

2: PROJECT ALTERNATIVES

2.0 Introduction

The California Public Utilities Commission (CPUC) determined that the Valley-Ivyglen 115 kV Subtransmission Line Project (Application No. A. 07-01-031, filed January 16, 2007) and the Fogarty 115 kV Substation Project (Application No. A. 07-04-028, filed April 30, 2007) are consolidated into a single proceeding for California Environmental Quality Act (CEQA) analysis. Alternatives associated with these two proposed projects are described in the following sections.

2.1 Alternatives Overview

CEQA and CEQA Guidelines Section 15126.6(a) require that an environmental impact report describe a range of reasonable alternatives to a proposed project, or to the location of the project, which would feasibly attain most of the basic project objectives but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. CEQA Guidelines Section 15126.6(d) requires that sufficient information about each alternative be included to allow meaningful evaluation, analysis, and comparison with the proposed project. In addition, CEQA Guidelines Section 15126.6(e) requires the evaluation of a “no project” alternative to compare the impacts of approving the proposed project with the impacts of not approving the proposed project (No Project Alternative).

The following sections describe the methodology for screening project alternatives. This chapter concludes with a brief description of the alternatives retained for full analysis in the Proponent’s Environmental Assessment (PEA).

2.2 Project System Alternatives

2.2.1 SYSTEM ALTERNATIVE EVALUATION METHODOLOGY

The development of system alternatives consists of a four-step process summarized below.

Step 1. Perform technical engineering analyses to determine whether modifying the existing electrical infrastructure can accommodate the forecasted peak electrical demand.

Step 2. Develop system alternatives if the forecasted electrical demand cannot be accommodated by modifying the existing electrical infrastructure and considering feasible upgrades or additions to the existing electrical infrastructure.

Step 3. Evaluate each system alternative in consideration of the extent to which an alternative could feasibly accomplish the proposed Project Objectives.

Step 4. Eliminate an alternative from further consideration if it is not feasible. If feasible, an alternative is retained for full analysis in the PEA, as required by CPUC General Order 131-D.

If it is determined that a new electrical infrastructure upgrade or addition is required, then route alternatives or site alternatives are considered as described in Sections 2.3 and 2.4, below.

2.2.2 VALLEY-IVYGLEN SYSTEM ALTERNATIVES AND RECOMMENDATIONS

SCE considered three system alternatives and the No Project Alternative to meet the forecasted electrical demand within the Valley-Ivyglen Electrical Needs Area, as defined on pages 1-2 and 1-3 in the Proponent's Environmental Assessment, Valley-Ivyglen 115 kV Subtransmission Line Project. These alternatives are listed below and discussed in the following sections.

- **System Alternative V-I.1:** Construct a new 115 kV subtransmission line that traverses between the Valley 500/115 kV and Ivyglen 115/12 kV substations
- **System Alternative V-I.2:** Upgrade the existing electrical subtransmission and distribution system, including upgrades at the Glen Ivy and Elsinore Substations
- **System Alternative V-I.3:** Convert the Ivyglen Substation from a 115/12 kV substation to a 66/12 kV substation and transfer it to the Mira Loma 220/66 kV System
- **System Alternative V-I.4:** No Project Alternative

The proposed Valley-Ivyglen 115 kV Subtransmission Line Project is needed to provide additional line capacity to an area served by a single 115 kV line that is projected to exceed capacity in 2007. In addition, the propose project is needed to provide a second 115 kV subtransmission line to Ivyglen Substation in order to be consistent with SCE's reliability criteria.

System Alternative V-I.1: Construct a New 115 kV Subtransmission Line

System Alternative V-I.1 would require the fewest system modifications of the system alternatives considered. This system alternative would entail constructing approximately 25 miles of new 115 kV subtransmission line between the Valley and Ivyglen Substations. In order to accommodate the Proposed Subtransmission Line, existing 115 kV line positions would be equipped with circuit breakers and ancillary equipment at both substations, along with installation of a telecommunications line.

This alternative would provide an increase in subtransmission capacity to serve projected electrical demand requirements in the Electrical Needs Area and would provide a second 115 kV subtransmission line to the Ivyglen Substation. The proposed increase in subtransmission capacity would in turn provide greater capacity to the Ivyglen 115/12 kV Substation to increase the distribution supply under both normal and abnormal conditions. By providing a second 115 kV subtransmission line to the Ivyglen Substation this alternative would provide greater reliability to the Electrical Needs Area.

This option also provides the potential for future system upgrades that would accommodate continuing growth and electrical demand in the area.

The estimated cost of System Alternative V-I.1 is projected at approximately \$23 million.¹

System Alternative V-I.2: Upgrade the Existing Electrical Systems

This system alternative would entail at least five components. These components would include:

- 1) Increasing transformer capacity at the Glen Ivy 33/12 kV Substation from 5.6 MVA to 28 MVA
- 2) Constructing two new underground 33 kV lines from the Elsinore 115/33 kV Substation to the Glen Ivy 33/12 kV Substation
- 3) Reconductoring approximately 14.5 miles of the Valley-Elsinore-Ivyglen 115 kV Subtransmission Line
- 4) Upgrading the Glen Ivy 33/12 kV and Elsinore 115/33 kV Substations
- 5) Building two new 12 kV distribution lines

Increasing the transformer capacity of the Glen Ivy Substation from 5.6 MVA to 28 MVA would require the addition of two new underground 33 kV lines to the Glen Ivy Substation to provide capacity and to meet SCE's reliability criteria. These two new 33 kV lines would originate at the Elsinore 115/33 kV Substation, and the combined lines would be approximately 27 miles long. To accommodate the additional electrical demand, the conductors on the Valley-Elsinore section of the Valley-Elsinore-Ivyglen 115 kV Subtransmission Line would be replaced with larger conductors.

The additional 33 kV lines would require upgrades to both the Glen Ivy 33/12 kV and Elsinore 115/33 kV Substations. These upgrades would require substation expansions and acquisition of additional real estate at the Elsinore Substation.

Two new 12 kV distribution lines from the Glen Ivy Substation would include approximately seven miles of new construction and provide the ability to serve the electrical demand.

This alternative provides limited potential to accommodate future growth. It does not eliminate the need to construct a 115 kV subtransmission line in the future.

The estimated cost of System Alternative V-I.2 is projected at approximately \$58 million. Additional components, such as new telecommunications upgrades, are not included in the cost estimate.

System Alternative V-I.3: Convert the Ivyglen Substation from 115/12 kV to 66/12 kV and Transfer it from the Valley 500/115 kV System to the Mira Loma 220/66 kV System

System Alternative V-I.3 would convert the Ivyglen Substation from a 115/12 kV substation to a 66/12 kV substation, and transfer it to the Mira Loma 220/66 kV System. System Alternative V-I.3 would also necessitate additional upgrades to the Mira Loma 220/66 kV System. This system alternative would include the three components listed below:

- 1) Construct three new 66 kV subtransmission lines
- 2) Reconfigure an existing 66 kV line

¹ The addition of a new telecommunications line is not included in this cost estimate. The total project cost, including a new telecommunications line, is projected at approximately \$25 million.

3) Build two new 12 kV distribution lines

The Ivyglen Substation is currently served from a 115 kV system, while Mira Loma is a 66 kV system. Transferring the Ivyglen Substation from the Valley 115 kV System to the Mira Loma 66 kV System would require reconfiguring or rebuilding the Ivyglen Substation to accommodate the necessary equipment changes required to convert it from a 115 kV substation to a 66 kV substation. This would include replacing the existing 115/12 kV 28 MVA transformers with two new 66/12 kV 28 MVA transformers.

In order to provide the required power to the newly configured Ivyglen 66/12 kV Substation, two new 66 kV lines would be constructed from the Chase 66/12 kV Substation to the Ivyglen 66/12 kV Substation. Each new line would be approximately 7.5 miles long and would follow different line routes. A third new 66 kV subtransmission line between the Chase and Jefferson substations would be needed as well.

As a result of this added electrical demand on the Mira Loma 220 kV System, additional system upgrades would be necessary. New electrical facilities at the Mira Loma, Chase, and Jefferson Substations would require additional subtransmission line positions, including circuit breakers and other associated equipment.

System Alternative V-I.3 provides limited potential for future growth and does not eliminate the need for an additional future 115 kV subtransmission line in the Electrical Needs Area. This alternative would limit SCE's ability to transfer distribution load between the Ivyglen and Elsinore or Glen Ivy Substations without service interruptions.

The estimated cost of System Alternative V-I.3 is approximately \$37 million. Additional components, such as new telecommunications upgrades, are not included in the cost estimate.

System Alternative V-I.4: No Project Alternative

Under the No Project Alternative, no action would be taken. This alternative would require SCE to serve the Electrical Needs Area from the existing substations and subtransmission lines, with no upgrades or modifications. As discussed in on page 1-5 of SCE's Valley-Ivyglen Proponent's Environmental Assessment, SCE's current forecast shows that the electric demand in the Valley-Ivyglen Electrical Needs Area would exceed existing capacity in 2007. This alternative would result in a reduced level of reliability, leading to blackouts. Therefore, this alternative would not meet the Project Objectives and was eliminated from further consideration.

Valley-Ivyglen System Alternatives Cost Summary

The estimated costs associated with the three viable Valley-Ivyglen system alternatives are listed below in Table 2.2-1.

Table 2.2-1: Valley-Ivyglen System Alternatives Cost Comparison		
Alternative	Description	Estimate Cost
V-I.1	Construct a new 115 kV subtransmission line between the Valley and Ivyglen Substations	\$23 million
V-I.2	Upgrade the existing system	\$58 million
V-I.3	Convert the Ivyglen Substation from 115 kV to 66 kV	\$37 million

SOURCE: SCE 2006

Valley-Ivyglen System Alternatives Recommendation

System Alternative V-I.1 satisfies the Project Objectives for the Valley-Ivyglen Electrical Needs Area, which are listed below:

- Serve projected electrical demand requirements in the Valley-Ivyglen Electrical Needs Area beginning in 2009
- Provide a direct connection between SCE's Valley 500/115 kV Substation and SCE's Ivyglen 115/12 kV Substation
- Increase system reliability by locating a second 115 kV subtransmission line within the Valley-Ivyglen Electrical Needs Area
- Improve operational and maintenance flexibility on subtransmission lines without interruption of service
- Meet project need while minimizing environmental impacts
- Meet project need in a cost-effective manner

System Alternative V-I.1 would require the fewest system modifications of the system alternatives considered. This alternative would provide the most capacity of the three system alternatives considered to serve projected electrical demand requirements in the Electrical Needs Area and would provide a second 115 kV subtransmission line to the Ivyglen Substation. The second subtransmission line would allow SCE to perform maintenance by providing the ability to remove one line from service without interrupting service to customers. In addition, the second subtransmission line would enable SCE to serve demand under emergency conditions. This system configuration enables operational flexibility to transfer load between Elsinore, Ivyglen, and Glen Ivy Substations without interruption. The proposed increase in subtransmission capacity would in turn provide greater capacity to the Ivyglen 115/12 kV Substation to increase the distribution supply under both normal and abnormal conditions.

This alternative provides the potential for future system upgrades that would accommodate continuing area growth and electrical demand. System Alternative V-I.1 also has the fewest environmental impacts of the three system alternatives evaluated.

System Alternative V-I.2 does not provide a second source of power to the Ivyglen Substation and would not meet SCE's subtransmission reliability criteria. In addition, substantial upgrades to the existing 115 kV network would still be required within SCE's 10-year forecast to serve the Electrical Needs Area.

The 33 kV upgrades required in System Alternative V-I.2 between the Elsinore Substation and the Glen Ivy Substation would have to be constructed in an area with multiple existing overhead lines. As a result, the new 33 kV lines would be constructed underground. Additionally, these lines would require a minimum of two paths (approximately 27 miles total). The underground duct banks would require substantial excavation along the entire length of the line routes, presenting the potential for significant environmental impacts.

