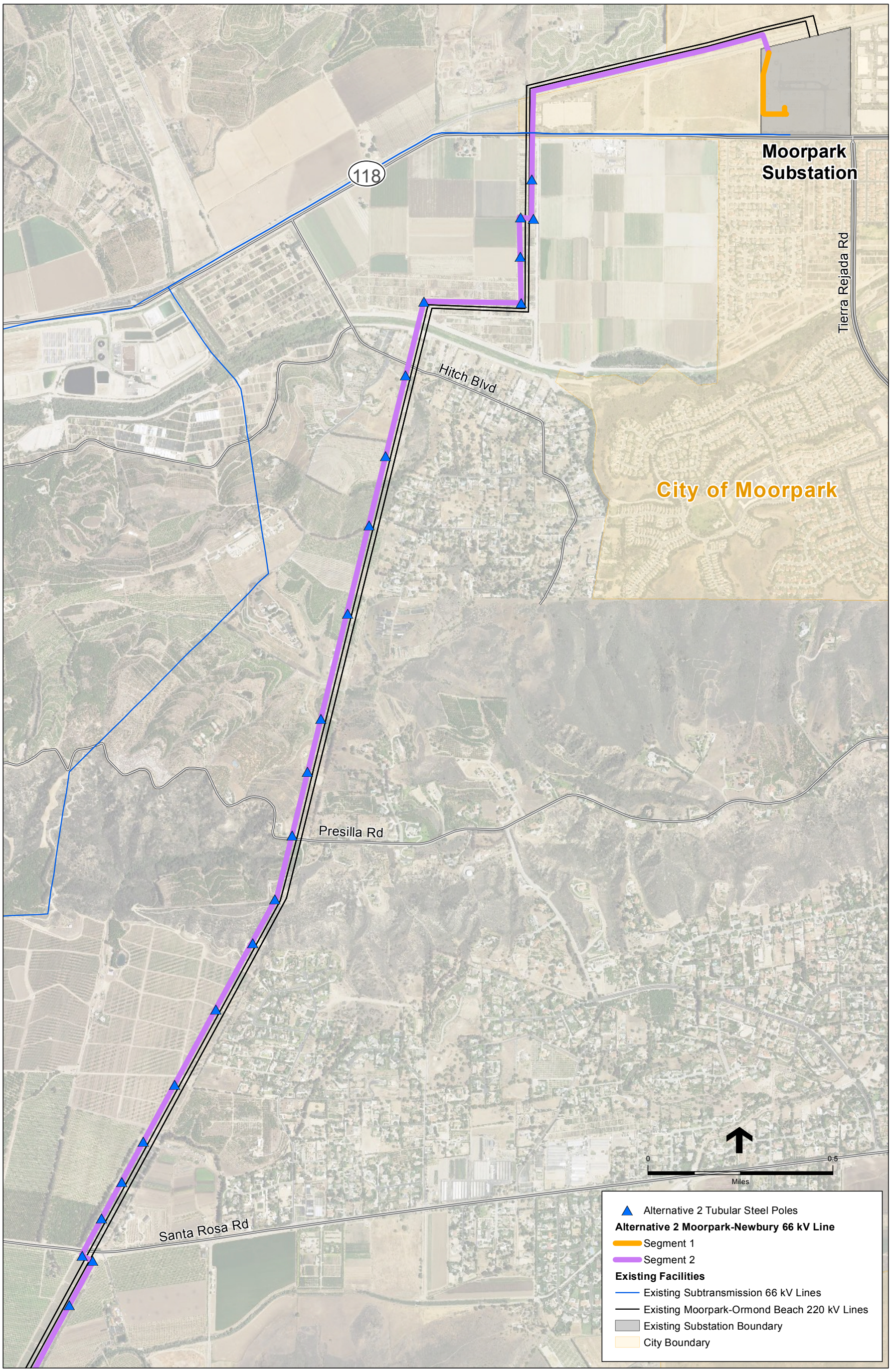
However, the subtransmission alignment under Alternative 2 would cross under existing 220 kV transmission lines twice, resulting in a conflict with CPUC GO 95. Pursuant to CPUC GO 95, Section III, Rule 31.3 (Avoidance of Conflicts and Crossings) “care shall be taken to avoid unnecessary crossings” of existing transmission lines. SCE has also indicated that the transmission line crossings would not conform to its applicable engineering, design, and construction standards for subtransmission projects (SCE, 2014).

In addition, SCE maintains that future infrastructure will eventually be needed in this ROW, and that the presence of infrastructure on both the west and east side of that existing transmission line could effectively block, and preclude the ability for construction of future lines down the west or the east side. SCE has expressed concern that if the ROW were constrained by crossings of a new 66 kV line, this may require the acquisition of additional property to replace the ROW that could be rendered unavailable by the crossings (SCE, 2014).

