Section 1

1.1 PROJECT PURPOSE

The purpose of the project is to build electrical facilities necessary to serve forecasted demand in Calimesa, Beaumont, and the surrounding areas of unincorporated northern Riverside County (Electrical Needs Area) and to maintain safe and reliable service to customers in this area. Studies indicate that increased electrical demand in the Electrical Needs Area could exceed SCE's existing electrical system capacity serving this area as early as summer of 2007.

In addition to serving the forecasted demand in the Electrical Needs Area, the project would relieve the Vista System and Devers System by transferring electrical demand from these systems to the new El Casco System. The project would also improve electrical reliability and operational flexibility in northern Riverside County.

To maintain safe and reliable service and serve customer electrical demands, SCE proposes to construct the El Casco System Project (Proposed Project). Overall, the Proposed Project would include the following elements:

- Construct a new 220/115/12 kilovolt (kV) substation within the Norton Younglove Reserve in the County of Riverside (El Casco Substation), associated 220 kV and 115 kV interconnections, and new 12 kV line getaways.

- Replace approximately 13 miles of existing single-circuit 115 kV subtransmission lines with new, higher capacity double-circuit 115 kV subtransmission lines and replace support structures within existing SCE rights-of-way in the Cities of Banning and Beaumont, and unincorporated Riverside County.

- Replace approximately 1.9 miles of existing single-circuit 115 kV subtransmission lines with new, higher capacity single-circuit 115 kV subtransmission lines and replace support structures within existing SCE rights-of-way in the City of Beaumont and unincorporated Riverside County.

- Replace approximately 0.5 miles of existing single-circuit 115 kV subtransmission lines with new, higher capacity single-circuit 115 kV subtransmission lines on existing support structures within existing SCE rights-of-way in the City of Beaumont and unincorporated Riverside County.

- Rebuild 115 kV switchracks within Banning and Zanja Substations in the Cities of Banning and Yucaipa, respectively.

- Install telecommunications equipment at the proposed El Casco Substation and at SCE's existing Mill Creek Communications Site.

- Install fiber optic cables within public streets and on existing SCE structures between the Cities of Redlands and Banning.

Over the next five years, SCE is expecting to construct an unprecedented level of electrical projects throughout its service territory. As a result, SCE will be constrained in its ability to construct these projects because of the availability of necessary resources, specifically in the areas of financing and manpower. To manage the impact of the workload on available resources, engineering and construction efforts must be distributed over time. Therefore, the El Casco System Project would be constructed from approximately June 2008 to June 2010, and the project would be operational in two phases. The 115/12 kV portion of the substation would be operational by June 2009. The 220/115 kV portion of the substation and remaining components of the project would be operational by June 2010.

Upon completion of the 115/12 kV portion of the substation, the substation would serve local load currently served by Maraschino Substation. Upon completion of the 220/115 kV portion of the substation, the new El Casco 115 kV System would be created. This system would serve five existing distribution substations that are currently served by the Vista and Devers 115 kV Systems (Crafton Hills, Maraschino, Mentone, Zanja, and Banning Substations). See Figure 1-1, Electrical Needs Area and Affected SCE Substations.

Under the Federal Energy Regulatory Commission (FERC), North American Electric Reliability Council (NERC), Western Energy Coordinating Council (WECC), and California Public Utilities Commission (CPUC) rules, guidelines and regulations, electrical transmission, subtransmission, and distribution systems must have sufficient capacity to maintain safe, reliable, and adequate service to customers. The safety and reliability of the systems must be maintained under normal conditions when all facilities are in service, and also maintained under abnormal conditions when facilities are out of service due to equipment or line failures, maintenance outages, or outages that cannot be predicted or controlled which are caused by weather, earthquakes, traffic accidents, and other unforeseeable events.

SCE utilizes a multi-step planning process to ensure the necessary system facilities are developed in time to meet increased electrical demand. The planning process begins with the development of a peak demand forecast for each substation. Peak demand forecasts are developed using historical data and trends in population data, urbanization data, and meteorological data. Because electrical systems have certain loading limits, technical engineering studies are then conducted to determine whether the forecasted peak demand can be accommodated on the existing transmission, subtransmission, and distribution systems. When projections indicate that these limits will be exceeded within an appropriate planning horizon, a project is proposed to keep the electrical system within specified loading limits. In addition to considering the operating limits of a single substation, SCE evaluates the ability to transfer the load from that single substation to adjacent substations in the system. This

process has identified the need for the El Casco System Project as described in the next section.

1.2 PROJECT NEED

Currently, Maraschino Substation, located in the eastern portion of the Vista System, serves the rapidly growing development in this area. However, as discussed below, the Vista System (and Maraschino Substation in particular) cannot accommodate the anticipated load growth. Therefore, the El Casco Substation is needed to serve increased electrical demand in the Electrical Needs Area. In addition, other components of the Proposed Project (such as modifications to existing substations), are needed to address reliability issues and to relieve load within the Devers and Vista 115 kV Systems.

1.2.1 Vista System Overview

The Vista System serves approximately 150,000 metered customers and is bounded to the north by the San Bernardino National Forest, to the south and west by SCE's service territory, and to the east by the City of Banning's municipal utility service territory. The Vista System is comprised of the Vista 220/115 kV Substation and connecting subtransmission and distribution facilities. The Vista 220/115 kV Substation provides electrical energy to fifteen 115 kV substations within the Vista System, which include: Maraschino, Mentone, Crafton Hills, and Zanja Substations.

1.2.1.1 Vista System – Vista 220/115 kV Substation

Vista Substation reduces voltage from 220 kV to 115 kV with two 280 Mega Volt-Ampere (MVA) transformers. The amount of electrical load that can be served in northern Riverside County is limited to the maximum amount of electrical power that these two transformers can deliver before exceeding their operating limits. Operating limits are established to ensure that SCE maintains the required capacity and operational flexibility to safely and reliably meet the projected peak electrical demands during periods of extreme heat under both normal and abnormal conditions. Based on these factors, the capacity of the existing Vista System is limited to 560 MVA under normal operating conditions.[1]

In 2005, the normal condition peak demand for the Vista System was 487 MVA. For a 220/115 kV substation, SCE adjusts the normal condition peak demand to reflect the forecasted peak demand of a 1-in-5 year heat storm, in accordance with SCE's planning

[1] The operating capacity of a substation is determined through technical analysis taking into account several factors including the summation of nameplate ratings and the evaluation of thermal capabilities of all equipment. Notwithstanding this analysis, the operating capacity of the substation may not exceed the operating or planning guidelines established by SCE. In this case, Vista Substation has two 280 MVA transformers, resulting in a combined nameplate rating of 560 MVA.

guidelines.[2] The 2005 weather adjusted peak demand, adjusted for a 1-in-5 year heat storm, for the Vista System was 518 MVA.

Based on historical growth trends and known residential, commercial, and industrial developments either under construction or planned, SCE projects that the weather adjusted peak demand will increase to 572 MVA by 2008 (an average annual compound growth rate of 3.3%). This projected electrical demand will exceed the operating limits of the transformers currently serving the Vista System.

Because the second stage of the Proposed Project will not be operational until 2010, overload conditions may occur in the Electrical Needs Area between 2008 and 2010 if actual demand exceeds the operating capacity of the transformers at Vista Substation. Exceeding operating limits results in a deviation from SCE planning guidelines. To address this deviation and mitigate potential overload conditions prior to the operation of the second stage of the Proposed Project in 2010, SCE would implement temporary operating procedures within the Vista System during 2008 and 2009. These operating procedures could include contracting local generation, temporarily transferring Vista System substations to adjacent 115 kV systems, dropping load and/or implementing rolling blackouts.

Load projections for the Vista System can be found in Figure 1-2, Vista System Capacity and Peak Demand, which depicts existing capacity limits and forecasted demand for the Vista System. The data used to create Figure 1-2 is set forth in Table 1-1, Vista System - Historical and Forecasted Peak Demand.