System Alternative V-I.2 would result in significant environmental impacts while still requiring a future 115 kV line to be constructed into the Ivyglen Substation. In addition, the cost of constructing System Alternative V-I.2 exceeds that of System Alternative V-I.1. Therefore, System Alternative V-I.2 offers only an interim solution and does not meet the Project Objectives of increasing system reliability and improving operational flexibility. For these reasons, and the reasons described above, System Alternative V-I.2 was eliminated from further consideration.

System Alternative V-I.3 meets the Project Objectives for serving projected load, increasing system reliability, and improving subtransmission operational flexibility. However, rebuilding the

Ivyglen Substation from 115 kV to 66 kV would require that the existing Valley-Elsinore-Ivyglen 115 kV line be de-energized for an extended period of time. Because there is no other available source of electricity to the customers served by the Ivyglen Substation, those customers would be without electricity during construction, which could last several months. In addition, the cost of constructing System Alternative V-I.3 exceeds that of System Alternative V-I.1. For these reasons, System Alternative V-I.3 was eliminated from further consideration.

Taking all the above into consideration, SCE selected System Alternative V-I.1 as the Preferred System Alternative for further evaluation in the Valley-Ivyglen Subtransmission Project PEA.

2.2.3 FOGARTY AREA SYSTEM ALTERNATIVES AND RECOMMENDATIONS

SCE considered two system alternatives and the No Project Alternative to meet the forecasted electrical demand within the Fogarty Electrical Needs Area, as defined on pages 1-1 through 1-11 in the Proponent's Environmental Assessment, Fogarty 115/12 kV Substation Project. These alternatives are listed below and discussed in the following sections.

- **System Alternative F.1:** Construct a new 115/12 kV substation, extending the existing Valley-Elsinore-Ivyglen kV Subtransmission Line into the new substation, and constructing six underground 12 kV distribution circuits within the Fogarty Electrical Needs Area
- **System Alternative F.2:** Construct a new 33/12 kV substation, reconfigure four existing 12 kV distribution lines, and install three new underground 33 kV lines
- **System Alternative F.3:** No Project Alternative

The proposed Fogarty Substation Project is needed to provide additional distribution capacity to a rapidly growing area served by three existing SCE substations: Centex 33/12 kV, Dryden 33/12 kV, and Elsinore 115/12 kV and 115/33 kV. Centex Substation will be retired in 2007, and projected area demand would exceed the distribution capacity of Dryden and Elsinore in 2009.

System Alternative F.1: Construct a New 115 kV Substation

System Alternative F.1 includes the following elements:

- Construction of a new 115/12 kV substation (Fogarty Substation) centrally located in the Fogarty Electrical Needs Area. The Fogarty Substation would be an unattended, low-profile, 56 megavolt ampere (MVA), 115/12 kV substation
- Installation of a 115 kV switch rack, two 115/12 kV 28 MVA transformers, a 12 kV switch rack, and two 4.8 mega volt-ampere reactive (MVAR) 12 kV capacitor banks
- Six underground 12 kV distribution circuits (four existing and two new) would be connected from the substation to Terra Cotta Road
- Installation of three tubular steel poles and the addition of two new overhead 115 kV subtransmission line segments approximately 200 feet each, from the existing Valley-Elsinore-Ivyglen 115 kV Subtransmission Line into the proposed Fogarty Substation
- Installation of two new underground 24-strand fiber optic cable segments between the Fogarty Substation and the existing fiber optic cable between Elsinore and Ivyglen Substations. New telecommunication equipment would be installed in the Fogarty Substation Mechanical Electrical-Equipment Room (MEER)

The planned in-service date for the Fogarty Substation Project is June 2009. The estimated cost of System Alternative F.1 is projected at approximately \$11.2 million.²

System Alternative F.2: Construct a New 33/12 kV Substation

System Alternative F.2 would consist of upgrades at SCE's Elsinore 115/33 kV Substation, the construction of a new 33/12 kV substation, reconfiguration of four 12 kV distribution lines, and installation of three new underground 33 kV distribution lines. Additionally, the acquisition of adjacent property to the east of Elsinore Substation would be required to extend the existing 33 kV bus (a conductor used to collect, carry, and distribute powerful electrical current) to accommodate the addition of three new 33 kV lines. The installation of approximately 16 miles of new 33 kV underground lines would be needed to deliver power to the new 33/12 kV substation. The estimated cost of System Alternative F.2 is projected at approximately \$30 million. Additional components, such as new telecommunications lines, are not included in the cost estimate.

System Alternative F.3: No Project Alternative

Under the No Project Alternative, no action would be taken. Therefore, this alternative would render SCE unable to provide sufficient, reliable service to the Fogarty Electrical Needs Area and require SCE to serve the Fogarty Electrical Needs Area from the existing electrical system with no upgrades or modifications. As discussed above, the electric demand in the Fogarty Electrical Needs Area would exceed capacity by 2009. This alternative would result in a reduced level of reliability, and possibly cause customers to experience power outages. Additionally, the No Project Alternative would result in noncompliance with the CPUC-mandated voltage levels, and would not meet the Project Objectives.

Fogarty System Alternatives Cost Summary

The estimated costs associated with the two viable Fogarty system alternatives are listed below in Table 2.2-2.

Alternative	Description	Estimate Cost
F.1	Construct a new 115 kV substation, extending the existing Valley-Elsinore-Ivyglen kV subtransmission line into the new substation, and constructing six underground 12 kV distribution circuits within the Fogarty Electrical Needs Area	\$11.2 million
F.2	Construct a new 33/12 kV substation, reconfigure four existing 12 kV distribution lines, and install three new underground 33 kV lines	\$30 million

SOURCE: SCE 2006

Fogarty System Alternatives Recommendation

SCE recommends System Alternative F.1 as the preferred System Alternative because it satisfies the Project Objectives, which are to:

- Serve projected electrical demand requirements in the Fogarty Electrical Needs Area beginning in 2009
- Maintain system reliability within the Fogarty Electrical Needs Area
- Improve operational flexibility by providing the ability to transfer load between distribution lines and substations within the Fogarty Electrical Needs Area

² The new telecommunications lines are not included in the cost estimate. The project cost, including new telecommunications lines, is projected at approximately \$12.7 million.

- Utilize SCE owned property for location of the project
- Meet project needs while minimizing environmental impacts
- Meet project needs in a cost-effective manner

System Alternative F.1 would provide the required additional capacity to the Fogarty Electrical Needs Area. By supplying the source of power near the center of the Fogarty Electrical Needs Area, SCE would be able to transfer electrical demand during normal and abnormal conditions, thus providing reliability and operational flexibility.

System Alternative F.2 offers only an interim solution, and does not meet the Project Objectives of maintaining system reliability and enhancing operational flexibility. The three new 33 kV circuits necessary to feed the new 33/12 kV substation would have to be constructed underground requiring approximately 11 miles of trenching. System Alternative F.2 does not eliminate the need for a new substation in the Fogarty Electrical Needs Area in the future. System Alternative F.2 would only provide a maximum of 56 MVA capacity, which would only serve the projected load through 2015. System Alternative F.2 is therefore eliminated from further consideration.

System Alternative F.3, the No Project Alternative, is not a viable option because it would prevent SCE from providing safe and reliable electrical service to its customers in the Fogarty Electrical Needs Area. System Alternative F.3, the No Project Alternative, is therefore eliminated from further consideration.

2.2.4 CONSOLIDATED SYSTEM ALTERNATIVES

SCE considered three consolidated system alternatives and the No Project Alternative to meet the forecasted electrical demand within both the Valley-Ivyglen Electrical Needs Area and the Fogarty Electrical Needs Area. These alternatives are listed below and discussed in the following sections.

- **Consolidated System Alternative A:** Construct a new 115 kV subtransmission line that traverses between the Valley 500/115 kV and Ivyglen 115/12 kV substations (System Alternative V-I.1), and construct a new 115/12 kV substation, extending the existing Valley-Elsinore-Ivyglen kV Subtransmission Line into the new substation, and constructing six underground 12 kV distribution circuits within the Fogarty Electrical Needs Area (System Alternative F.1)
- **Consolidated System Alternative B:** Construct a new 115 kV subtransmission line that traverses between the Valley 500/115 kV and Ivyglen 115/12 kV Substations (System Alternative V-I.1), but take no action regarding the Fogarty Electrical Needs Area
- **Consolidated System Alternative C:** Construct a new 115/12 kV substation, extending the existing Valley-Elsinore-Ivyglen kV Subtransmission Line into the new substation, and constructing six underground 12 kV distribution circuits within the Fogarty Electrical Needs Area (System Alternative F.1), but take no action on the Valley-Ivyglen Electrical Needs Area
- **Consolidated System Alternative D:** No Project Alternative

Consolidated System Alternatives Recommendation

SCE recommends Consolidated System Alternative A as the preferred Consolidated System Alternative because it satisfies the Project Objectives in both the Valley-Ivyglen Electrical Needs Area and the Fogarty Electrical Needs Area, both of which are explained above. Consolidated System Alternatives B and C satisfy the Project Objectives of only one of the Electrical Needs

Areas, and thus have been eliminated from further consideration. Similarly, Consolidated System Alternative D would not satisfy any of the project alternatives, and would prevent SCE from providing safe and reliable electrical service to its customers in both the Valley-Ivyglen Electrical Needs Area and the Fogarty Electrical Needs Area. Consolidated System Alternative D, the No Project Alternative, is therefore eliminated from further consideration.

2.3 Subtransmission Corridor Alternatives

SCE considered several different routing alternatives for System Alternative V-I.1. Each alternative began at the Valley Substation and ended at the Ivyglen Substation. The routing options were divided into three alternative corridors: northern, middle, and southern (Figure 2.3-1). Each alternative corridor shared a common eastern segment running from the Valley Substation to Highway 74. These three corridors are summarized below in section 2.3.2.

2.3.1 CORRIDOR EVALUATION METHODOLOGY

SCE initiated a route and corridor evaluation process to identify potential subtransmission line corridor alternatives between the Valley and Ivyglen Substations. SCE identified three potential corridors connecting these two substations, along with multiple route segment alternatives within each corridor. SCE developed a screening criteria process that included the analysis of engineering, environmental, and land use factors. SCE considered the following factors in analyzing the corridor alternatives:

- Ability to meet Project Objectives
- Ability to meet critical engineering requirements
- Ability to serve future electrical needs
- Existence of transmission rights-of-way
- Existence of subtransmission and distribution rights-of-way
- Ground topography and slope steepness
- Line route distance between substations
- Proximity to existing and planned roads
- Future visibility of line segments

Each of the three corridors considered and evaluated is summarized below.

2.3.2 CORRIDOR ALTERNATIVES

Southern Corridor Alternative

The southern corridor would begin at the Valley Substation and proceed west toward Highway 74. It would proceed southwest from the point where the existing Valley-Serrano 500 kV ROW crosses Highway 74. It would then continue southwest along Highway 74 until reaching I-15, where it would turn northwest along the I-15 and Temescal Canyon Road corridor.

The southern corridor would meet engineering and operational requirements. First, it would serve the basic objective of providing a direct connection between the Valley and Ivyglen Substations. In addition, it could be utilized for connections to potential future electrical facilities in the Valley South System. Thus, the southern corridor could serve other facilities in southern Riverside County and would support the project objective of increasing system reliability.

A southern corridor in the general vicinity of the existing Valley-Elsinore-Ivyglen 115 kV subtransmission line would also address the continuing need for future electrical facilities in the Valley South System.

Middle Corridor Alternative

The middle corridor would begin at the Valley Substation and run west toward Highway 74. This corridor would then proceed westward from Highway 74 along the existing Valley-Serrano 500 kV ROW to an area north of the Ivyglen Substation. From this 500 kV ROW, several alternative routes were considered to connect the proposed line to the Ivyglen Substation. Due to significant design and operational differences between 500 kV transmission lines and 115 kV subtransmission lines, construction of a new 115 kV line within the existing 500 kV ROW would create multiple adverse environmental impacts.