Feasibility

Alternative 2, with installation of the new 66 kV subtransmission line entirely overhead on poles, would meet all feasibility criteria. If the undergrounding option were selected, the underground portion would fail to meet feasibility criteria as described below.

Challenges regarding earthquake fault zones and steep terrain would render infeasible underground installation of the subtransmission line within Santa Rosa Valley. The ROW crosses the Simi-Santa Rosa Fault, an active Alquist-Priolo Earthquake Fault Zone that perpendicularly traverses the ROW. Constructing an underground subtransmission line in such an area would pose reliability risks. Seismic activity poses a greater risk to underground structures and cable than to overhead construction, as overhead construction provides increased flexibility in the event of displacement across the fault. Overhead structures have less rigidity and have more flexibility



SOURCE: SCE, 2015a

Moorpark-Newbury 66 kV Subtransmission Line Project. 207584.15

Figure 4-2

Alternative 2, West Side of 220 kV ROW

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by incorporating slack that enables the conductors to swing and not break when fault activity occurs, and can be located to avoid the surface trace of the fault. In addition, the ROW contains excessively steep topography between pole sites 18 and 20 that would not be suitable for underground subtransmission construction. The weight of the underground cable in steep terrain would require that the cable be held-back with special cable grips in standard transmission vaults and restraint vaults, but for the area south of Presilla Road, cable grip installation would not be feasible because the rise and fall of the grade is too excessive (SCE, 2014). For these reasons, undergrounding the new subtransmission line in the Santa Rosa Valley portion of the Moorpark-Ormond Beach 220 kV ROW would be infeasible.

Environmental Effects

Alternative 2 would require installation of 20 more poles in Segment 2 than the Proposed Project, which would result in a longer construction time and greater impacts pertaining to ground disturbance, which would result in greater impacts to air quality, agricultural resources, biological resources, and cultural resources. Alternative 2 would result in a more severe significant unavoidable impact to air quality compared to the Proposed Project. Short-term construction-related noise exposure would be reduced to some residences along the east side of the 220 kV corridor under this alternative compared to the Proposed Project. In fact, conductor installation activities at the stringing site north-northeast of the intersection of Hitch Boulevard and Ventavo Road would be setback a sufficient distance under Alternative 2 to avoid the significant unavoidable noise impact to the nearest residences that would occur under the Proposed Project. However, this alternative would result in new significant unavoidable construction noise impacts to at least one residence on the west side of the 220 kV corridor off Presilla Road that would not occur under the Proposed Project. This alternative would result in the same significant noise-related impact associated with the helicopter landing zone near the end of Segment 2.

Alternative 2 includes natural habitat in the Los Posas Hills, south of Presilla Road that was not examined during the rare plant surveys that were conducted for the Proposed Project. Rare plants are not present in the comparable portion of the Proposed Project alignment. If rare plants are present in the Los Posas Hills area of the Alternative 2 alignment, impacts could be relatively greater under this alternative compared to the Proposed Project. Potential impacts to wetlands, riparian habitat, or other sensitive natural communities, special-status reptiles, and nesting birds would be similar to that identified for the Proposed Project. Undergrounding could result in additional impacts to agricultural and/or cultural resources.

Alternative 2 is not considered to be a viable alternative because it would result in greater environmental impacts than the Proposed Project. Therefore, Alternative 2 has been eliminated from full consideration in this EIR.

4.5.3 Alternative 3 – New 66 kV Line Collocated with the Existing Moorpark-Newbury-Pharmacy 66 kV Line

4.5.3.1 Description

Alternative 3 would result in the construction of a new subtransmission line circuit collocated with the existing Moorpark-Newbury-Pharmacy 66 kV Subtransmission Line between Moorpark and Newbury substations (see **Figure 4-3**, *Alternative 3, New 66 kV Line Collocated with the Existing Moorpark-Newbury-Pharmacy 66 kV Line*). This alternative would result in the replacement of existing double-circuit wood poles along SR 118 (Los Angeles Avenue) with triple-circuit TSPs, and replacement of single-circuit wood poles with double-circuit LWS poles between SR 118 and the Proposed Project alignment. Under Alternative 3, all work in Segments 3 and 4 would be the same as for the Proposed Project. This alternative would either require a pole for pole replacement, or the new poles could be engineered to have longer spans than the existing double-circuit and single-circuit poles.