Table 1-1, Vista System – Historical and Forecasted Peak Demand

	Historical								
Year	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**
Actual Demand (MVA)	375	392	387	370	390	465	420	463	477

	Forecast										
Year	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Normal Demand Forecast (MVA)	487	504	522	537	553	564	566	572	577	592	601
1-in-5 Heat Storm Demand Forecast (MVA)	518	536	556	572	588	600	602	609	614	630	640

[2] Planning guidelines are established by SCE to provide a basis for designing a safe and reliable transmission system using methodologies and procedures approved by SCE's Technical Review Council.

1.2.1.2 Vista System - Maraschino 115/12 kV Substation

Maraschino Substation reduces voltage from 115 kV to 12 kV with two 28 MVA transformers. Maraschino Substation is connected to the Vista System through one preferred 115 kV line, named the Vista-Maraschino-San Bernardino 115 kV line. During abnormal conditions, Maraschino Substation can be transferred to the Devers System through one emergency 115 kV line, named the Banning-Garnet-Maraschino-Windfarm 115 kV line.

The amount of electrical load that can be served in the Electrical Needs Area is limited to the maximum amount of electrical power that Maraschino Substation can deliver before exceeding its operating limits. The operational capacity of the existing Maraschino Substation is limited to 65 MVA under normal operating conditions.[3]

In 2005, the normal condition peak demand for Maraschino Substation was 52 MVA. For a 115/12 kV substation, SCE adjusts the normal condition peak demand to reflect the forecasted peak demand of a 1-in-10 year heat storm in accordance with SCE's planning guidelines.[4] The 2005 weather adjusted peak demand, adjusted for a 1-in-10 year heat storm, for Maraschino Substation was 57 MVA.

Based on historical growth trends and known residential, commercial, and industrial developments either under construction or planned, SCE projects that the weather adjusted peak demand will increase to 69 MVA by 2007 (an average annual compound growth rate of 10.0%). This projected electrical demand will exceed the operating limits of the transformers serving Maraschino Substation.

To address the overload conditions that may occur in the Electrical Needs Area prior to the operation of the first stage of the Proposed Project in 2009, SCE will add a third 28 MVA transformer and two 12 kV distribution lines (each approximately 9 miles in length) at Maraschino Substation in 2007. The addition of this third 28 MVA transformer will increase the operational capacity of Maraschino Substation to 109 MVA under normal operating conditions. However, the 2007 upgrades at Maraschino Substation will not address all of the deviations to SCE's planning guidelines and reliability issues will continue to exist within the Electrical Needs Area due to the current 115 kV line arrangement and the length of 12 kV distribution lines (discussed below).

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[3] The operating capacity of a substation is determined through technical analysis taking into account several factors including the summation of nameplate ratings and the evaluation of thermal capabilities of all equipment. Notwithstanding this analysis, the operating capacity of the substation may not exceed the operating or planning guidelines established by SCE. In this case, Maraschino Substation has two 28 MVA transformers, resulting in a combined nameplate rating of 56 MVA and a planned loading limit rating of 65 MVA or 116%.

[4] Planning guidelines are established by SCE to provide a basis for designing a safe and reliable distribution system using methodologies and procedures approved by SCE's Technical Review Council.

Currently, Maraschino Substation is only served by one 115 kV line at a time: either from the Vista System (the "preferred" line) or from the Devers System (the "emergency" line). However, under SCE's Subtransmission Guidelines,[5] a distribution substation with more than one 28 MVA transformer should normally be served by at least two 115 kV lines at all times. Therefore, to address reliability in the Electrical Needs Area and to conform to SCE's Subtransmission Guidelines, the Proposed Project is needed to provide a second 115 kV subtransmission line to serve Maraschino Substation.

In addition, reliability issues are created by longer distribution lines. To accommodate the load growth in the Electrical Needs Area, SCE has built increasingly longer 12 kV distribution lines at Maraschino Substation, which significantly exceed the maximum preferred distribution line length of approximately four miles. As distribution lines increase in length and the load on those lines continues to grow, the voltage to the end of the line decreases and exposure to outages increases, resulting in reduced reliability to the customers served by those lines. In addition, longer distribution lines create difficulties in transferring load between distribution lines and between distribution substations. Load transfers are standard procedures to mitigate distribution circuit and substation overloads during normal and abnormal operating conditions. The inability to transfer load results in diminished operating capabilities and reduced reliability. By 2009, the projected electrical demand will exceed the operating capabilities of the lengthy distribution lines currently serving the Electrical Needs Area. Therefore, the first stage of the Proposed Project would be operational by 2009 to address reliability problems resulting from longer distribution lines.

Demand projections for Maraschino Substation can be found in Figure 1-3, Maraschino Substation Capacity and Peak Demand, which depicts existing capacity limits and forecasted demand projections for Maraschino Substation. The data used to create Figure 1-3 is set forth in Table 1-2, Maraschino Substation - Historical and Forecasted Peak Demand.

[5] Subtransmission Guidelines are established by SCE to provide a basis for designing a safe and reliable subtransmission system using methodologies and procedures approved by SCE's Technical Review Council.

Table 1-2, Maraschino Substation – Historical and Forecasted Peak Demand

	Historical								
Year	1996	1997	1998	1999	2000	2001	2002	2003	2004
Actual Demand (MVA)	33	27	27	25	30	30	34	41	48

	Forecast										
Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Normal Demand Forecast (MVA)	52	58	63	70	76	83	89	96	102	109	115
Demand Forecast (MVA)	57	63	69	76	83	91	98	105	112	119	126

1.2.1.3 Vista System – Zanja 115/33 kV Substation

Zanja Substation reduces voltage from 115 kV to 33 kV with one 10 MVA transformer. Zanja Substation is connected to the Vista System through one preferred 115 kV line, named the Crafton Hills-Mentone-Zanja 115 kV line. During abnormal conditions, Zanja Substation can be transferred to the Devers System through one emergency 115 kV line, named the Devers-Banning-Windpark-Zanja 115 kV line.

Currently, Zanja Substation can only be served by one 115 kV line at a time: either from the Vista System (the "preferred" line) or from the Devers System (the "emergency" line). Therefore, in the event of an outage on the preferred line, Zanja Substation would experience a brief outage until the emergency line is switched into service. Therefore, an additional benefit from the Proposed Project would be a second 115 kV subtransmission line to serve Zanja Substation at all times, thereby reducing outages.

1.2.2 Devers System Overview

The Devers System serves approximately 160,000 metered customers and is bounded to the north, south, and east by SCE's service territory, and to the west by the City of Banning's municipal utility service territory. The Devers System is comprised of the Devers 500/220/115 kV Substation and connecting subtransmission and distribution facilities. The Devers 220/115 kV Substation provides electrical energy to twelve 115 kV substations within the Devers System, which include Banning Substation (See Figure 1-1, Electrical Needs Area and Affected SCE Substations).

1.2.2.1 Devers System – Banning 115/33 kV Substation

Banning Substation reduces voltage from 115 kV to 33 kV with two 56 MVA transformers. Banning Substation is connected to the Devers System through one preferred 115 kV line, named the Devers-Banning-Windpark-Zanja 115 kV line. During abnormal conditions, Banning Substation can be transferred to the emergency 115 kV line, the Banning-Garnet-Maraschino-Windfarm 115 kV line, which is also connected to the Devers System. As an additional contingency during abnormal conditions, both the preferred line and the emergency line can be connected to the Vista System to transfer Banning Substation to the Vista System.

Currently, Banning Substation can only be served by one 115 kV line at a time: either from the preferred line or from the emergency line. However, under SCE's Subtransmission Guidelines a distribution substation with more than one 28 MVA transformer should normally be served by at least two 115 kV lines at all times. Therefore, to improve reliability and to conform to the Subtransmission Guidelines, the Proposed Project is needed to provide additional 115 kV subtransmission lines to serve Banning Substation.

