CONSULTANT REPORT

ADDENDUM TO TRANSMISSION OPTIONS AND POTENTIAL CORRIDOR DESIGNATIONS IN SOUTHERN CALIFORNIA IN RESPONSE TO CLOSURE OF SAN ONOFRE NUCLEAR GENERATING STATION (SONGS)

ENVIRONMENTAL FEASIBILITY ANALYSIS

Prepared for: California Energy Commission

Prepared by: Aspen Environmental Group

SEPTEMBER 2014

CEC-700-2014-002-AD

Prepared by:

Primary Author(s):
Susan Lee
Emily Capello
Brewster Birdsall

Aspen Environmental Group
235 Montgomery Street, Suite 935
San Francisco, CA 94104
415-696-5311
www.AspenEG.com

Contract Number: 700-11-027

Prepared for:

California Energy Commission

Angelique Juarez-Garcia
Contract Manager

Clare Laufenberg Gallardo
Project Manager

Don Kondoleon
Office Manager
Strategic Transmission Planning and
Corridor Designation Office

Roger Johnson
Deputy Director
Siting, Transmission and Environmental Protection Division

Robert P. Oglesby
Executive Director

ABSTRACT

Since the May 2014 publication of the report *Transmission Options and Potential Corridor Designations in Southern California in Response to Closure of San Onofre Nuclear Generating Station,* the California Independent System Operator found that the closure of the nuclear plant caused a significant reduction in the capability of the transmission system to deliver future renewable generation from the Imperial Irrigation District to the bulk transmission system due to changes in electrical flow patterns over the electric transmission system. The change in flow patterns also affects the ability of the electrical transmission system to maintain deliverability of import capability from the Imperial Irrigation District at the intended level of 1,400 megawatts. In response to this previously unrecognized consequence of the closure of the nuclear plant, this analysis provides a high-level environmental assessment of two additional transmission alternatives that would restore the 1,400 megawatt transfer capability for the Imperial Irrigation District. As with the original report, these alternatives may be considered by California Energy Commission staff for potential electric transmission corridor designation. While the alternatives examined may provide electrical solutions for addressing challenges arising from the closure of the San Onofre Nuclear Generating Station, this report presents and examines the likely siting constraints that may have to be considered during the environmental permitting process for each potential alternative.

The alternatives were ranked on a qualitative four-step scale that ranges from possible, possible but challenging, challenging, to very challenging.

Keywords: California Energy Commission, San Onofre Nuclear Generating Station, environmental assessment, electrical transmission, onshore transmission alternatives, siting constraints, AC, deliverability

Lee, Susan, Emily Capello. (Aspen Environmental Group). 2014. ***Addendum to Transmission Options and Potential Corridor Designations in Southern California in Response to Closure of San Onofre Nuclear Generating Station (SONGS): Environmental Feasibility Analysis.*** California Energy Commission. Publication Number: CEC-700-2014-002-AD.

TABLE OF CONTENTS

ABSTRACT……i

TABLE OF CONTENTS……ii

EXECUTIVE SUMMARY……1

BACKGROUND……1

OVERVIEW OF RESULTS……2

CHAPTER 1: OVERVIEW OF THE ALTERNATIVE CORRIDORS AND SEGMENTS ADDRESSED IN THIS ADDENDUM……5

CHAPTER 2: ALTERNATIVE 9, IMPERIAL IRRIGATION DISTRICT'S STRATEGIC TRANSMISSION EXPANSION PLAN……7

Project Description Provided by Developer……7

ROUTING SUMMARY……7

Segment 1: Hoober to Midway Junction……7

Segment 2: Midway Junction to Devers……7

Segment 3: Devers to Valley……8

Segment 4: Valley Substation to Rainbow Valley Boulevard West……10

Segment 5: Rainbow Valley Boulevard West to Talega and SONGS……11

LAND USES……11

Segment 1: Proposed Hoober Substation to Midway Junction……12

Segment 2: Midway Junction to Devers……13

Segment 3: Devers to Valley……14

Segment 4: Valley Substation to Rainbow Valley Boulevard West……15

Segment 5: Rainbow Valley Boulevard West to Talega and SONGS……16

CONSTRAINTS……16

Segment 1: Proposed Hoober Substation to Midway Junction……16

Segment 2: Midway Junction to Devers Substation……17

Segment 3: Devers to Valley……17

Segment 4: Valley Substation to Rainbow Valley Boulevard West……18

Segment 5: Rainbow Valley Boulevard West to Talega and SONGS……19

CHAPTER 3: ALTERNATIVE 10, SOUTHERN CALIFORNIA EDISON MIDWAY SUBSTATION TO DEVERS SUBSTATION ROUTE……25

Project Description Provided by Developer 25

ROUTING SUMMARY 25

Segment 1: Midway to Midway Junction..... 25

Segment 2: Midway Junction to Devers 25

LAND USES..... 26

Segment 1: Midway to Midway Junction..... 26

Segment 2: Midway Junction to Devers 26

CONSTRAINTS..... 26

Segment 1: Proposed Hoober Substation to Midway Junction..... 26

Segment 2: Midway Junction to Devers Substation 26

CHAPTER 4: SUMMARY OF ORIGINAL REPORT AND ALTERNATIVES EVALUATED……28

OVERVIEW OF ONSHORE ALTERNATIVE CORRIDORS AND SEGMENTS: MAY AND SEPTEMBER ALTERNATIVES..... 29

ACRONYMS……...32

REFERENCES……33

LIST OF FIGURES

Figure 1: Overview of Hoober-Devers-Valley and Midway-Devers Transmission……5

Figure 2: Detail of Hoober and Midway Substation Area……20

Figure 3: Detail of Devers to Valley (STEP) Transmission Segment ……...21

Figure 4: Underground HVDC Route From Valley to Inland Substation……...22

Figure 5: Detail of Hoober and Midway to Devers (Land Ownership)……..23

Figure 6: Schematic Map of Onshore Substations and Segments……29

LIST OF TABLES

Table ES-1: Key to Summary Table: Likelihood of Successful Permitting and Construction……...2