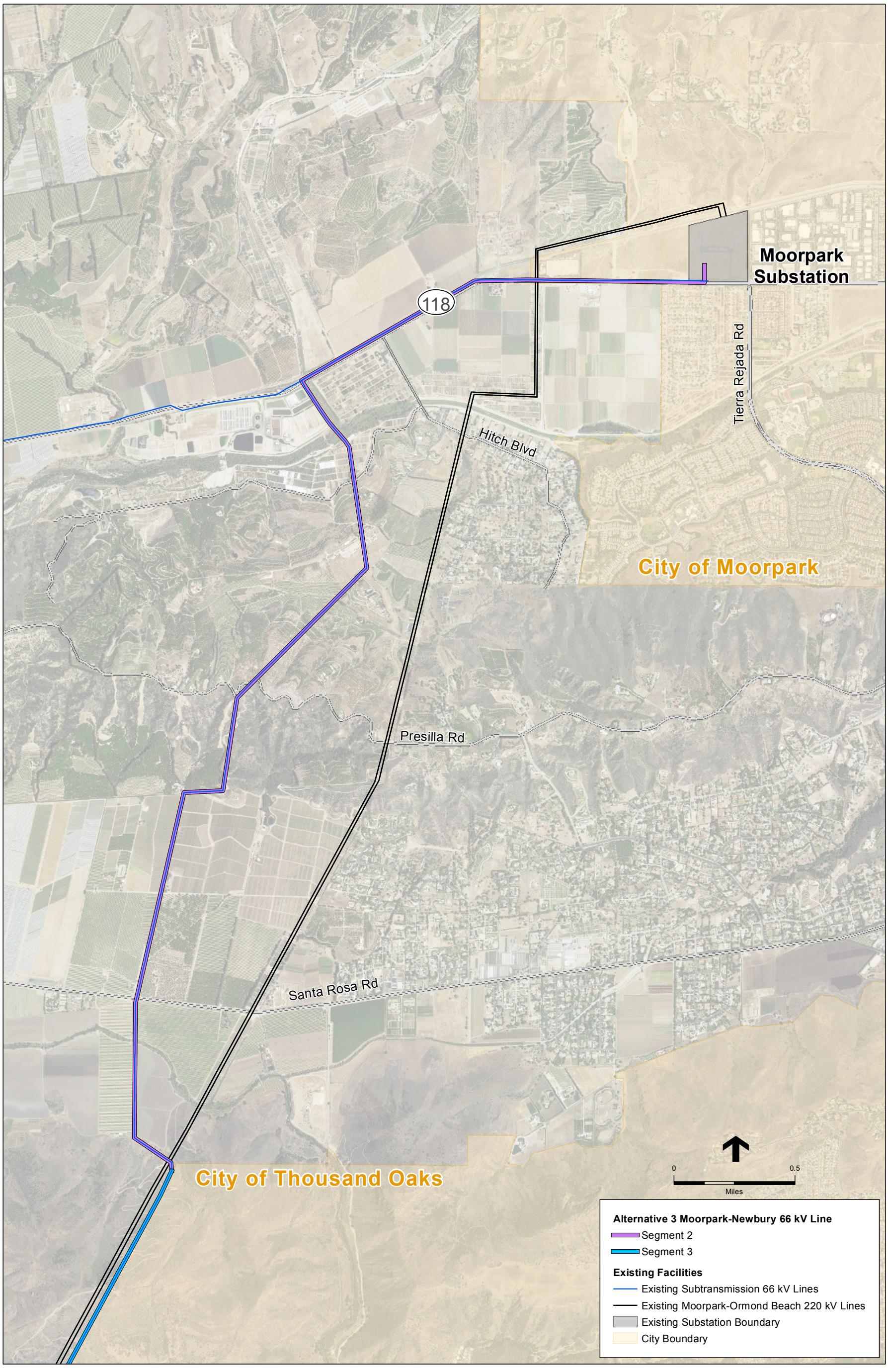
To accommodate the existing two circuits of the Moorpark-Newbury-Pharmacy line along SR 118 and the new subtransmission line, SCE would build a unique TSP structure that could accommodate three circuits in vertical configuration (see **Figure 4-4**, *Conceptual Triple-Circuit 66 kV Structure*). The footprint of such a structure would be significantly larger than the footprint of the existing double-circuit poles. A larger (approximately 65-foot-wide) ROW would be needed to accommodate the new structures compared to the current double-circuit wood poles, which are generally within an approximately 20-foot-wide footprint with the California Department of Transportation (Caltrans) ROW. An option for collocating the new subtransmission line circuit with the existing subtransmission line circuits on the north side of SR 118 would be to locate the new subtransmission line circuit on the south side of SR 118. It is anticipated that the double-circuit LWS poles that would replace the single-circuit wood poles would have a similar appearance to the LWS poles that would be associated with the Proposed Project (see **Figure 3-8**, *Typical Pole Design*).

4.5.3.2 Rationale for Elimination

Meeting Proposed Project Objectives

Alternative 3 would meet many of the Proposed Project objectives, including adding capacity to meet forecasted electrical demand while providing long-term, safe, and reliable electrical service in the ENA; maintain sufficient voltage in accordance with applicable requirements during normal and abnormal system conditions; and maintaining system reliability within the ENA.