1.3 PROJECT OBJECTIVES

SCE has defined the following objectives to meet the project purpose and need:

- Serve long-term projected electrical load requirements in the Electrical Needs Area;
- Provide enhanced system reliability by constructing a project in a suitable location to serve the Electrical Needs Area;
- Provide greater operational flexibility to transfer load between lines and substations;
- Provide substations with more than one 28 MVA transformer with service from two 115 kV lines;
- Provide safe and reliable electrical service consistent with SCE's planning guidelines and Subtransmission Guidelines;
- Meet project need while minimizing environmental impacts; and
- Meet project need in a cost-effective manner.

These objectives guide SCE in developing a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic project objectives.

1.4 SYSTEM ALTERNATIVES

CEQA and the CEQA Guidelines (Section 15126.6.(a)) require consideration of a range of alternatives to a proposed project, or to the location of a project, that would feasibly attain most of the basic project objectives but would avoid or substantially lessen any of the significant effects of the project. This analysis must include 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).

SCE first evaluates whether the existing electrical infrastructure can be modified to meet the project objectives. If not, then SCE evaluates what new infrastructure is required and where it would be located in order to meet project objectives. The following sections describe the methodology for screening system alternatives and site alternatives. Alternatives developed by these methodologies are then screened for their ability to meet the project objectives. The section concludes with a brief description of the alternatives retained for full analysis in the PEA.

1.4.1 System Alternatives Screening Methodology

The development of system alternatives consists of the four-step process summarized below:

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

Step 2. If the forecasted electrical demand cannot be accommodated by modifying the existing electrical infrastructure, then develop system alternatives by considering feasible upgrades or additions to the existing electrical infrastructure.

Step 3. Evaluate each system alternative in consideration of the following criteria:

- The extent to which an alternative would substantially meet the proposed project objectives; and
- The feasibility of an alternative considering capacity limits, ability to upgrade the system on existing utility sites, and economic viability.

Step 4. If a system alternative is infeasible, then that alternative is eliminated from consideration. If feasible, the 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 site location alternatives are considered as described later in this section.

To meet the need in the Electrical Needs Area, SCE considered three alternatives:

Alternative 1: No Project Alternative
Alternative 2: El Casco System Project
Alternative 3: Vista System Upgrade

1.4.2 Alternatives Discussion

Alternative 1: No Project Alternative

- Construct no additional facilities.

The no project alternative would involve no construction and no modification to the existing Vista System. Figure 1-4, Alternative 1 – Existing Vista System, illustrates the existing configuration of the Vista System.

Alternative 2: El Casco System Project

- Construct the new 220/115/12 kV El Casco Substation within the Norton Younglove Reserve in the County of Riverside, associated 220 kV and 115 kV interconnections, and new 12 kV distribution line getaways.
- Upgrade existing 115 kV subtransmission lines between El Casco, Maraschino, and Banning (see Alternatives 2.a and 2.b, discussed below).
- Rebuild 115 kV switchracks within Banning and Zanja Substations in the Cities of Banning and Yucaipa, respectively.
- Install telecommunications equipment at the proposed El Casco Substation and at SCE's existing Mill Creek Communications Site.
- Install fiber optic cables within public streets and on existing SCE structures between the Cities of Redlands and Banning.

The El Casco System Project would be constructed from approximately June 2008 to June 2010, and the project would be operational in two phases. The 115/12 kV portion of the substation would be operational by June 2009. The 220/115 kV portion of the substation and remaining components of the project would be operational by June 2010.

The 115/12 kV portion of the proposed El Casco Substation would relieve the Maraschino Substation by transferring approximately 10 MVA of 12 kV distribution load to El Casco Substation in 2009. The five new 12 kV distribution line getaways associated with the El

Casco Substation would be used to facilitate this load transfer, and would also serve future load growth that would otherwise be served from Maraschino Substation. With this transfer and the majority of the future load growth being served by the new El Casco Substation, demand on the existing transformers at Maraschino Substation would be below operating limits.

The existing 220 kV Devers-San Bernardino No. 2 transmission line would serve as the source for the El Casco System, making it independent (i.e., having a separate 220 kV transmission source of supply) of the Vista System. The El Casco System would tie in with the Vista System and the Devers System through the 115 kV subtransmission system and tie to the Vista System through the 12 kV distribution system, thereby providing the capability to transfer load between systems under both normal and abnormal conditions. This increases the reliability of all three systems.

The 220/115 kV portion of the proposed El Casco Substation would relieve the Vista 220/115 kV Substation through the transfer of four existing substations from the Vista 115 kV System to the El Casco 115 kV System. These substations (Crafton Hills, Maraschino, Mentone, and Zanja) are located at the eastern end of the existing Vista 115 kV System and will have a combined projected normal weather peak demand of approximately 135 MVA in 2010. After these transfers, demand on the existing transformers at the Vista 220/115 kV Substation would be below operating limits. In addition, the Banning 115/33 kV Substation (with a projected normal weather peak demand of approximately 101 MVA in 2010) would also be transferred from SCE's existing Devers 115 kV System to the El Casco 115 kV System. This allows Banning Substation to be served by more than one 115 kV line.

For the 115 kV line work that will occur during the second stage of construction, two alternative routes were considered (Alternative 2.a and Alternative 2.b).

Alternative 2.a: Southerly 115 kV Subtransmission Line Route

The southerly 115 kV line route consists of the following 115 kV lines:

- The El Casco-Maraschino 115 kV line route begins at El Casco Substation and proceeds south then continues southeast within the existing right-of-way for approximately five miles. The route then continues east for approximately one mile into Maraschino Substation.

- The Banning-Maraschino 115 kV line route begins at Maraschino Substation and proceeds south for approximately 0.7 miles to the existing right-of-way. At this point, the route turns east for approximately seven miles and then north for approximately 0.7 miles into Banning Substation.

- The El Casco-Banning 115 kV line route begins at El Casco Substation and proceeds along a route parallel to the El Casco-Maraschino 115 kV line to the point where the El Casco-Maraschino 115 kV subtransmission line turns east towards Maraschino Substation. The El Casco-Banning 115 kV line bypasses Maraschino Substation and continues southeast for approximately 0.8 miles. The route then continues parallel to the Banning-Maraschino 115 kV line into Banning Substation.

The southerly 115 kV subtransmission line route involves the following scope of work:

- Replace approximately 13 miles of existing single-circuit 115 kV subtransmission lines with new, higher capacity double-circuit 115 kV subtransmission lines and replace support structures within existing SCE rights-of-way in the Cities of Banning, Beaumont, and unincorporated Riverside County.

- Replace approximately 1.9 miles of existing single-circuit 115 kV subtransmission lines with new, higher capacity single-circuit 115 kV subtransmission lines and replace support structures within existing SCE rights-of-way in the City of Beaumont and unincorporated Riverside County.

- Replace approximately 0.5 miles of existing single-circuit 115 kV subtransmission lines with new, higher capacity single-circuit 115 kV subtransmission lines on existing support structures within existing SCE rights-of-way in the City of Beaumont and unincorporated Riverside County.

A more detailed description of the southerly route is provided in the Project Description, Section 2.6. Figure 1-5, Alternative 2.a – Southerly 115 kV Subtransmission Line Route, depicts the preferred line arrangement of the El Casco 115 kV System.

Estimated Cost of El Casco System Project with Alternative 2.a – $92,008,000 (in 2006 USD based on preliminary engineering only)

Alternative 2.b: Northerly 115 kV Subtransmission Line Route

The northerly 115 kV subtransmission line route consists of the following 115 kV lines:

- The El Casco-Maraschino 115 kV line route begins at El Casco Substation and proceeds south then continues southeast within the existing right-of-way for approximately five miles. The route then continues east for approximately one mile into Maraschino Substation.

- The Banning-Maraschino 115 kV line route begins at Maraschino Substation and proceeds south for approximately 0.7 miles to the existing right-of-way. At this

point, the route turns east for approximately seven miles and then north for approximately 0.7 miles into Banning Substation.