A network of new access roads would be needed to construct the proposed 115 kV subtransmission line through mountainous terrain along the existing 500 kV ROW west of Highway 74. Road construction would require extensive earthmoving activities, including rock blasting, grading on steep slopes, and filling of natural drainages. These construction activities would present potential adverse impacts to biological resources, air quality, water quality, erosion, and noise. In addition, future road maintenance and operations would generate adverse impacts to biological resources, air quality, water quality, and erosion. Multiple new access roads traversing across the steep hillsides would contrast dramatically with the existing relatively undisturbed steep terrain, resulting in unavoidable significant impacts to visual resources.

Additionally, the middle corridor would not meet engineering and operational requirements. Although it would serve the objective of providing a direct connection between the Valley and Ivyglen substations, it would not be feasible to utilize for connections to potential future electrical facilities in the Valley South System. This corridor would pass through a sparsely developed mountainous area. From this remote area, a new 115 kV line within the middle corridor would be too far from existing 115 kV facilities in southern Riverside County and could not support the project objective of serving projected electrical demand in the Valley South System. Because the middle corridor alternative would cause potentially significant environmental impacts, would not meet engineering requirements, and would not serve projected electrical demand in the Valley South System, this corridor alternative was eliminated from further consideration.

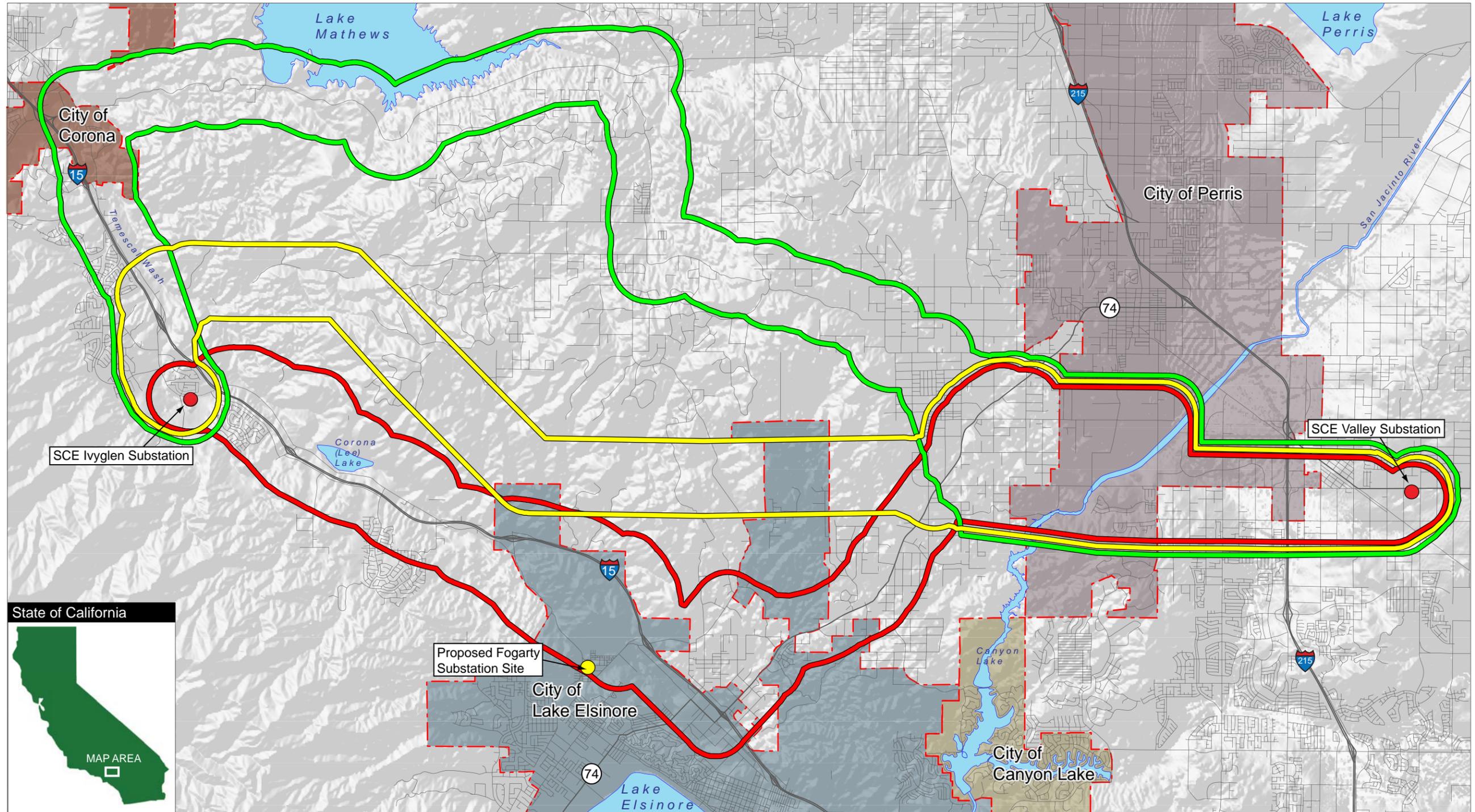
Northern Corridor Alternative

The northern corridor would begin at the Valley Substation and run west toward Highway 74. This corridor would then proceed northwest along existing streets through residential neighborhoods and open areas. After several miles along Theda Street, Mountain Avenue, Palm Street, Ellis Avenue, Post Road, Santa Rosa Mine Road, and Gavilan Road. The northern corridor would then proceed west along Cajalco Road along the southern side of Lake Mathews. From Cajalco Road, this corridor would proceed south on Temescal Canyon Road to the Ivyglen Substation.

This corridor would present multiple potential adverse environmental impacts, especially to visual resources. The corridor would follow Cajalco Road, which is a Riverside County Eligible Scenic Highway. Cajalco Road presents scenic vistas of Lake Mathews and the undeveloped surrounding area. Thus, a new 115 kV subtransmission line in this area would be a prominent visual feature along this road in stark contrast to the surrounding open countryside, resulting in significant visual impacts.

Cajalco Road traverses an undisturbed habitat conservation area and bald eagle habitat surrounding Lake Mathews. Thus, potential adverse construction impacts to biological resources would be possible, as well as potential operational impacts to bald eagles.

Figure 2.3-1: Subtransmission Route Corridors



SOURCE: Southern California Edison 2006 and MHA Environmental Consulting 2007

LEGEND

Northern Corridor Area	Interstate Highway	Existing Substation	City of Lake Elsinore	City of Perris
Central Corridor Area	State Route	Proposed New Substation Site	City of Canyon Lake	City of Corona
Southern Corridor Area	Road	Water		

0 0.75 1.25 2.5 5 Miles



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Additionally, the northern corridor would not meet engineering and operational requirements. Although it would serve the objective of providing a direct connection between the Valley and Ivyglen substations, it would not be feasible to utilize for connections to potential future electrical facilities in the Valley South System. As noted above under System Alternatives, the electrical systems serving the northern portions of Riverside County are based on a 66 kV system. The new 115 kV subtransmission line would be incompatible with other facilities in the northern region. Because the northern corridor alternative would cause significant environmental impacts and would not meet operational requirements, this corridor alternative was eliminated from further consideration.

2.3.3 RECOMMENDATION – PREFERRED CORRIDOR ALTERNATIVE

The southern corridor alternative is the most forward looking of the three corridor alternatives presented because it would provide for future system upgrades to accommodate continuing growth in the Valley-Ivyglen Electrical Needs Area. This alternative would also have the fewest environmental impacts. As such, the middle and northern corridors were eliminated from further consideration and the southern corridor was selected as the preferred corridor alternative. Multiple alternative route segments within this corridor were considered as discussed below in Section 2.4, Route Segment Alternatives.

2.4 Route Segment Alternatives

SCE recommends constructing the new Valley-Ivyglen 115 kV Subtransmission Line within the southern corridor as described above in Section 2.3. Within the southern corridor, defined as the Project Study Area, SCE identified multiple route segments. SCE analyzed the routing alternatives by examining these individual route segments.

2.4.1 EVALUATION METHODOLOGY

SCE delineated 21 different alternative route segments within the southern corridor. Figure 2.4-1 illustrates the 21 alternative segments considered by SCE. Figures 2.4-2 to 2.4-7 are detailed illustrations of the alternative segments.

To identify potential subtransmission line route alternatives within the Project Study Area, SCE considered the factors listed below.

- Existence of transmission rights-of-way
- Existence of subtransmission and distribution rights-of-way
- Ground topography and slope steepness
- Line route distance between substations
- Proximity to existing and planned roads
- Future visibility of line segments

2.4.2 ALTERNATIVE ROUTE SEGMENT DESCRIPTIONS

SCE considered several different routing alternatives for the Valley-Ivyglen 115 kV Subtransmission Line. Each alternative segment is located within the southern corridor. The southern corridor begins at the Valley Substation and terminates at the Ivyglen Substation. Alternative routes were subdivided into individual segments to facilitate project analysis. Twenty-one alternative route segments were identified within the southern corridor and evaluated for this project.

SCE divided the southern corridor into three regions: Eastern (City of Perris area), Central (City of Lake Elsinore area) and Western (Glen Ivy/Corona Lake area). This segmentation enhances the comparison of alternatives by grouping alternative route segments into regions with similar settings (and potential impacts).

Designations for each route segment discussed in the PEA include a letter representing the region (E = Eastern Region, C = Central Region, W = Western Region) and a number representing the segment within the region (i.e., E-1, C-1 or W-1). Table 2.4-1 summarizes the alternative route segments evaluated for this project. Figure 2.4-1 illustrates several alternative segments considered by SCE.

2.4.3 ALTERNATIVE ROUTE SEGMENTS ELIMINATED FROM FURTHER CONSIDERATION

Based on engineering and environmental considerations, six alternative route segments listed in Table 2.4-1 were considered infeasible. As such, Alternative Route Segments C-5, W-6, W-7, W-9, W-11, and W-12 were eliminated from further consideration. These six alternative route segments are discussed below.

Alternative Route Segment C-5

Alternative Route Segment C-5 would begin at the intersection of Highway 74 and Conard Avenue. It would proceed southwest along Highway 74 to Collier Avenue. It would then follow Collier Avenue northwest along the Valley-Elsinore-Ivyglen 115 kV line on new double circuit tubular steel poles (TSPs).

Construction would require removing the existing Valley-Elsinore-Ivyglen 115 kV line from service for extended periods of time over many weeks of construction. Since the Valley-Elsinore-Ivyglen 115 kV line is the only line feeding the Ivyglen Substation, removing this line from service would also result in taking the substation out of service. Associated extended service outages to the Glen Ivy Hot Springs community and surrounding area are not desirable. Therefore, this alternative is eliminated from further consideration.