Alternative 3 would not maintain consistency with CPUC GO 95 or be designed in conformance with SCE's applicable engineering, design, and construction standards for subtransmission projects. According to SCE, there is insufficient room between the north side of SR 118 and the nearby Union Pacific Railway ROW to accommodate the triple-circuit structures (SCE, 2014). Therefore, implementation of Alternative 3 would require that the new subtransmission line be placed on the south side of SR 118, which would result in subtransmission lines on both sides of



SOURCE: SCE, 2013

Moorpark-Newbury 66 kV Subtransmission Line Project. 207584.15

Figure 4-3

Alternative 3, New 66kV Subtransmission Line Collocated with the Existing Moorpark-Newbury-Pharmacy 66 kV Line

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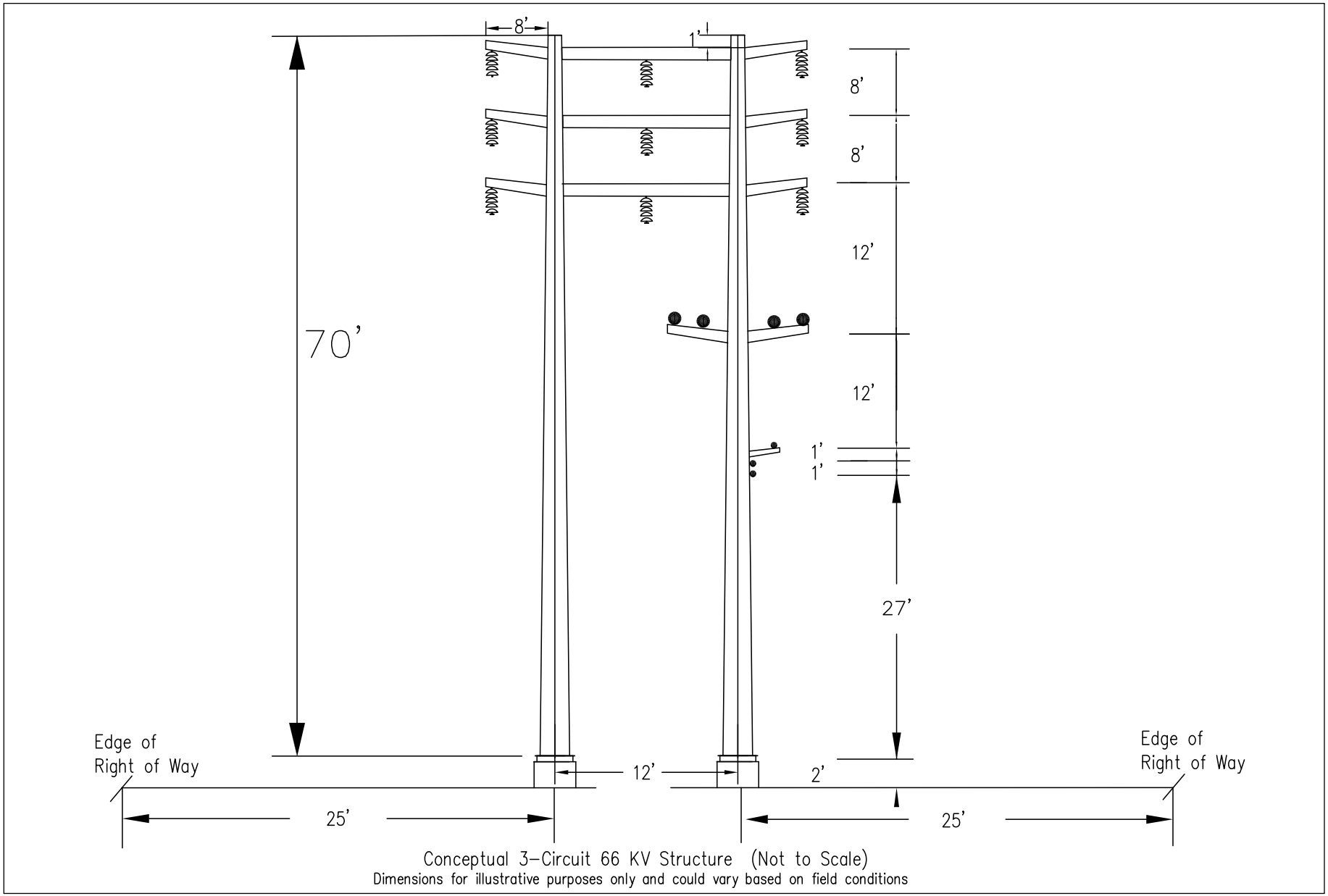

SOURCE: SCE, 2015a

Figure 4-4
Conceptual Tripple-Circuit 66 kV Structure

SR 118. Having subtransmission lines on both sides of SR 118 would be counter to CPUC GO 95, Section III, Rule 31.3, which states: "… circuits shall not occupy both sides of thoroughfares…" (CPUC, 1962) as well as counter to SCE standards for subtransmission line projects.