- The El Casco-Banning 115 kV line route begins at El Casco Substation and proceeds east for approximately 9.5 miles. The route then proceeds south for approximately 0.2 miles and continues east for approximately 4.3 miles. At this point, the route proceeds south for approximately 0.5 miles into Banning Substation.

The northerly 115 kV subtransmission line route involves the following scope of work:

- Replace approximately 5.8 miles of existing single-circuit 115 kV subtransmission lines with new, higher capacity single-circuit 115 kV subtransmission lines and replace support structures within existing SCE rights-of-way along the El Casco-Maraschino 115 kV line.

- Replace approximately 0.7 miles of existing 115 kV single-circuit subtransmission lines with new, higher capacity double-circuit 115 kV subtransmission lines and replace support structures within public street rights-of-way to create the Banning-Maraschino 115 kV line.

- Construct 9.5 miles of new double-circuit 115 kV subtransmission lines to intercept the 115 kV line between Banning Substation and Zanja Substation within existing SCE rights-of-way to create the El Casco-Zanja 115 kV line and the El Casco-Banning 115 kV line.

- Replace 4.3 miles of existing 115 kV single-circuit subtransmission lines with new, higher capacity single-circuit 115 kV subtransmission lines and replace support structures within new and existing rights-of-way to increase the capacity of the new El Casco-Banning 115 kV line.

Figure 1-6, Alternative 2.b – Northerly 115 kV Subtransmission Line Route, depicts the alternate line arrangement of the El Casco 115 kV System.

Estimated Cost of El Casco System Project with Alternative 2.b - $93,786,000 (in 2006 USD based on preliminary engineering only)

Alternative 3: Vista System Upgrade

- Increase capacity at the Vista 220/115 kV Substation through the addition of one 280 MVA transformer.

- Construct 10 miles of new, single-circuit 115 kV subtransmission lines and replace 13 miles of existing single-circuit 115 kV subtransmission lines with new, higher capacity double-circuit 115 kV subtransmission lines and replace support structures within new and existing rights-of-way to create the new Vista-Maraschino 115 kV line.

- Construct 4.4 miles of new, single-circuit 115 kV subtransmission lines and replace 4.3 miles of existing single-circuit 115 kV subtransmission lines with new, higher capacity single-circuit 115 kV subtransmission lines and replace support structures within new and existing rights-of-way to create the new Banning-Maraschino-Zanja 115 kV line.

- Replace 0.7 miles of existing single-circuit 115 kV subtransmission lines with new, higher capacity double-circuit 115 kV subtransmission lines and replace support structures within existing SCE rights-of-way.

- Increase capacity at the Maraschino 115/12 kV Substation through the addition of one 28 MVA transformer.

- Rebuild 115 kV switchracks within Banning and Zanja Substations in the Cities of Banning and Yucaipa, respectively.

- Install telecommunications equipment at Vista, Maraschino, Banning, and Zanja Substations.

- Install fiber optic cables within public streets and on existing SCE structures from Vista Substation to Maraschino, Banning, and Zanja Substations.

Vista Substation is served by six 220 kV lines, the Devers-Vista No. 1 and No. 2 lines, the Mira Loma-Vista No. 1 and No. 2 lines, the Etiwanda-Vista line, and the San Bernardino-Vista line. There are currently two 280 MVA, 220/115 kV transformers serving the Vista 115 kV System. Figure 1-4 illustrates the current configuration of the Vista System.

An upgrade of the Vista System would require the addition of one 280 MVA, 220/115 kV transformer at Vista Substation, construction of two new 115 kV subtransmission lines to deliver the power, and the addition of a fourth 28 MVA, 115/12 kV transformer and five 12 kV distribution lines at Maraschino Substation. To add one 280 MVA, 220/115 kV transformer at Vista Substation requires adding a new 115 kV bank position, expanding the 220 kV switchrack one bay to the south for a new bank position, and constructing several transmission steel poles and conductors to connect the new transformer. Additionally the 115 kV switchrack would be expanded three bays to the east to create a new bus sectionalizing position, a new bank position, and new 115 kV line position for a new line. Various upgrades are required to the existing 115 kV switchrack, breakers, disconnects, conductors, and relays.

The existing 66 kV switchrack would need to be demolished and rebuilt to make room for the 220/115 kV transformer work.

Figure 1-7, Alternative 3 – Vista System Upgrade, illustrates the necessary upgrades to the Vista System.

Estimated Cost of Alternative 3 – $98,655,000 (in 2006 USD based on preliminary engineering only)

The estimated costs for Alternative 3 are based on order-of-magnitude estimates. Although SCE did not perform a detailed cost analysis for Alternative 3, the estimated costs are higher than Alternative 2. Should this alternative be selected, SCE would prepare a more detailed engineering analysis and cost estimate on this proposal.

1.4.3 System Alternatives Recommendation

SCE is recommending Alternative 2.a, the El Casco System Project with the southerly line route as the Proposed Project. As discussed below, Alternative 2.a provides superior reliability and operational flexibility at a lower cost as compared to the other alternatives.

Alternative 1: No Project Alternative

SCE has determined that a No Project Alternative is not an option to address the capacity constraints at Maraschino Substation and Vista Substation. The No Project Alternative would result in rolling blackouts to Electrical Needs Area customers. In addition, all of northern Riverside County would be affected as SCE strives to maintain equipment loadings within established operating limits during peak load periods. This is contrary to SCE's obligations to serve growing electrical demand and to provide safe and reliable electric service within its service territory.

Alternative 2: El Casco System Project

Alternative 2 provides 560 MVA of additional 220/115 kV capacity with 560 MVA of future upgrade capability at El Casco Substation. The 220/115 kV portion of the proposed El Casco Substation would relieve the Vista 220/115 kV Substation through the transfer of four existing substations from the Vista 115 kV System to the El Casco 115 kV System. After these transfers, demand on the existing transformers at Vista 220/115 kV Substation would be below operating limits. Alternative 2 also provides 56 MVA of additional 115/12 kV capacity and five 12 kV lines with future upgrade capability of 56 MVA and twelve 12 kV lines. The 115/12 kV portion of the proposed El Casco Substation would serve the load growth within the Electrical Needs Area and would relieve Maraschino Substation.

Alternative 2 provides additional 115 kV lines to Banning, Maraschino, and Zanja Substations, consistent with SCE's Subtransmission Guidelines. This improves reliability and operational flexibility by ensuring that these substations are served by more than one 115 kV line at a time. Additionally, construction of Alternative 2 offers greater operational flexibility by allowing for the transfer of distribution substations between the El Casco, Vista, and Devers Systems during normal and abnormal conditions.

The El Casco Substation is located within the Electrical Needs Area, thereby allowing for shorter distribution lines than currently exist to the area. This avoids reliability problems resulting from longer distribution lines, and also facilitates load transfers between distribution lines and substations.

Alternative 2.a, the southerly 115 kV subtransmission line route, potentially provides the greatest system reliability of the alternatives due to fewer miles of 115 kV line exposure. Additionally, the southerly route would be built within existing rights-of-way. Alternative 2.b, the northerly 115 kV subtransmission line route, results in more miles of 115 kV line exposure than the southerly line route, which potentially reduces reliability. Alternative 2.b also requires the acquisition of additional rights-of-way. Specifically, for a distance of approximately two miles along the northerly 115 kV subtransmission line route, SCE would need to obtain additional rights-of-way to widen its existing easement by 25 feet.

Alternative 3: Vista System Upgrade

Alternative 3 provides only 280 MVA of additional 220/115 kV capacity. The new 280 MVA, 220/115 kV transformer would be located at Vista Substation and once completed, Vista Substation would have no room for future capacity upgrades. Alternative 3 also provides only 28 MVA of additional 115/12 kV capacity and five 12 kV lines at Maraschino Substation. There would be no room to add additional transformers at Maraschino Substation to serve future load growth, and there would be room in the 12 kV switchrack for the addition of only one or two 12 kV lines. Electrical load growth is projected to increase in the Electrical Needs Area and Alternative 3 would not provide sufficient capacity to support this load increase in the long-term.