Alternative Route Segment W-6

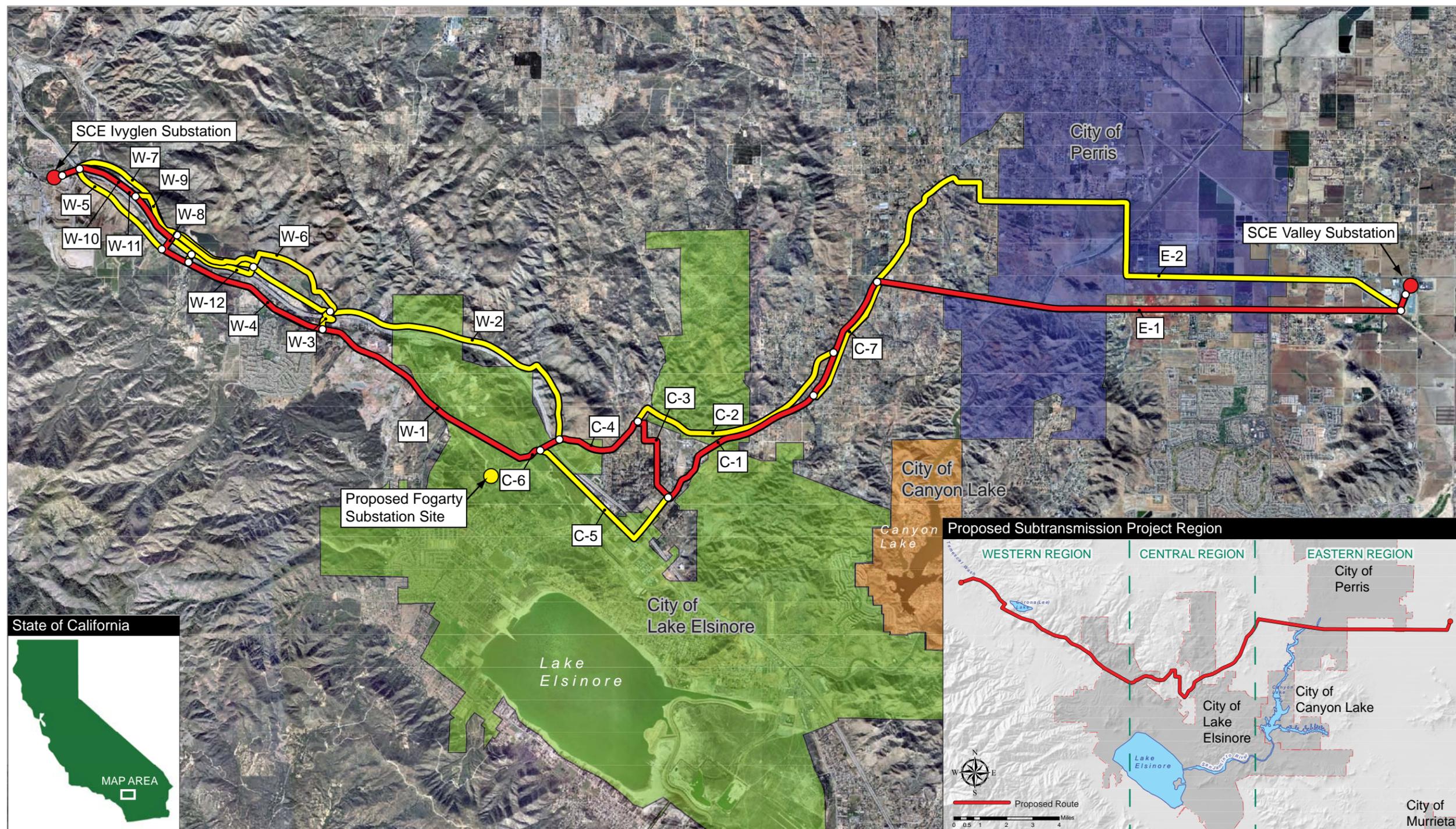
Alternative Route Segment W-6 would begin at the I-15 crossing over Temescal Canyon Road near its intersection with Concordia Ranch Road. Alternative Route Segment W-6 would run northeast a short distance along Concordia Ranch Road before traveling north and west on a new ROW. This new ROW would follow along the base of the hills north of I-15 toward the east side of Corona Lake before turning south to Temescal Canyon Road and following Temescal Canyon Road northwest for approximately 0.2 mile.

Alternative Route Segment W-6 is a continuation of Alternative Route Segment W-9 (discussed below). Since Alternative Route Segment W-9 would entail removing the existing Valley-Elsinore-Ivyglen 115 kV line from service for extended periods of time, and was eliminated from further consideration, Alternative Route Segment W-6 is also eliminated from further consideration.

Alternative Route Segment W-7

Alternative Route Segment W-7 would begin near the intersection of Temescal Canyon Road and Concordia Ranch Road. It would follow along the north side of Temescal Canyon Road, from I-15 west of Concordia Ranch Road to Mayhew Road. From Mayhew Road, it would travel west along Temescal Canyon Road to the Ivyglen Substation.

Figure 2.4-1: Proposed Subtransmission Route Segments, Alternative Route Segments, and Proposed New Substation Site



SOURCE: Southern California Edison 2006 and MHA Environmental Consulting 2007

LEGEND

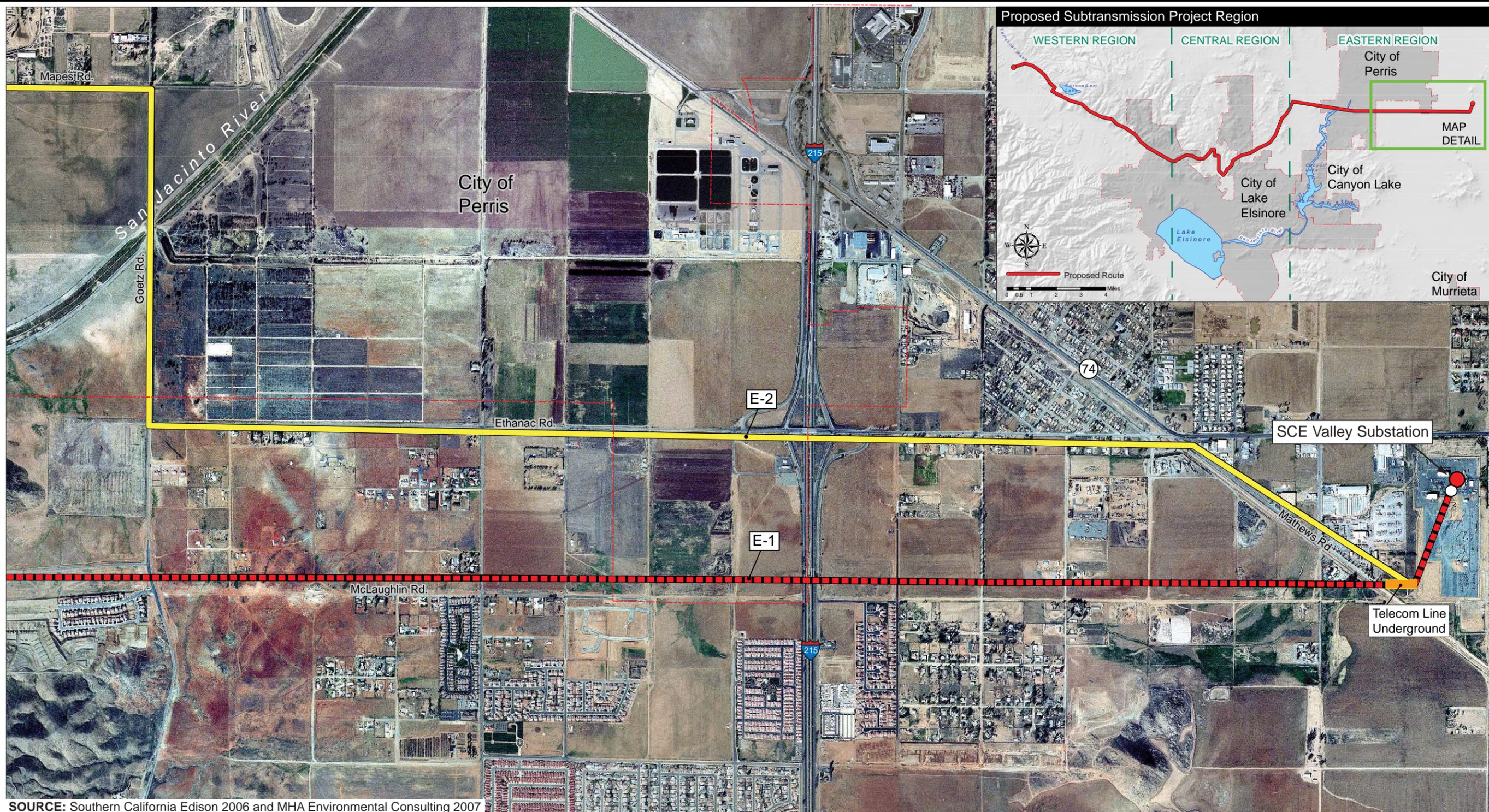
- Proposed New 115 kV Line Route Segment
- Alternative 115 kV Line Route Segment
- Existing Substation
- Proposed New Substation Site
- City of Canyon Lake
- City of Lake Elsinore
- City of Perris

0 0.5 1 2 3 4 Miles



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Figure 2.4-2: Proposed Subtransmission and Alternative Route Segments



SOURCE: Southern California Edison 2006 and MHA Environmental Consulting 2007

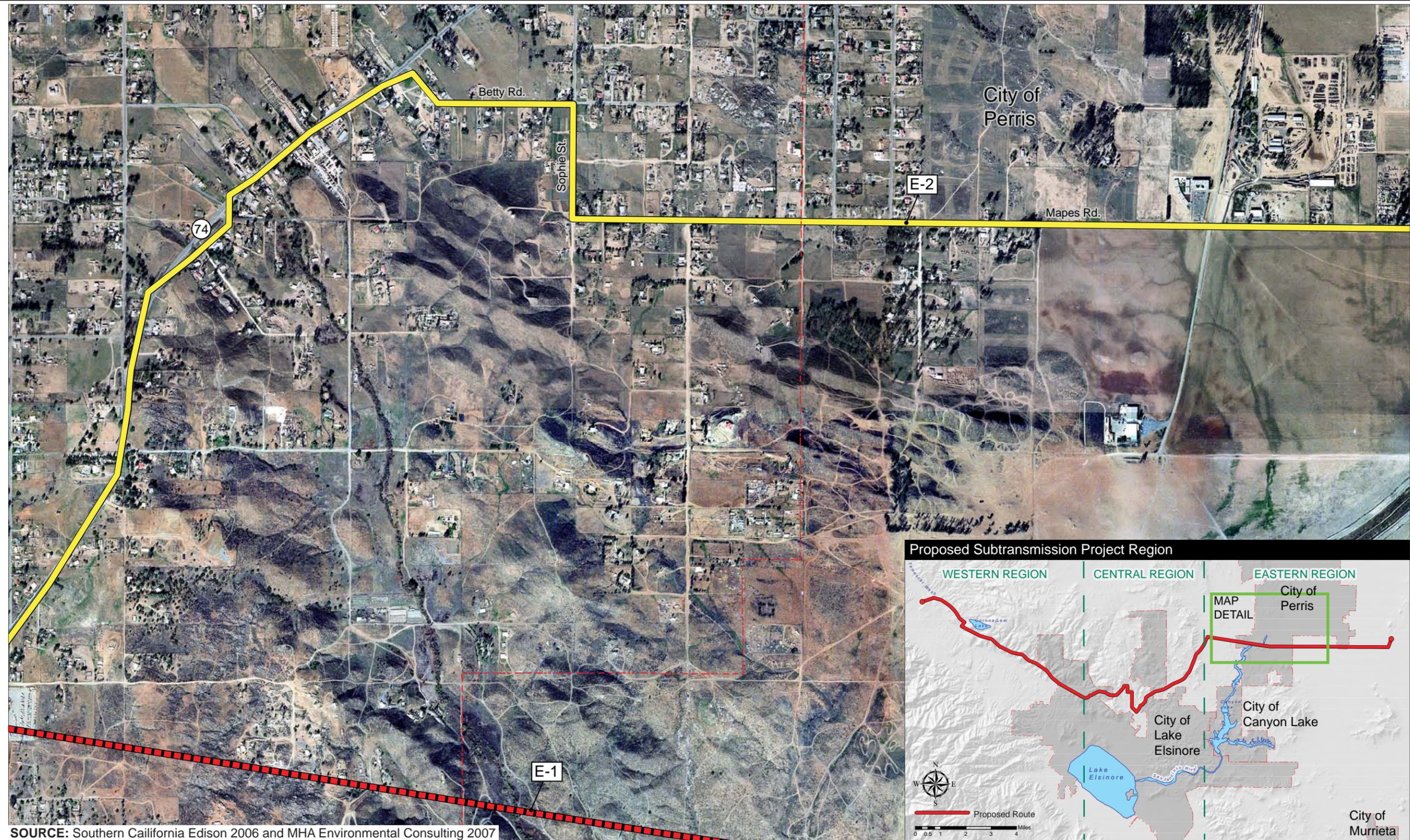
- LEGEND**
- Proposed Route: Segment Built Along Existing Distribution Lines
 - Proposed Route: Segment Built on New Infrastructure
 - Proposed Route: Segment Built Along 500 kV ROW
 - Alternative Route Segment