Feasibility

As discussed above, there is insufficient room on the north side of SR 118 to accommodate the triple-circuit structures that would be required for Alternative 3. Therefore, the Alternative 3 option to locate a triple-circuit line on the north side of SR 118 would not be feasible. Placing a new subtransmission line on the south side of SR 118 would conflict CPUC GO 95, Section III, Rule 31.3, and SCE subtransmission line standards (see *Meeting Proposed Project Objectives* discussion above); however, it appears this option would be feasible.

Environmental Effects

Alternative 3 would require installation of an additional approximately 40 triple-circuit structures and 80 double-circuit LWS poles compared to the Proposed Project, which would result in commensurately longer construction time and greater impacts pertaining to ground disturbance, which would result in greater impacts to air quality, agricultural resources, biological resources, cultural resources, and traffic. The short-term significant construction-related noise exposure impact under the Proposed Project associated with conductor installation activities at the stringing site north-northeast of the intersection of Hitch Boulevard and Ventavo Road would be avoided under this alternative; however, Alternative 3 would result in new significant unavoidable construction noise impacts to several residences along Ventavo Road, Gerry Road, and Rosita Road that would not occur under the Proposed Project. This alternative would result in the same significant noise-related impact as the Proposed Project associated with the helicopter landing zone near the end of Segment 2.

Natural habitat along the Alternative 3 corridor in the Los Posas Hills, south of Presilla Road, was not examined during rare plant surveys for the Proposed Project. Rare plants are not present in the comparable portion of the Proposed Project alignment. If rare plants are present in this area, impacts would likely be greater compared to the Proposed Project. Potential impacts to wetlands, riparian habitat or other sensitive natural communities, special-status reptiles, and nesting birds would be similar to that identified for the Proposed Project. Though the alignment has not be surveyed to identify all biological resources, potential impacts to wetlands, riparian habitat or other sensitive natural communities, special-status reptiles, and nesting birds under Alternative 3 may be similar to that identified for the Proposed Project.

Alternative 3 is not considered to be a viable alternative because it would result in greater environmental impacts than the Proposed Project. Therefore, Alternative 3 has been eliminated from full consideration in this EIR.

4.5.4 Alternative 4 – Reconnect the Camgen Generator to the Moorpark System

4.5.4.1 Description

Alternative 4 would disconnect the Camgen generator on the California State University, Channel Islands (CSUCI) campus from SCE's Santa Clara system and reconnect it to the Moorpark system via the Colonia-Camgen-Newbury Subtransmission line. The potential connection point would begin at a pole outside of Camgen Substation on the CSUCI campus, in the City of Camarillo. As depicted in **Figure 4-5**, *Alternative 4, Reconnect the Camgen Generator to the Moorpark System***,** the alignment would follow an existing 16 kV distribution line south to Potrero Road. The alignment would continue south, crossing Potrero Road, until it reaches the Moorpark-Ormond Beach ROW. From there the subtransmission line would parallel the Moorpark-Ormond Beach 220 kV Transmission Line to the east, and connect into the existing idle section of the Newbury-Thousand Oaks 66 kV Subtransmission Line (SCE, 2015a). The alignment between Camgen Substation and the Newbury-Thousand Oaks 66 kV Subtransmission line would be approximately 2 miles.

The existing 16 kV distribution line that exits Camgen Substation would need to be overbuilt and SCE would need to acquire a new 25-foot transmission easement from the east side of Camgen Substation that would follow the existing distribution line, extending south for approximately 0.3 mile until the route would reach SCE's fee owned parcel where the line would continue (SCE, 2015a). Alternative 4 would also require infrastructure upgrades related to the disconnection of Camgen from the Santa Clara system and reconnection of Camgen to the Moorpark system. Upgrades would include:

- Substation electrical system upgrades, including replacement of electronic equipment, reprogramming of equipment, and testing of substation equipment at Camgen, Newbury and Thousand Oaks substations. In addition, studies such as short-circuit-duty analyses may be required to determine if other equipment such as circuit breakers may require replacement at other substations.
- Telecommunications infrastructure upgrades or replacements at Camgen, Newbury, Moorpark, and Thousand Oaks substations.