Vista Substation is located approximately 20 miles from the Electrical Needs Area, which results in greater 115 kV line exposure than Alternative 2.a and Alternative 2.b. Therefore, Alternative 3 results in less reliability compared with the Proposed Project. In addition, Alternative 3 requires the acquisition of new rights-of-way.

Construction of Alternative 3 does not provide the same operational flexibility as Alternative 2 because Alternative 3 does not allow for the increased capability to transfer distribution substations between systems during normal and abnormal conditions.

Maraschino Substation is located farther from the Electrical Needs Area than the El Casco Substation, requiring longer distribution lines than the Proposed Project. The longer distribution lines would impede load transfers between distribution lines and substations and could create reliability problems. Therefore, Alternative 3 results in significantly less distribution reliability compared with the Proposed Project.

1.4.4 System Alternatives Summary

The No Project Alternative does not meet any of the project objectives, and is therefore eliminated from further consideration.

Alternative 2.a achieves all of the project objectives, including serving load growth in the Electrical Needs Area and enhancing system reliability and operational flexibility in a manner that is consistent with SCE's planning guidelines and Subtransmission Guidelines. In addition, Alternative 2.a is the least costly alternative. Therefore, Alternative 2.a is carried forward in the PEA as the Proposed Project.

Alternative 2.b achieves all of the project objectives but not to the same extent as Alternative 2.a. In addition, Alternative 2.b requires the acquisition of new rights-of-way. Alternative 2.b is carried forward in the PEA as an alternative to the Proposed Project.

Alternative 3 meets some but not all of the project objectives. In addition, Alternative 3 is more costly than Alternatives 2.a and 2.b. Therefore, Alternative 3 is eliminated from further consideration.

1.5 SUBSTATION SITE ALTERNATIVES

SCE recommends the El Casco System Project (Alternative 2.a) as the Proposed Project. In addition, Alternative 2.b is evaluated as a system alternative to the Proposed Project. Construction of a new substation is a component of both Alternatives 2.a and 2.b. Therefore, this section considers several sites for the El Casco Substation.

1.5.1 Siting Methodology and Criteria

In order to identify potential substation sites, SCE initiated a siting evaluation process which included identifying parcels of land (sites) within the Electrical Needs Area that, at a minimum, meet the following criteria:

- A contiguous land area of at least 12 acres

- Located within one mile of existing 220 kV lines

A siting process was conducted in order to determine an optimal substation site that considered engineering constraints, environmental impacts, project costs, and community sensitivities. In addition to sites identified by SCE, potential sites were suggested by local officials and property owners.
SCE also considered the locations of schools, city boundaries, land use designations, fire hazard areas, flood hazard areas, and geologic factors. As a result of this process, six sites were identified for further evaluation.

1.5.2 Substation Site Analysis

Of the six sites evaluated, four sites were eliminated due to one or more of the following: (1) the site would not support the substation construction process; (2) the site would not efficiently connect the project to the source transmission system or local distribution system; and (3) local stakeholders, including the City of Calimesa and adjacent property developers, did not support the use of the site for substation development. The remaining two sites, identified as Sites 33 and 38, were selected as the Preferred Site and the Alternate Site, respectively. Figure 1-8, Preferred and Alternate Substation Locations, identifies the Alternate Site and the Preferred Site for the El Casco Substation.

1.5.3 Preferred Site

The Preferred Site for the El Casco Substation consists of 28 acres located within the Norton Younglove Reserve in proximity to San Timoteo Canyon Road and adjacent to SCE's existing Devers-San Bernardino No. 2 220 kV transmission line. The footprint of the proposed substation would occupy approximately 14 acres of the Preferred Site.

1.5.4 Alternate Site

The Alternate Site consists of 68 acres located northeast of San Timoteo Canyon Road, approximately 0.5 miles from the Preferred Site. The footprint of the proposed substation would occupy approximately 14 acres of the Alternate Site. SCE initially selected Site 38 as the preferred site for the Proposed Project. However, following input from local stakeholders, including the City of Calimesa, SCE designated Site 33 as the Preferred Site and Site 38 as the Alternate Site.

1.5.5 Site Alternatives Summary

Site 33 was selected as the Preferred Site. Therefore, the environmental analysis of the Proposed Project assumes the El Casco Substation would be located on the Preferred Site. In addition, Site 38 is also evaluated in the PEA as a site alternative to the Proposed Project.