- Interstate Highway
 - State Route
 - Existing Substation
 - City Boundary
- 0 0.1 0.2 0.4 0.6 0.8 Miles



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Figure 2.4-3: Proposed Subtransmission and Alternative Route Segments



SOURCE: Southern California Edison 2006 and MHA Environmental Consulting 2007

LEGEND

- —○ Proposed Route: Segment Built Along Existing Distribution Lines
- —●●●○ Proposed Route: Segment Built on New Infrastructure
- ———○ Proposed Route: Segment Built Along 500 kV ROW
- ———○ Alternative Route Segment
- 15 Interstate Highway
- 74 State Route
- Existing Substation
- City Boundary

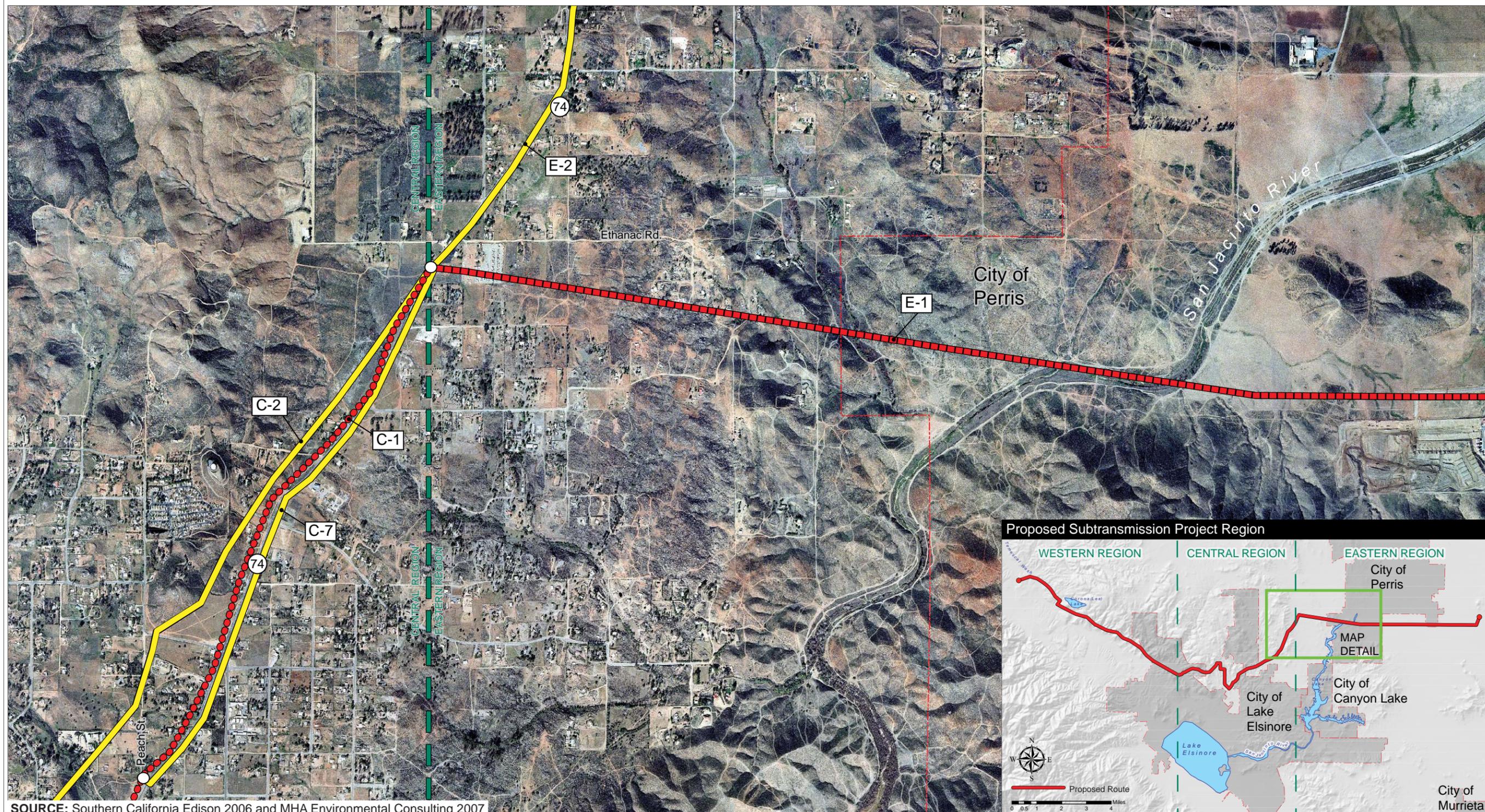
0 0.125 0.25 0.5 0.75 Miles

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Figure 2.4-4: Proposed Subtransmission and Alternative Route Segments

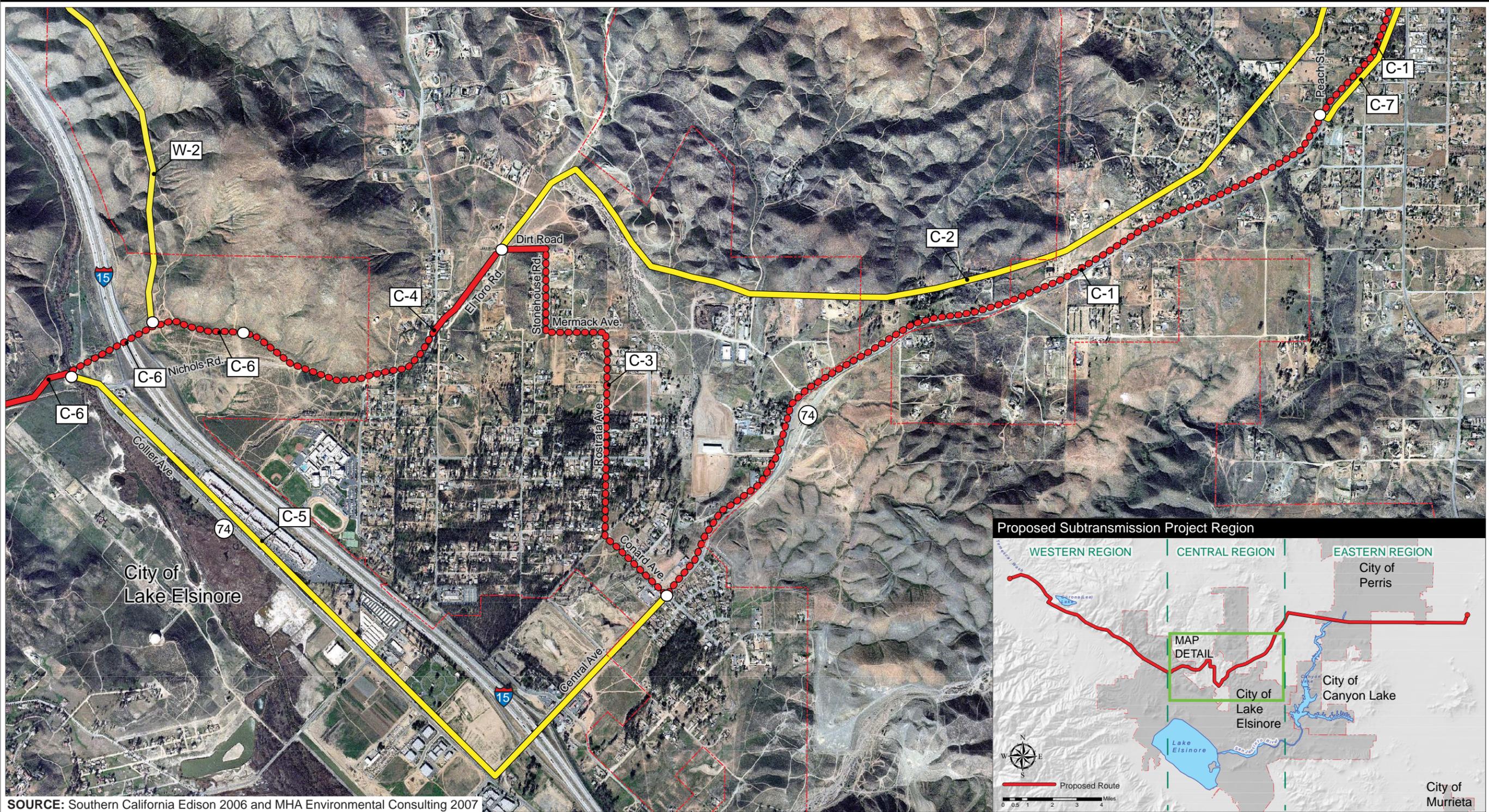


SOURCE: Southern California Edison 2006 and MHA Environmental Consulting 2007

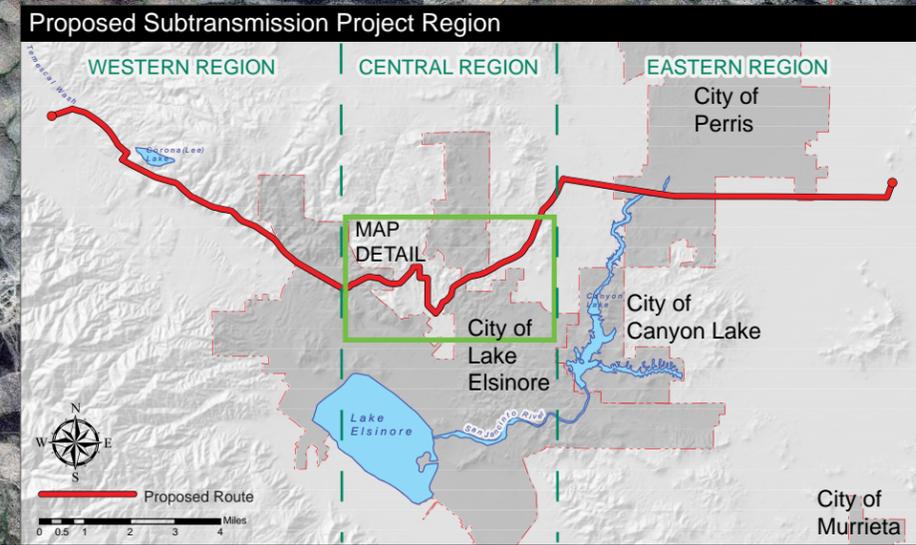
LEGEND Proposed Route: Segment Built Along Existing Distribution Lines Proposed Route: Segment Built on New Infrastructure Proposed Route: Segment Built Along 500 kV ROW Alternative Route Segment	Interstate Highway State Route 	Existing Substation City Boundary			
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Figure 2.4-5: Proposed Subtransmission and Alternative Route Segments