4.5.4.2 Rationale for Elimination

Meeting Proposed Project Objectives

Reconnecting Camgen to the Moorpark System would only provide a short-term solution to addressing voltage violations for the base case scenario. With Camgen reconnected to the Moorpark System, SCE anticipates that the existing Moorpark-Newbury-Pharmacy 66 kV Subtransmission Line would be subject to an overload under N-1 (contingency) conditions in the year 2027 (SCE, 2015a). In addition, it is also expected that voltage violations would occur during the first year that this alternative would be operational with the loss of the Moorpark-Newbury line and the reconnection of the Pharmacy Substation load (SCE, 2015c). Accordingly, SCE would still need to have the Proposed Project operational to address this forecasted N-1

SOURCE: SCE, 2015a

Moorpark-Newbury 66 kV Subtransmission Line Project. 207584.15

Figure 4-5

Alternative 4, Reconnect the Camgen Generator to the Moorpark System

violation on the Moorpark System. Therefore, Alternative 4 is not considered to be a viable alternative to the Proposed Project and has been eliminated from full consideration in this EIR.

Additionally, SCE has expressed concern that future generation output that will be produced by the Camgen generation facility is uncertain due to the many years of its operation, and may not be sufficient to meet forecasted electrical demand and maintain system reliability in the ENA (SCE, 2014). If Camgen ceased generating power or significantly reduced its output in the future, SCE would be left without the resources to satisfy the peak electrical demand that is forecasted to develop in 2021 on the Moorpark-Newbury-Pharmacy 66 kV Subtransmission Line. In such a scenario, SCE electrical customers in and around the ENA would be faced with electrical service interruptions until SCE could construct a satisfactory infrastructure remedy (SCE, 2014). However, due to the level of uncertainty, this was not considered to be the prime factor in determining whether or not this alternative is capable of meeting basic project objectives.

Feasibility

Implementation of Alternative 4 would require successful easement negotiations with CSUCI. In addition, Alternative 4 relies on the assumption that power would be provided from the Camgen generator to the Moorpark System. However, SCE has stated that "Camgen is currently obligated to supply power to SCE only through April 2018, and anything further would have to be pursuant to either an extension of the existing power purchase agreement or execution of a new such agreement between the operator of Camgen and an off-taker" (SCE, 2014). If CSUCI and SCE were to enter into a new contract, SCE has indicated that it would have "no guarantee that the generation output Camgen would be obligated to produce would be sufficient to meet SCE's needs that otherwise would be remedied by the Proposed Project." Camgen's generation facility has been in operation for many years and SCE is not aware of any intention of CSUCI to repower or upgrade that facility in any way. SCE has expressed concern that should the Camgen facility fail without warning, it could be left incapable of meeting electrical demand requirements (SCE, 2014).

In addition, Alternative 4 could result in unacceptable overload conditions in SCE's Santa Clara System. If the generation from Camgen were to be transferred back to the Moorpark System, the generation available to the Santa Clara System would be reduced by approximately 25 megawatts (MW). Currently, the Santa Clara 66 kV System has several generation resources; four of these generators could contribute to a potential overload of the Santa Clara-Colonia 66 kV Subtransmission Line. Each of these four generators (one of which is Camgen) has a contract set to expire before the year 2020. The transfer of Camgen to the Moorpark System would leave the Santa Clara System with three generators that could affect the potential line overload mentioned above. If the power purchase contracts for all three of these generators were not renewed, the Santa Clara-Colonia 66 kV Subtransmission Line is projected to exceed its emergency rated capacity in the year 2021 during an unplanned outage of the Santa Clara-Colonia-Procgen 66 kV Subtransmission Line (N-1 contingency condition). In order to remedy the unacceptable overload condition, SCE would have to take some additional action such as transferring generation from Camgen back to the Santa Clara System or undertaking an infrastructure improvement project such as reconductoring approximately 10 miles of the existing Santa Clara-Colonia 66 kV Subtransmission Line (SCE, 2014).

Due to the uncertainty and the potential to address the above noted concerns through negotiation and power purchase agreements, these issues do not rise to the level of eliminating the alternative based on feasibility. Additional information would be needed for these issues to be the sole rationale for elimination of this alternative, based on feasibility alone.

Environmental Effects

It is estimated that Alternative 4 would require installation of a similar amount of poles (approximately 23 LWS poles) compared to the Proposed Project (22 TSPs and 2 LWS poles); therefore, overall ground disturbance and associated impacts to cultural resources would be similar to that of the Proposed Project. However, this alternative would require much less conductor stringing (i.e., two miles of single-circuit line compared to approximately 8 miles of single- or double-circuit lines under the Proposed Project) and no lattice steel tower (LST) removal, which would result in commensurately shorter construction time and reduced impacts to air quality. This alternative would be located within agricultural fields south of Potrero Road for approximately 1 mile, potentially resulting in increased temporary and permanent impacts to agricultural resources compared to the Proposed Project. It appears that this alternative would not be constructed near any noise-sensitive uses at CSUCI and would therefore not be expected to result in any significant construction-related noise impacts. In addition, the significant construction-related noise exposure impacts under the Proposed Project would be eliminated under Alternative 4.