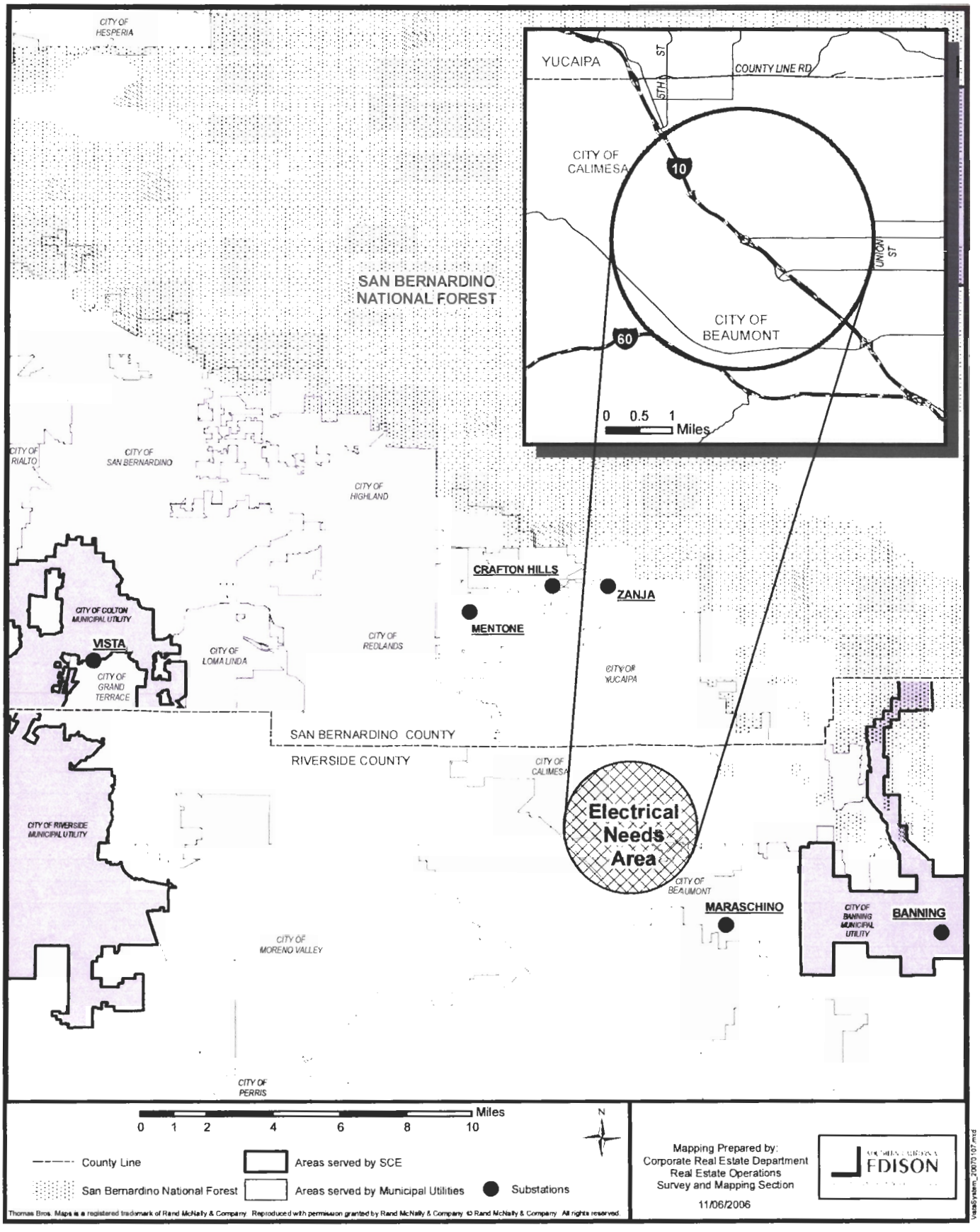


Figure 1-1, Electrical Needs Area and Affected SCE Substations

Figure 1-2, Vista System Capacity and Peak Demand

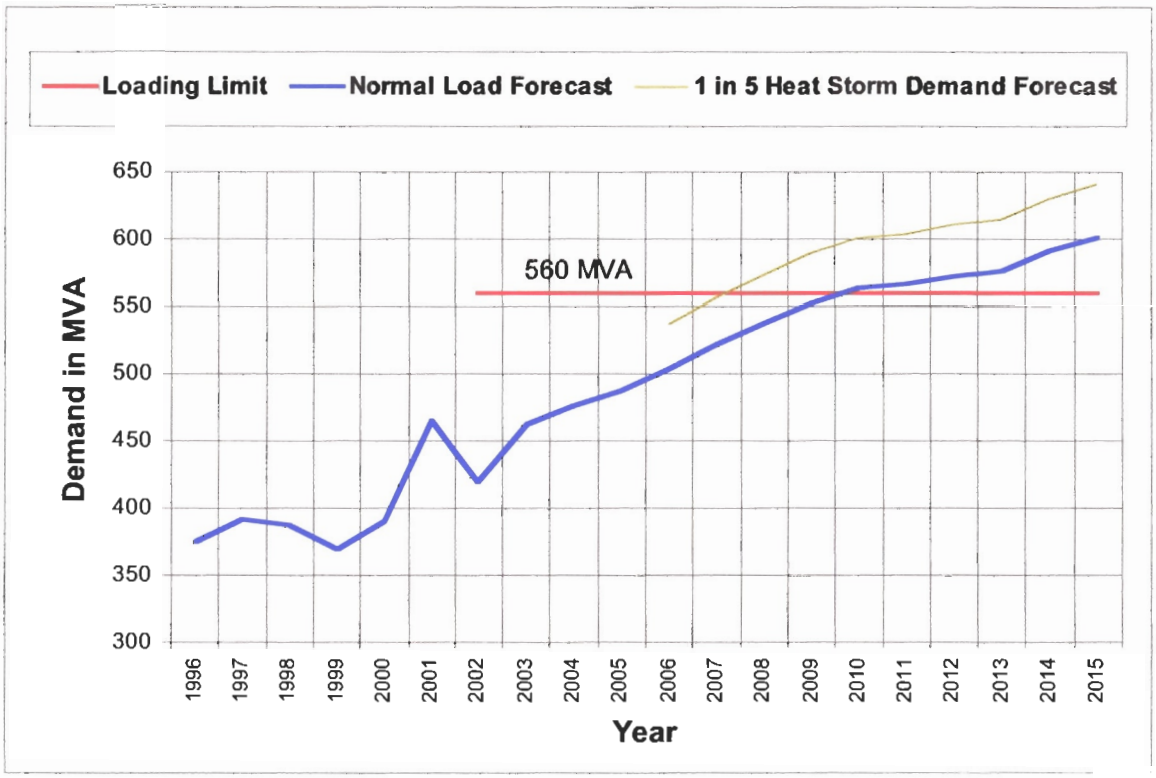


Figure 1-3, Maraschino Substation Capacity and Peak Demand