SOURCE: Southern California Edison 2006 and MHA Environmental Consulting 2007



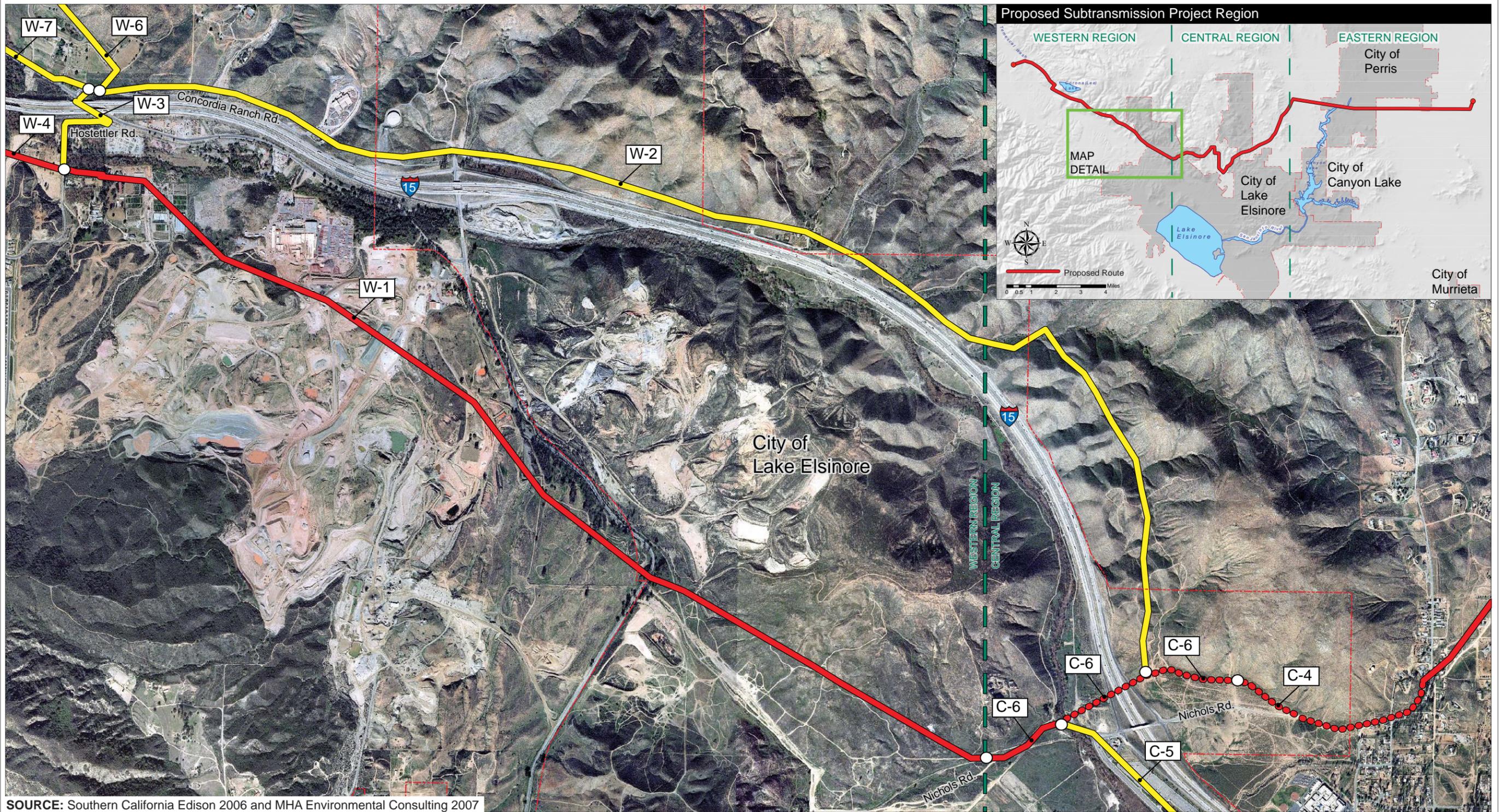
- LEGEND**
- Proposed Route: Segment Built Along Existing Distribution Lines
 - Proposed Route: Segment Built on New Infrastructure
 - Proposed Route: Segment Built Along 500 kV ROW
 - Alternative Route Segment

- Interstate Highway
 - State Route
 - Existing Substation
 - City Boundary
- 0 0.1 0.2 0.4 0.6 0.8 Miles



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Figure 2.4-6: Proposed Subtransmission and Alternative Route Segments



SOURCE: Southern California Edison 2006 and MHA Environmental Consulting 2007

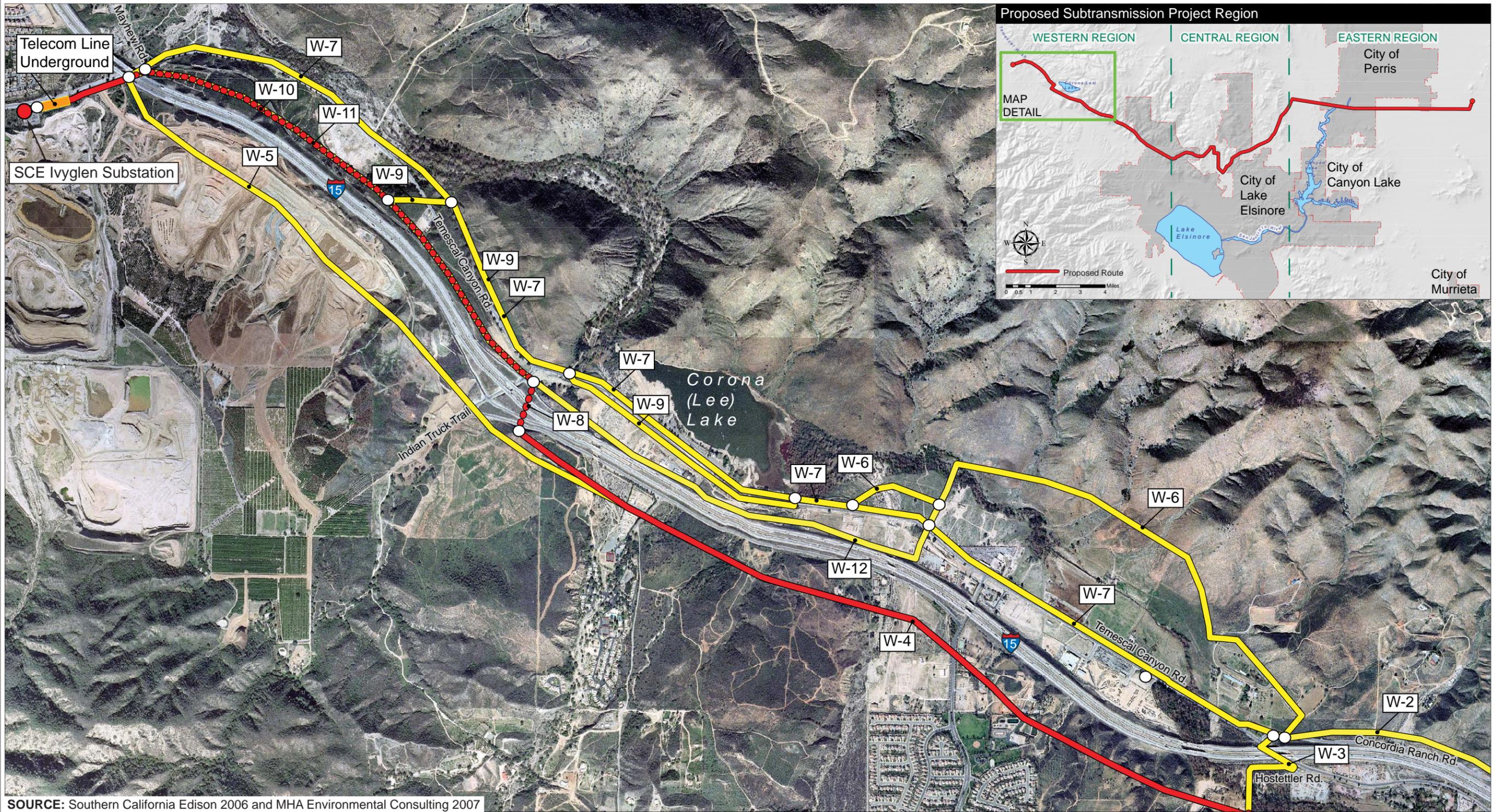
- LEGEND**
- Proposed Route: Segment Built Along Existing Distribution Lines
 - Proposed Route: Segment Built on New Infrastructure
 - Proposed Route: Segment Built Along 500 kV ROW
 - Alternative Route Segment

- Interstate Highway
 - State Route
 - Existing Substation
 - City Boundary
- 0 0.1 0.2 0.4 0.6 0.8 Miles



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Figure 2.4-7: Proposed Subtransmission and Alternative Route Segments



SOURCE: Southern California Edison 2006 and MHA Environmental Consulting 2007

- LEGEND**
- Proposed Route: Segment Built Along Existing Distribution Lines
 - Proposed Route: Segment Built on New Infrastructure
 - Proposed Route: Segment Built Along 500 kV ROW
 - Alternative Route Segment

- Interstate Highway
- State Route

- Existing Substation
- City Boundary



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Table 2.4-1: Alternative Route Segment Summary

Alternative Segment Designation	Line Description
E-1	Exits the Valley Substation from the south and runs approximately 7.5 miles west along the north side of an existing 500 kV transmission line ROW, across I-215, until it reaches Highway 74.
E-2	Proceeds northwest from Matthews and McLaughlin Roads. Follows Ethanac Road west to Goetz Road. From this point, it proceeds north on Goetz Road to Mapes Road, and then to Sophie Street. It follows Sophie Street north on to Betty Road, then proceeds west on Betty Road to Highway 74 and follows the highway to Ethanac Road.
C-1	Proceeds southwest along the northwest side of Highway 74, from the existing 500 kV transmission ROW to Conard Avenue.
C-2	Proceeds southwest along the existing 33 kV and 12 kV lines that are located northwest of Highway 74, for approximately 5.8 miles, turning west until reaching El Toro Road.
C-3	From Highway 74, travels northwest on Conard Avenue; north on Rostrata Avenue; west on Mermack Avenue; north on Stonehouse Road; west on a dirt road and an existing 12 kV line to El Toro Road.
C-4	Follows El Toro Road for approximately 1 mile; turns west and runs approximately 0.5 miles along the north side of Nichols Road.
C-5	Proceeds southwest along Highway 74 from Conard Avenue to Collier Avenue. Turns northeast and follows Collier Avenue along the Valley-Elsinore-Ivyglen 115 kV line on new double circuit TSPs to Nichols Road.
C-6	Proceeds west near Nichols Road, crosses I-15, and then back onto Nichols Road for approximately 1 mile to an existing 33 kV line ROW.
C-7	Travels along the southeast side of Highway 74. Follows Highway 74 southwest from the existing 500 kV transmission line ROW to Peach Street. Crosses to the northwest side of Highway 74 at Peach Street.
W-1	Follows an existing 33 kV line ROW for approximately 4 miles from Nichols Road to Hostettler Road.
W-2	Follows I-15 north from Nichols Road to Concordia Ranch Road; travels north through Bureau of Land Management (BLM) land to Big Canyon Drive and Walker Canyon Road; proceeds west along the north side of I-15 to Concordia Ranch Road and Temescal Canyon.
W-3	Crosses I-15 on two existing 115 kV TSPs at the Temescal Canyon Road underpass.
W-4	From the intersection of Hostettler Road and Desperado Drive, follows the south side of I-15 northwest along an existing 33 kV line to an existing 12 kV line southeast of Indian Truck Trail.
W-5	Follows the south side of I-15 northwest, from the intersection of Hostettler Road and Desperado Drive, to Temescal Canyon Road, east of the Ivyglen Substation.
W-6	Follows the base of the hills north of I-15 on a new ROW, toward the east side of Corona Lake for 1.6 miles.
W-7	Follows the north side of Temescal Canyon Road from west of Concordia Ranch Road to Mayhew Road; from Mayhew Road west to the Ivyglen Substation.
W-8	Crosses over I-15 a short distance southeast of Indian Truck Trail, near an existing 12 kV line crossing.
W-9	Follows Temescal Canyon Road for approximately 2 miles, with a portion on existing 115 kV poles (south side Temescal Canyon Road) and a portion on new poles (north side Temescal Canyon Road).
W-10	From the crossing over I-15 southeast of Indian Truck Trail; continues on the north side of I-15 between I-15 and Temescal Canyon Road, toward I-15 and Temescal Canyon Road overpass and into the Ivyglen Substation.
W-11	Crosses to the south side of Temescal Canyon Road, approximately 1 mile southeast of the Temescal Canyon Road underpass beneath I-15, and parallels Temescal Canyon Road between I-15 and an existing 115 kV line; the proposed new line would be on the same poles with the existing line from I-15 crossing into the Ivyglen Substation.
W-12	Proceeds northwest on the north side of I-15, between I-15 & Temescal Canyon Road, crossing Indian Truck Trail, then continuing northwest toward the Temescal Canyon Road underpass at I-15.

SOURCE: SCE 2006

Sections of Alternative Route Segment W-7 would cross through riparian areas and active river channels. As such, potentially adverse environmental impacts to biological resources and water quality would result. Placing electrical facilities within an active river channel would be inconsistent with the Riverside County General Plan, Safety Element. Poles along the route section within the active river channel would be subject to erosion and damage, thus creating a system reliability issue.