The majority of the Alternative 4 alignment would follow existing utility ROWs or established roads and crosses active agricultural lands; there would be minimal impact on biological resources in these areas. However, the easternmost approximately 0.5-mile of the alignment would be located within undeveloped mountainous terrain that supports several rare plants (e.g., Blochman's dudleya and Conejo buckwheat) (CDFW, 2015) and potentially provides habitat for coastal California gnatcatcher. If present in this area, Alternative 4 would incrementally increase impacts to these species compared to the Proposed Project. The alignment has not be surveyed to identify all biological resources, though potential impacts to wetlands, riparian habitat, or other sensitive natural communities, special-status reptiles, and nesting birds under Alternative 4 may be similar to those identified for the Proposed Project.

4.5.4.3 Combination of Alternatives 1 and 4 – Reconductoring plus Camgen Reconnection

The CPUC has evaluated the option of combining Alternatives 1 and 4, under which SCE would reconductor 7.3 miles of the existing Moorpark-Newbury tap of the Moorpark-Newbury-Pharmacy 66 kV Subtransmission Line and 12.6 miles of the Newbury-Thousand Oaks 66 kV Subtransmission Line, and reconnect the Camgen generator to the Moorpark system as described above.

As noted above, reconductoring a portion of the Moorpark-Newbury-Pharmacy line and the Newbury-Thousand Oaks line would provide sufficient line capacity (normal and emergency) going forward, but would not solve long-term voltage violations at Newbury Substation. With the

loss of the Moorpark-Newbury-Pharmacy line and the Pharmacy Substation load, and with the Camgen generator operating, voltage at Newbury Substation would remain within an acceptable range, dropping only 1.9 percent. However, upon reenergizing the Pharmacy load, the voltage at Newbury and Pharmacy substations would plunge, resulting in a total decrease of 6.3 percent for year 2026 compared to pre-outage conditions. Given the relatively slow load growth projected for the area, the 6.3 percent voltage drop noted in SCE's power flow plots for 2026 translates to a voltage loss of slightly more than 5 percent in 2015. This would exceed SCE's limit of a 5 percent drop in voltage, resulting in a voltage violation.

Given that the Moorpark system would continue to be subjected to voltage violations whenever the Pharmacy Substation load is energized from Newbury Substation via the Thousand Oaks subtransmission line, the reconductoring of the existing system and addition of Camgen generation would not provide an adequate solution to meet reliability criteria. Therefore, a combination of Alternative 1 and Alternative 4 would not be a viable alternative and has been eliminated from further evaluation in this EIR.

4.5.5 Alternative 5 – Demand-Side Management

4.5.5.1 Description

Demand-side management (DSM) programs are designed to reduce customer energy consumption. 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. One goal of these programs is to reduce overall electricity use. Some programs also attempt to shift such energy use to off-peak periods. The CPUC supervises various DSM programs administered by the regulated utilities, and many municipal electric utilities have their own DSM programs. The combination of these programs constitutes the most ambitious overall approach to reducing electricity demand administered by any state in the nation. Economic and price considerations as well as long-term impacts of state-sponsored conservation efforts, such as the Governors 20/20 rebate program and new appliance efficiency standards, are considered in load forecasts.

4.5.5.2 Rationale for Elimination

Reductions in energy demand through energy conservation and demand management programs will be a part of SCE's future operations and are incorporated into its long-term peak load forecasts. Existing conservation and demand management programs run by SCE include rebates on energy-efficient appliances, incentives for customer-owned solar generation, a metering system that allows SCE customers with smart thermostats and appliances to automatically respond during critical peak pricing and reliability events, and more (SCE, 2015b). However, these programs require voluntary participation. As separate and stand-alone programs, SCE cannot guarantee that such voluntary programs would provide either the capacity or reliability needs in the ENA, as stated in the Proposed Project objectives. For these reasons, this alternative was eliminated from further consideration.