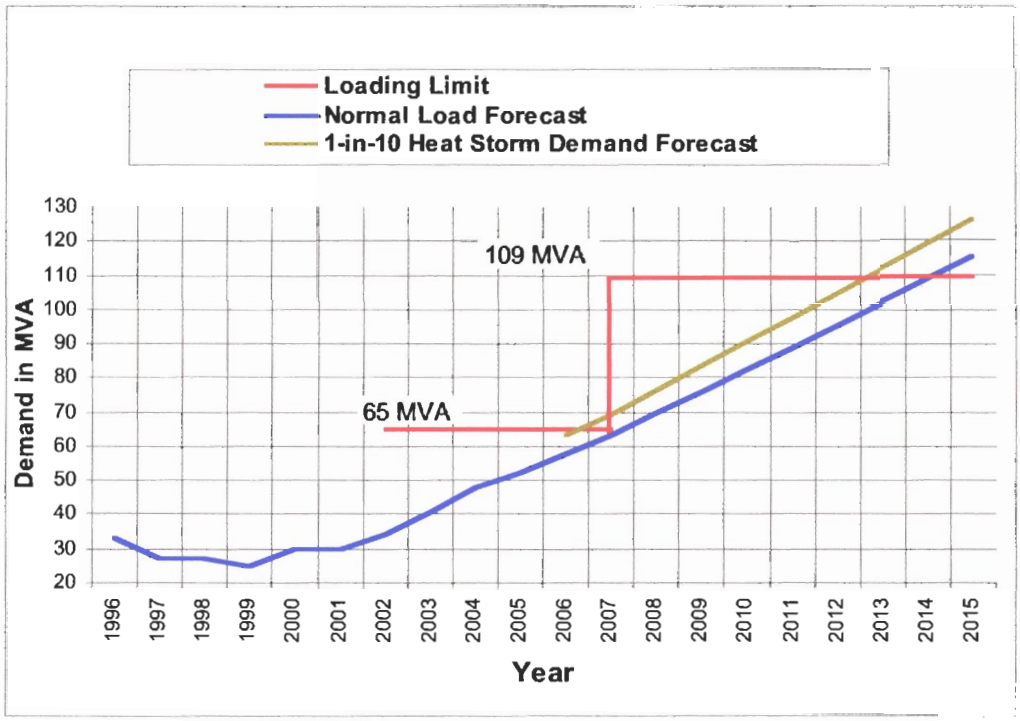


Figure 1-4, Alternative 1 - Existing Vista System

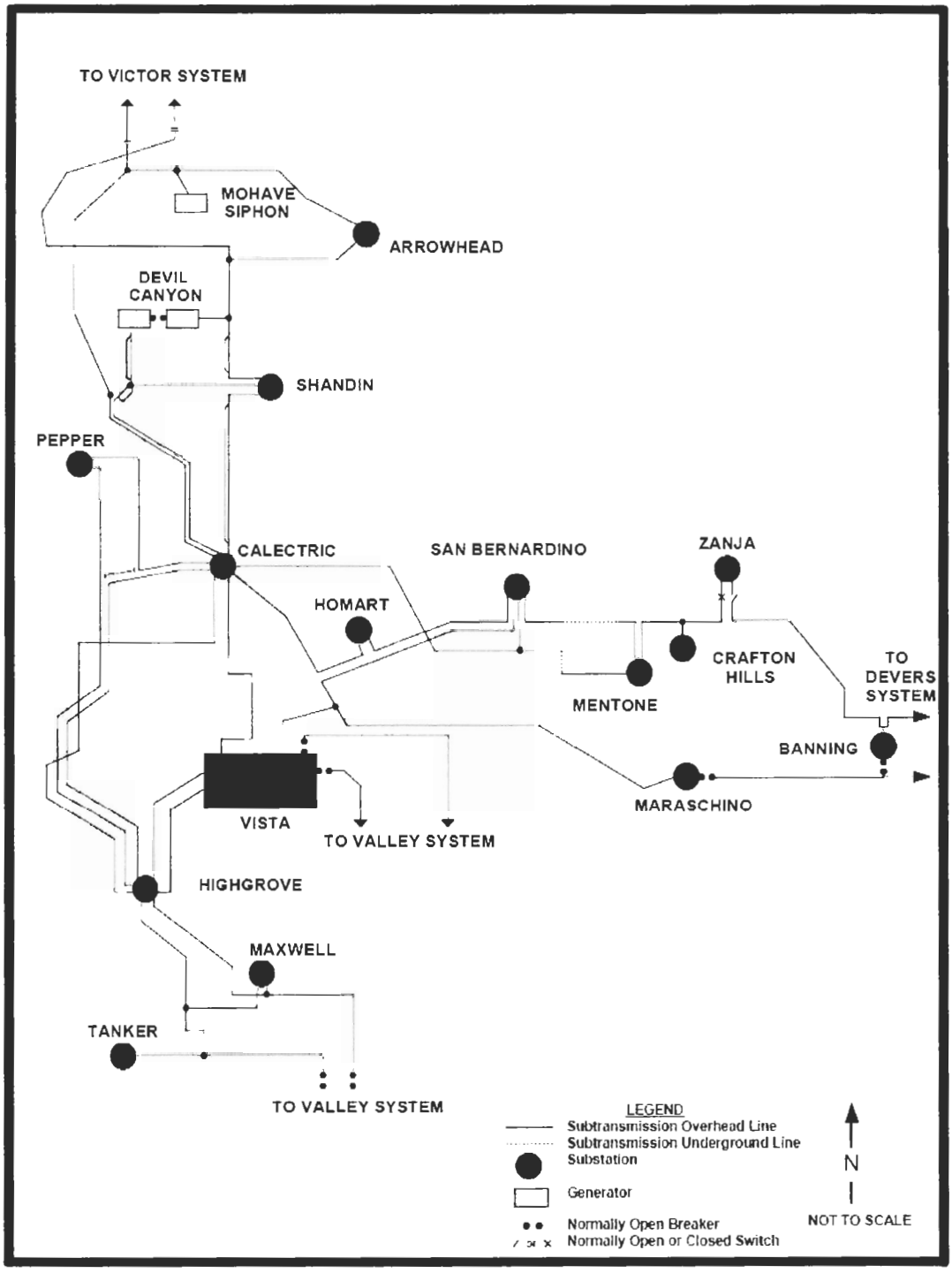


Figure 1-5, Alternative 2.a – Southerly 115 kV Subtransmission Line Route

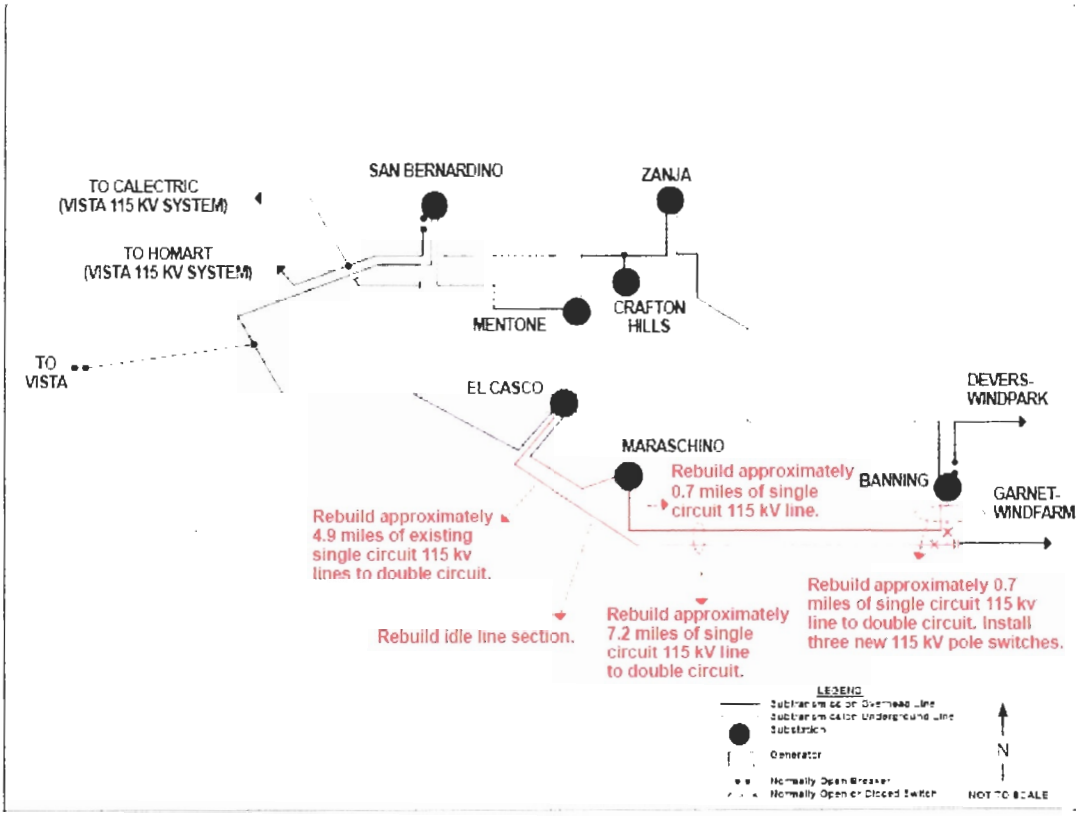


Figure 1-6, Alternative 2.b – Northerly 115 kV Subtransmission Line Route