Alternative Route Segment W-7 would require installing new TSPs along Temescal Canyon Road directly across from the existing Valley-Elsinore-Ivyglen 115 kV line. This would create significant visual impacts because 115 kV subtransmission lines would have to be located on both sides of the narrow Temescal Canyon Road. For these reasons, this alternative is eliminated from further consideration.

Alternative Route Segment W-9

Alternative Route Segment W-9 would begin on the north side of Temescal Canyon Road approximately 0.25 miles east of Corona Lake. It would follow along the north side of Temescal Canyon Road a short distance before crossing to the south side of Temescal Canyon Road. It would include new double-circuit structures for about 0.6 miles near Corona Lake before crossing back to the north side of Temescal Canyon Road. It would travel along the north side of Temescal Canyon Road for approximately 0.5 miles until crossing Temescal Canyon Road again to avoid an active river channel.

Sections of Alternative Route Segment W-9 would require rebuilding the existing Valley-Elsinore-Ivyglen 115 kV line to a double circuit pole line that would include both the existing 115 kV line and the new Valley-Ivyglen 115 kV line on the south side of Corona Lake. New double-circuit poles would be required along the route section on the south side of Temescal Canyon Road. Construction would require removing the existing Valley-Elsinore-Ivyglen 115 kV line from service for extended periods of time over many weeks of construction. Since the Valley-Elsinore-Ivyglen 115 kV line is the only line feeding the Ivyglen Substation, removing this line from service would also result in taking the substation out of service. Associated extended service outages to the Glen Ivy Hot Springs community and surrounding area are not desirable. Therefore, this alternative is eliminated from further consideration.

Alternative Route Segment W-11

Alternative Route Segment W-11 would cross Temescal Canyon Road and the existing Valley-Elsinore-Ivyglen 115 kV line, and continue northwest for approximately one mile. It would be located between Temescal Canyon Road and I-15. Alternative Route Segment W-11 would cross I-15 at Temescal Canyon Road and continues into the Ivyglen Substation.

Alternative Route Segment W-11 would be a continuation of Alternative Route Segment W-9. Since Alternative Route Segment W-9 would entail removing the existing Valley-Elsinore-Ivyglen 115 kV line from service for extended periods of time, and was eliminated from further consideration, Alternative Route Segment W-11 is also eliminated from further consideration.

Alternative Route Segment W-12

Alternative Route Segment W-12 would begin at a point approximately 0.5 miles northwest of the intersection of Horsethief Canyon and Temescal Canyon Roads. From this point, it would proceed in a southwestern direction, crossing Temescal Creek, until reaching an existing 12 kV circuit. It would continue southwest toward I-15, crossing Temescal Canyon Road. Between Temescal Canyon Road and I-15, it would proceed northwest between Temescal Canyon Road and I-15. It

would continue northwest, crossing Indian Truck Trail, until reaching Temescal Canyon Road and the existing 115 kV line on the east side of I-15.

The eastern portion of Alternative Route Segment W-12 would cross several existing businesses, including several large above ground storage tanks. Selecting this alternative route segment would likely require purchasing these sites and relocating the businesses. Therefore, this alternative segment is eliminated from further consideration.

2.4.4 ALTERNATIVE ROUTE SEGMENTS EVALUATED

Fifteen alternative segments comprise the alternative route segments evaluated in this PEA. Each of the fifteen remaining alternative segments evaluated in the PEA are described in Table 2.4-2.

2.4.5 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

SCE examined a total of 15 segments (excluding the six segments eliminated from further consideration described in Section 2.4.3 above and shown in Figure 2.4-1) for their potential environmental impacts. Table 2.4-3 presents in summary form the level of potential environmental impacts for each of the 15 segments and for each of the 16 environmental parameters evaluated in the PEA. The shaded columns represent the segments comprising the Proposed Route.

Alternative Route Segment	Description
E-1	Exits the Valley Substation from the south and runs approximately 7.5 miles west along the north side of an existing 500 kV transmission line ROW, across I-215, until it reaches Highway 74. Alternative Route Segment E-1 would consist of approximately 192 Light Duty Steel (LDS) poles, eight TSPs, and 40,000 circuit feet of 954 Stranded Aluminum Conductor (SAC) along approximately 7.5 miles.
E-2	Proceeds northwest from Matthews and McLaughlin Roads. Follows Ethanac Road west to Goetz Road. From this point, it proceeds north on Goetz Road to Mapes Road, and then to Sophie Street. It follows Sophie Street north on to Betty Road, then proceeds west on Betty Road to Highway 74 and follows the highway to Ethanac Road. Alternative Route Segment E-2 would consist of approximately 85 LDS poles, and approximately 10 TSP. Alternative Route Segment E-2 would include approximately 131,000 circuit feet of 954 SAC. Existing 12 kV lines would be transferred to new poles along approximately 1 mile of this alternative route segment. No SCE overhead utilities are located on Betty Road, Mapes Road, or Goetz Road (approximately 9 miles).
C-1	Proceeds southwest along the northwest side of Highway 74, from the existing 500 kV transmission ROW to Conard Avenue. Alternative Route Segment C-1 would consist of approximately 120 LDS poles, five TSPs, and 24,000 circuit feet of 954 SAC along approximately 4.5 miles.
C-2	Proceeds southwest along the existing 33 kV and 12 kV lines that are located northwest of Highway 74, for approximately 5.8 miles, turning west until reaching El Toro Road. Alternative Route Segment C-2 would consist of approximately 115 LDS poles, two TSPs, and 31,500 circuit feet of 954 SAC along approximately 6 miles. This portion of the segment would include about 0.5 miles of new construction along the northeast side (upslope) of a dry wash near Chippewa Road.
C-3	From Highway 74, travels northwest on Conard Avenue; north on Rostrata Avenue; west on Mermack Avenue; north on Stonehouse Road; west on a dirt road and an existing 12 kV line to El Toro Road. Alternative Route Segment C-3 would consist of approximately 35 LDS poles, five TSPs, and 6,800 circuit feet of 954 SAC along approximately 1.3 miles.

Table 2.4-2 (Continued): Alternative Route Segments Evaluated	
Alternative Route Segment	Description
C-4	<p>Follows El Toro Road for approximately 1 mile; turns west and runs approximately 0.5 miles along the north side of Nichols Road.</p> <p>Alternative Route Segment C-4 would consist of approximately 29 LDS poles, four TSPs, and 6,300 circuit feet of 954 SAC along approximately 1.2 miles.</p>
C-6	<p>Proceeds west near Nichols Road, crosses I-15, and then back onto Nichols Road for approximately 1 mile to an existing 33 kV line ROW.</p> <p>Alternative Route Segment C-6 would consist of approximately 23 LDS poles, six TSPs, and 6,900 circuit feet of 954 SAC along approximately 1.3 miles.</p>
C-7	<p>Travels along the southeast side of Highway 74. Follows Highway 74 southwest from the existing 500 kV transmission line ROW to Peach Street. Crosses to the northwest side of Highway 74 at Peach Street.</p> <p>Alternative Route Segment C-7 would consist of approximately 37 LDS poles, three TSPs, and 7,400 circuit feet of 954 SAC along approximately 1.4 miles.</p>
W-1	<p>Follows an existing 33 kV line ROW for approximately 4 miles from Nichols Road to Hostettler Road.</p> <p>Alternative Route Segment W-1 would consist of approximately 93 LDS poles, two TSPs, and 18,500 circuit feet of 954 SAC along approximately 3.5 miles.</p>
W-2	<p>Follows I-15 north from Nichols Road to Concordia Ranch Road; travels north through Bureau of Land Management (BLM) land to Big Canyon Drive and Walker Canyon Road; proceeds west along the north side of I-15 to Concordia Ranch Road and Temescal Canyon.</p> <p>Alternative Route Segment W-2 would consist of approximately 110 LDS poles and 21,500 circuit feet of 954 SAC along approximately 4 miles.</p>
W-3	<p>Crosses I-15 on two existing 115 kV TSPs at the Temescal Canyon Road underpass.</p> <p>This segment may require replacing the existing TSPs with different TSPs designed to accommodate lines crossing at different angles.</p> <p>Alternative Route Segment W-3 would consist of approximately 10 LDS poles, two TSPs, and approximately 2,200 circuit feet of 954 SAC along approximately 0.5 miles.</p>
W-4	<p>From the intersection of Hostettler Road and Desperado Drive, follows the south side of I-15 northwest along an existing 33 kV line to an existing 12 kV line southeast of Indian Truck Trail.</p> <p>Alternative Route Segment W-4 would consist of approximately 70 LDS poles and 13,200 circuit feet of 954 SAC along approximately 2.5 miles.</p>
W-5	<p>Follows the south side of I-15 northwest, from the intersection of Hostettler Road and Desperado Drive, to Temescal Canyon Road, east of the Ivyglen Substation.</p> <p>Alternative Route Segment W-5 would consist of approximately 125 LDS poles and 25,000 circuit feet of 954 SAC along approximately 5 miles.</p>
W-8	<p>Crosses over I-15 a short distance southeast of Indian Truck Trail, near an existing 12 kV line crossing.</p> <p>Alternative Route Segment W-8 would consist of approximately five TSPs and 1,000 circuit feet of 954 SAC along approximately 0.2 miles.</p>
W-10	<p>From the crossing over I-15 southeast of Indian Truck Trail; continues on the north side of I-15 between I-15 and Temescal Canyon Road, toward I-15 and Temescal Canyon Road overpass and into the Ivyglen Substation.</p> <p>Alternative Route Segment W-10 would consist of approximately 53 LDS poles, ten TSPs, and 13,200 circuit feet of 954 SAC along approximately 2.5 miles.</p>

SOURCE: SCE 2006

Table 2.4-3: Summary of Impacts and Significance

Line Segment ----- Environmental Parameter	E-1	E-2	C-1	C-2	C-3	C-4	C-6	C-7	W-1	W-2	W-3	W-4	W-5	W-8	W-10
Aesthetics															
Agricultural Resources															
Air Quality															
Biological Resources															
Cultural Resources															
Geology, Soils, and Seismicity															
Hazards/Hazardous Materials															
Hydrology and Water Quality															
Land Use and Planning															
Mineral															
Noise															
Population and Housing															
Public Services															
Recreation															
Transportation and Traffic															
Utilities and Service Systems															

FOOTNOTE: Highlighted columns are route segments comprising the Proposed Route.

KEY:

= Potentially significant and not mitigable (to less than significant)

= Potentially significant but mitigable (to less than significant)

= Temporarily potentially significant but mitigable (to less than significant)

= Not potentially significant

= No impact

SOURCE: MHA 2006

Eastern Region

There are two potential route segments in the Eastern Region. Each of the two segments provide complete, alternative paths from the Valley Substation to a common ending point on Highway 74, although Segment E-2 is approximately 1.5 miles longer than Segment E-1. While the two segments would generate similar levels of impact across most of the parameters, Segment E-2 would have significant and unavoidable impacts associated with aesthetics as discussed in Chapter 4.2 of this PEA. Accordingly, Segment E-1 is the preferred segment in the Eastern Region.

Central Region

There are a total of seven potential segments in the Central Region. Unlike the two Eastern Region segments, the seven segments in the Central Region do not provide seven complete alternative paths. Rather, the seven segments provide a number of paths comprised of several of the segments. Segments C-1, C-2, and C-7 are the segments that begin where the Eastern Region ends. The alternatives for Segments C-1 and C-7 include adding Segments C-3, C-4, and C-6. Segment C-2 requires adding a combination of Segments C-4 and C-6.