4.5.6 Alternative 6 – Renewable and Distributed Energy Generation Resources

4.5.6.1 Description

Renewable Energy Generation

Executive Order S-14-08 sets California's renewable energy goals at 33 percent by 2020. This requires all retail sellers of electricity to increase their procurement of eligible renewable resources to 33 percent by 2020. This is an increase from California's Renewable Portfolio Standard (RPS) that required retail sellers of electricity to increase their procurement of eligible renewable to 20 percent by 2017. The RPS Program was mandated by Senate Bill 1078 (SB 1078, Sher, Chapter 516, Statutes of 2002) under Public Utilities Code sections 381, 383.5, 399.11 through 399.15, and 445. The CPUC, in collaboration with the California Energy Commission (CEC), is addressing its responsibilities in implementing the RPS through its own proceedings. On March 8, 2003, the CEC and the CPUC approved an Energy Action Plan in addition to the Renewable Portfolio Standard. On April 22, 2004, the CPUC issued an Order Instituting Rulemaking to specifically address the RPS (R.04-04-026). On September 21, 2005, the Energy Action Plan II was finalized, and in February 2008 the CPUC and CEC published the Energy Action Plan 2008 Update. The shared goal of the Energy Action Plan is to:

> *"Ensure that adequate, reliable, and reasonably-priced electrical power and natural gas supplies, including prudent reserves, are achieved and provided through policies, strategies, and actions that are cost-effective and environmentally sound for California's consumers and taxpayers."*

Currently, there are two types of solar generation available: solar thermal power (also known as concentrating solar power) and photovoltaic (PV) power generation. In 2013, California generated approximately 4,291 gigawatt hours (GWh) of power with solar thermal power plants, or 2.2 percent of the state's total electricity production. The majority of solar thermal power facilities are parabolic-trough electric plants installed in the Mojave Desert, due to the large tracks of land required for this technology. In 2008, the most recent year for which CEC has published data, the cumulative installed solar thermal capacity reached about 440 MW, generating an estimated 661.5 gigawatt hours (GWh) of electricity (CEC, 2015). PV power systems are available on a significantly smaller scale, and have received increased support from private and public sections since the 1970s.

In 2013, geothermal energy in California produced 12,485 GWh of electricity (CEC, 2015). Most of California's developed geothermal resources are located in Sonoma, Lake, Imperial, and Inyo counties. Other geothermal resource areas in the state are found in Lassen, Mono, Siskiyou, and Modoc counties. Some of the sites for new geothermal development are located in areas characterized by sensitive cultural and environmental concerns. Other issues that could delay development include permitting and access to transmission. The technologies most often used to produce electricity from geothermal resources in California are flash steam power and binary cycle power plants. The flash steam power technology is typically used at sites that have high

temperature fluids (usually above 400 degrees Fahrenheit). Fluids at these sites boil into steam as they rise to the surface. The steam is used to power a turbine, which turns a generator to produce electricity. Binary cycle power plants can be used with lower temperature geothermal resources where the water does not become steam before rising to the surface.

As of December 10, 2014, the installed capacity of wind energy electricity in California was about 7,100 MW, which produced a total of 12,694 GWh of electricity, or 6.4 percent of the state's total system power (CEC, 2015). According to the Renewable Resources Development Report, Ventura County has limited area with moderate and high wind resources potential (CEC, 2003). However, even in high wind resource areas, wind energy technology requires approximately 5 to 6 acres per MW of wind power. In addition, the primary technical obstacle to utilizing wind generation is the lack of existing transmission infrastructure to transport the wind-generated power to the grid.

Distributed Energy Generation

Distributed generation is electricity production that is on-site or close to the load center that could be interconnected at distribution, subtransmission, or transmission system voltages. Distributed generation is generally limited to systems less than 20 MW. Distributed generation does not include hydroelectricity, geothermal, non-combined heat, or power related digester gas, landfill gas, or electricity produced from municipal solid waste.

In March 2007, the CEC released the staff report *Distributed Generation and Cogeneration Policy Roadmap for California* (CEC, 2007b*).* The report included a vision for distributed generation and cogeneration becoming significant components of California's electrical system, meeting over 25 percent of the total peak demand. To achieve its vision, California will support incentives in the near term, transition to new market mechanisms, and reduce remaining institutional barriers.

4.5.6.2 Rationale for Elimination

Renewable resources for renewable energy programs will be part of SCE's future operations and are incorporated into its long-term peak load forecasts. As separate and stand-alone programs, these renewable resource alternatives would not replace the need for upgrading the existing subtransmission infrastructure in the study area. Indeed, transmission system constraints are noted by the CEC as a substantial impediment to effective integration of renewable resources statewide. However, because renewable resources would not provide the demand, reliability, or operational flexibility needs of SCE, as stated in the objectives for the Proposed Project, and because subtransmission infrastructure upgrades would still be required to integrate any renewable resources, this alternative was eliminated from further consideration.

The distributed generation industry is still a nascent industry that survives despite some difficult market conditions. There are numerous institutional, industry, and market barriers that have impeded the growth and adoption of the industry to date. Although the potential is recognized, it is not currently a significant energy resource. As of 2005, the existing distributed generation

penetration was 2.5 percent of total peak demand in California (CEC, 2007b). Because the potential for and timing of distributed generation within the ENA is uncertain and additional subtransmission infrastructure upgrades would likely still be required, this alternative was not carried forward for analysis.

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