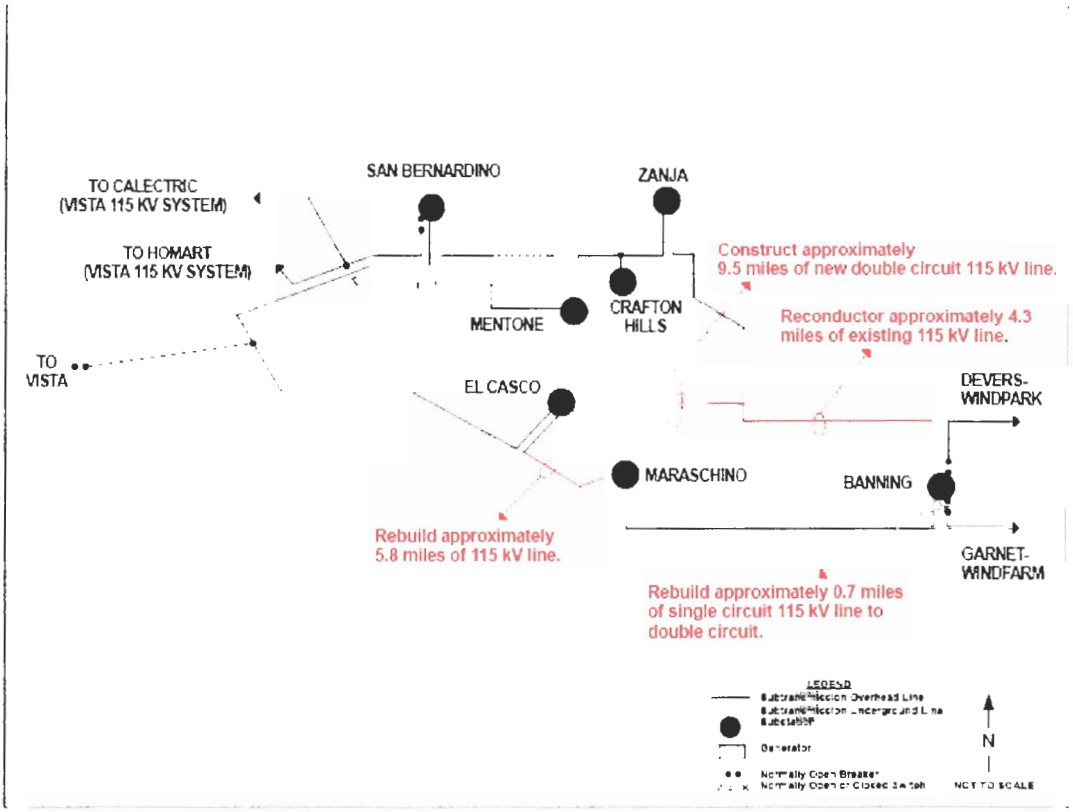
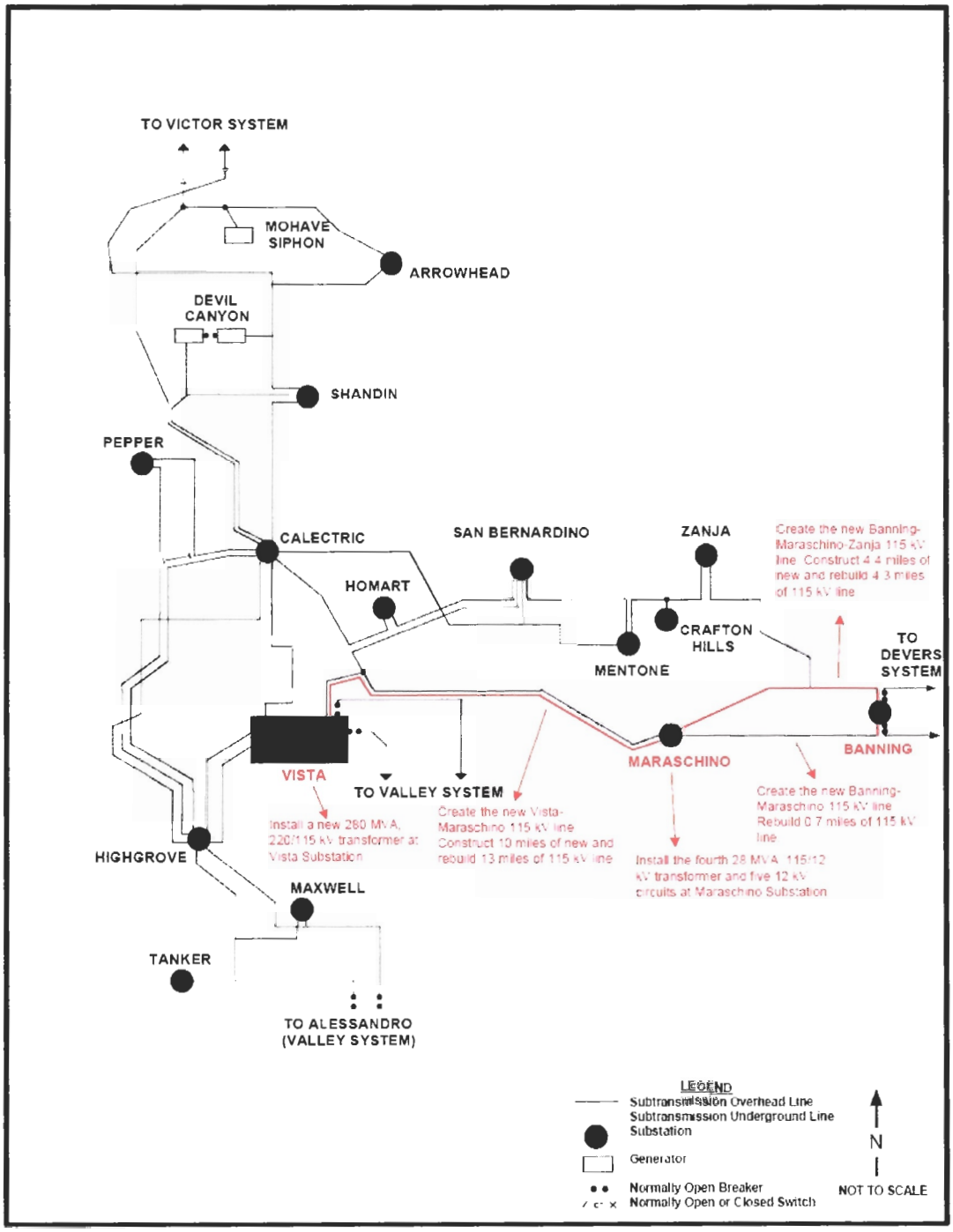


Figure 1-7, Alternative 3 – Vista System Upgrade



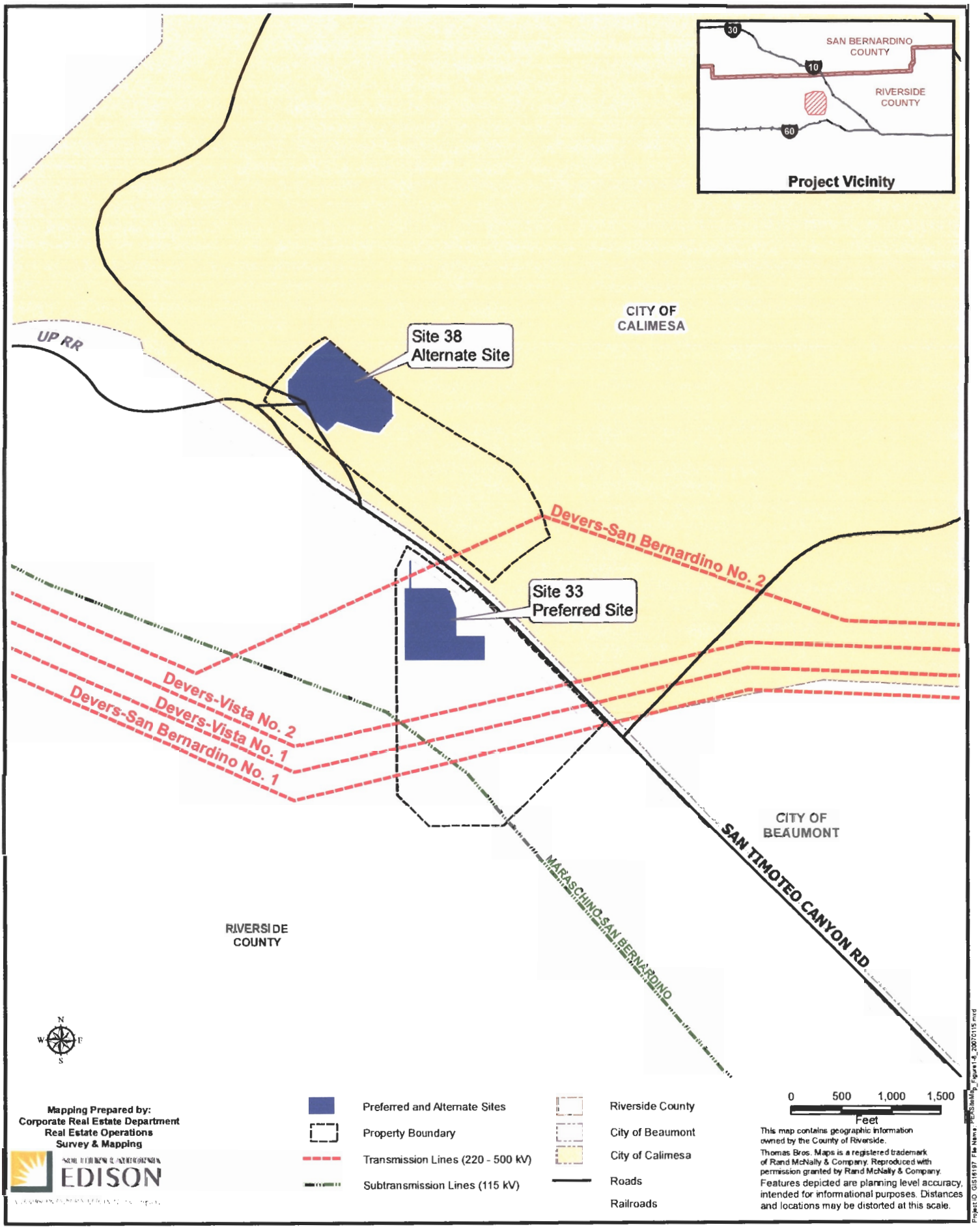


Figure 1-8, Preferred and Alternate Substation Locations

Section 2