These combinations of segments to cross the Central Region result in three possible paths. Segment C-7 would generate significant and unavoidable impacts associated with aesthetics as discussed in Chapter 4.2 of this PEA. Therefore, this segment and the combinations of Segments C-3, C-4, and C-6 have greater impacts than combinations that include C-1 or C-2. That leaves two viable alternatives: alternative one would consist of C-1, C-3, C-4, and C-6 and alternative two would consist of C-2, C-4, and C-6. The environmental impacts associated with either alternative path would be comparable, but the alternative path utilizing Segments C-2, C-4, and C-6 presents more access and maintenance challenges and potential system disruptions. Accordingly, Segments C-1, C-3, C-4, and C-6 are the preferred segments in the Central Region.

Western Region

The Western Region is comprised of eight segments. Similar to the Central Region, the segments are not distinct, complete paths from one side of the region to the other, but rather, a combination of segments are required to move from the end of the Central Region to the Ivyglen Substation.

The elimination of Segments W-7, W-9, and W-12 due to construction difficulties, as described above in section 2.4.3, also effectively eliminates Segments W-6 and W-11 from further consideration. Absent Segment W-9, Segment W-6 has no connection at its western end and Segment W-11 has no connection at its eastern end.

Of the remaining viable Western Region segments, there are three viable paths: (1) Segments W-1, W-4, W-8, and W-10; (2) W-2, W-3, W-4, W-8, and W-10; or (3) W-1, W-4, and W-5. The combination of Segments W-2, W-3, W-4, W-8, and W-10 would require replacing the existing crossing of I-15, resulting in removing the Valley-Elsinore-Ivyglen 115 kV line from service. Segments W-1, W-4, and W-5 would generate significant land use conflicts as discussed in Chapter 4.10 of this PEA. The remaining combination of Segments W-1, W-4, W-8, and W-10 would generate the least number of significant effects, and are therefore, they are the preferred segments for the Western Region.

2.4.6 RECOMMENDATION-PROPOSED ROUTE ALTERNATIVE

Nine discreet alternative route segments, totaling approximately 25 miles, comprise the Proposed Route for the new Valley-Ivyglen 115 kV Subtransmission Line. From east to west, these segments are designated Segments E-1, C-1, C-3, C-4, C-6, W-1, W-4, W-8, and W-10, as described above in Table 2.4-2. Segment E-1 would begin at the Valley Substation, while Segment W-10 would terminate at the Ivyglen Substation.

Taking into account environmental impacts, operational factors, and reliability considerations, Segments E-1, C-1, C-3, C-4, C-6, W-1, W-4, W-8, and W-10 were selected as the Proposed Route. The Proposed Route is carried forward in the Valley-Ivyglen PEA and defined as part of the Proposed Project discussed in the Project Description (Chapter 3).

2.5 Fogarty Substation Site Alternatives

2.5.1 SUBSTATION SITE SELECTION

SCE has identified the Fogarty Substation Project Area (Figure 2.5-1) as the area in which the Fogarty Substation must be located in order to optimize load balancing and distribution line lengths. Within the Project Area, SCE identified potential substation sites of at least three acres and evaluated each potential site applying a series of criteria, including, but not limited to:

- Proximity of each site to SCE's existing subtransmission line infrastructure
- Engineering constraints imposed by each site
- Location of each site relative to growth within the Fogarty Electrical Needs Area
- Relative compatibility with existing nearby land uses
- Relative compatibility with city and county land uses
- Potential environmental constraints imposed by each site

Based on the criteria listed above, SCE identified three possible substation sites. As discussed below, SCE's analysis indicates that Fogarty Site Alternative A is preferred to Site Alternative B and Site Alternative C. These three site alternatives are shown on Figure 2.5-2.

2.5.2 SITE ALTERNATIVES EVALUATED IN THE FOGARTY PEA

Fogarty Substation Site Alternative A

Fogarty Substation Site Alternative A is a 6.6-acre parcel of land located east of Terra Cotta Road, west of future Dolbeer Street, south of future Kings Highway and north of future Hoff Avenue. It is a rectangular shaped parcel of land in the City of Lake Elsinore currently owned by SCE. The property is zoned single-family residential by the City of Lake Elsinore. The existing Valley-Elsinore-Ivyglen 115 kV subtransmission line traverses this property along the north side.

Fogarty Substation Site Alternative B

Fogarty Substation Site Alternative B is a 5.7-acre parcel of land located directly west of Site Alternative A. It is a generally rectangular shaped parcel of land in the City of Lake Elsinore currently owned by SCE. Site Alternative B is located west of Terra Cotta Road, south of future Kings Highway and north of future Hoff Avenue. The property is zoned single-family residential by the City of Lake Elsinore. SCE's temporary Dryden 33/12 kV Substation is currently located on the northeast corner of this site. The existing Valley-Elsinore-Ivyglen 115 kV subtransmission line traverses this property along the north and west side.

Fogarty Substation Site Alternative C

Fogarty Substation Site Alternative C is a 12.3-acre parcel of land located approximately 1,750 feet east of Site Alternative A. The overall site is rectangular in shape and oriented northwest to southeast along its longer axis. The northwesterly side of the site fronts for nearly 550 feet along Pierce Street, and approximately 230 feet west of Baker Street located in the City of Lake Elsinore. The property is zoned as limited manufacturing by the City of Lake Elsinore, and is not owned by

SCE. The existing Valley-Elsinore-Ivyglen 115 kV subtransmission line bisects this property in a northeasterly direction.

2.5.3 RECOMMENDATION-PROPOSED FOGARTY SUBSTATION SITE ALTERNATIVE

Fogarty Substation Site Alternative A was determined to be the preferred alternative Fogarty Substation site. SCE currently owns both Site Alternative A and Site Alternative B. Site Alternatives A and B are each preferable to Site Alternative C because of their proximity to the load to be served, and to the location of four existing distribution circuits that will be served by the new substation. Site Alternatives A and B are also preferable to Site Alternative C because Terra Cotta Road will be improved as a condition of approval of the Alberhill and Lakeside Palms communities, providing access for circuits to exit the new substation. As compared to Site Alternatives A and B, Site Alternative C would require significant distribution line extension to the four existing circuits currently served by the Dryden 33/12 kV Substation on undeveloped roads. When the areas are developed the roads will likely be realigned and the lines would need to be relocated. Site Alternative C is located in close proximity to a blue line drainage southeast of the Site Alternative. This drainage could pose engineering and construction problems. Site Alternatives A and B are both compatible with surrounding land use designations, and pose the least engineering and environmental constraints to substation construction.

As compared to Site Alternative A, Site Alternative B would require significantly more grading and would require the construction of retaining walls. Site Alternative B would also require protection or removal of known cultural resources. The temporary Dryden 33/12 kV Substation would not prevent construction on Site Alternative B; however, it would pose greater constraints to substation construction than Site Alternative A.

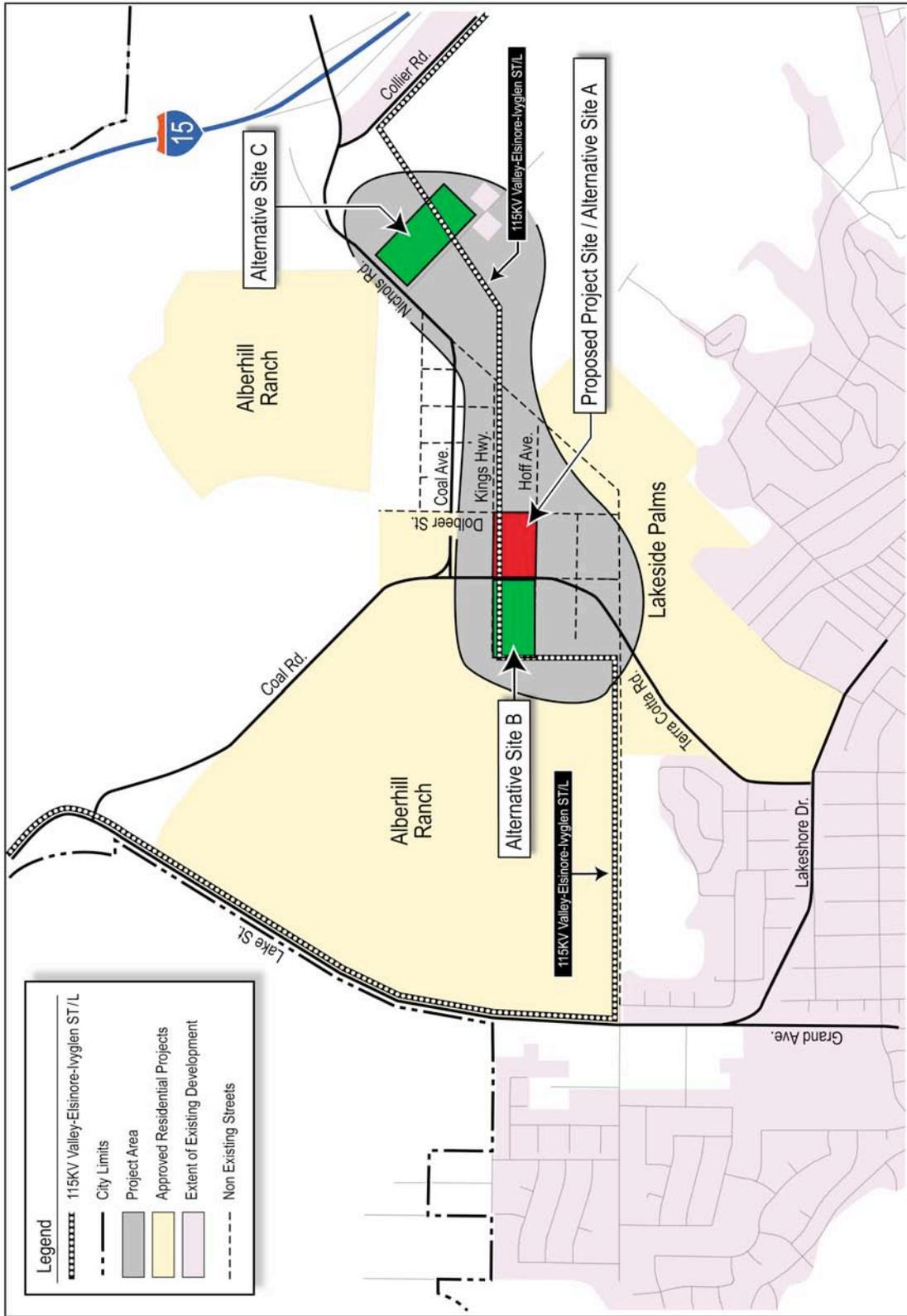
Based on the above analysis, SCE recommends construction of the Fogarty Substation facilities on Site Alternative A.

2.6 Proposed Project Alternative Summary

In determining the components that constitute the preferred project, SCE first examined the electrical service needs for both the Valley-Ivyglen Electrical Needs Area and the Fogarty Electrical Needs Area, and selected two independent system alternatives that best met these needs. These system alternatives include constructing a new 115 kV subtransmission line that traverses between the Valley 500/115 kV and Ivyglen 115/12 kV substations, and constructing a new 115/12 kV substation (Fogarty Substation) that would connect with the existing Valley-Elsinore-Ivyglen 115 kV Subtransmission Line.

Once the preferred Valley-Ivyglen system alternative had been selected, SCE then examined three possible corridors for the new Valley-Ivyglen 115 kV Subtransmission Line, including a northern, central, and southern corridor. Based on potential environmental impacts, costs, and the ability to meet the purpose and need of the project, SCE selected the southern corridor as the preferred corridor. SCE then analyzed the possible route segments within the southern corridor, and selected a route that minimized the potential impacts of the new subtransmission line while still achieving the project goals. The preferred route includes route segments E-1, C-1, C-3, C-4, C-6, W-1, W-4, W-8, and W-10, with Segment E-1 beginning at the Valley Substation and Segment W-10 terminating at the Ivyglen Substation.

In a similar manner to the selection of the preferred corridor and route segments for the Valley-Ivyglen 115 kV Subtransmission Line, SCE analyzed several site alternatives for the placement of the new Fogarty 115/12 kV Substation. Based on potential environmental impacts and costs, SCE selected Fogarty Substation Site Alternative A as the preferred location for the new substation.



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FIGURE 2.5-1: FOGARTY SUBSTATION PROJECT AREA