Table ES-2: Transmission Alternatives – Descriptions and Major Constraints……....3

Table 1: Overview of Transmission Segments in Alternatives 9 and 10……...4

Table 2: Land Jurisdiction – Hoober Substation to SONGS (miles)……..10

Table 3: Land Jurisdiction – Midway Substation to Devers Substation……24

Table 4: Transmission Segments for Onshore Alternatives……27

Table 5: Substations by Alternative……28

EXECUTIVE SUMMARY

Background

This report is an addendum to the May 2014 report *Transmission Options and Potential Corridor Designations in Southern California in Response to Closure of San Onofre Nuclear Generating Stations (SONGS): Environmental Feasibility Analysis*. Aspen Environmental Group (Aspen) prepared the feasibility analysis under contract with the California Energy Commission to inform Energy Commission staff and the California Independent System Operator (California ISO) about the environmental feasibility of potential electric transmission options under consideration by the California ISO in response to the closure of the San Onofre Nuclear Generating Station (SONGS). The options evaluated may be considered by the Energy Commission staff for potential transmission corridor designations.

Under the direction of Energy Commission staff, Aspen worked with an external team that included representatives of Southern California utilities in the study area; state, federal, and county agencies with permitting authority in the study area; and the California ISO.

Aspen studied potential corridors for two basic types of transmission options. First, the report described and evaluated seven potential onshore transmission alternatives, including both alternating current (AC) and direct current (DC) systems and substation upgrades. Second, the report described and evaluated the technology, viability, and potential to develop offshore corridors for a high-voltage direct current submarine cable between the Southern California Edison (SCE) and San Diego Gas & Electric (SDG&E) territories. The specific routes for these alternatives were defined by the consultant team, based on land-use constraints and the authors' experience in the region.

Since the May 2014 publication of the report, the California ISO found that the closure significantly reduced the capability of the transmission system to deliver future renewable generation from the Imperial Irrigation District (IID) due to changes in electricity flow patterns over the electric transmission system. The change in flow patterns also affects the ability of the electrical transmission system to maintain deliverability of import capability from the IID at the intended level of 1,400 megawatts (MW). As with the original report, Energy Commission staff may consider these alternatives for potential electric transmission corridor designation.

In July 2014, the California ISO held a workshop titled "Imperial County Transmission Consultation Stakeholder Meeting" (July 14, 2014, Folsom, California) to discuss the issues regarding delivering renewable generation out of the Imperial Valley to the rest of the electrical transmission system. Aspen authors presented a summary of the findings of the May 2014 report, and stakeholders were invited to provide comments. Some of the comments, due on July 28, 2014, suggested that the initial report be expanded to include additional transmission alternatives following specific routes. The routes studied include:

- Proposed Hoober Substation to SONGS (proposed by the IID).
- Midway Substation to Devers Substation (proposed by SCE).

This addendum is organized as follows:

- Chapter 1: Overview of Alternative Corridors and Segments Addressed in this Addendum
- Chapter 2: Alternative 9, IID's Strategic Transmission Expansion Plan (STEP)
- Chapter 3: Alternative 10, SCE's Midway to Devers Route
- Chapter 4: Summary of Original Report and Alternative Segments Evaluated
- Chapter 5: References

Overview of Results

This work presents an early stage evaluation of the two potential transmission routes and corridors in the Southern California study area. Developing any of the transmission options would require viable project sponsors with experience and access to sufficient resources to establish an optimum route and design. The considerations identified here provide an overview of requirements stemming from regulatory agency oversight, environmental issues, and technical or construction engineering concerns. Comprehensive environmental and technical studies would still need to occur before any agency could approve a project within any of the corridors.

Table ES-1 defines the range of permitting likelihood defined for the previous report and in this addendum. Table ES-2 (Transmission Alternatives – Descriptions and Major Constraints) summarizes the results of this addendum. This analysis finds that permitting of the Midway-Devers route (having common route segments of both alternatives studied) would be possible but challenging. The longer route from Devers to SONGS would face additional siting challenges, including segments considered to be challenging.

Table ES-1: Key to Summary Table: Likelihood of Successful Permitting and Construction

■ **Green: Possible**	No major obstacles to permitting or construction
■ **Yellow: Possible but Challenging**	Siting constraints but likely can be overcome
■ **Orange: Challenging**	Serious siting challenges that may not be resolvable
■ **Red: Very Challenging**	Very serious siting challenges that may make routes infeasible

Source: Aspen Environmental, 2014

Table ES-2: Transmission Alternatives – Descriptions and Major Constraints			
Alternative Name	**Description**	**Constraints**	**Likelihood of Successful Permitting**
Alternative 9. IID Strategic Transmission Expansion Project High-Voltage Direct Current	Hoober Substation to "Midway Junction"	• Acquisition of ROW across private and/or agricultural land • Expansion of existing ROW due to proximity of homes • Crossing of Agua Caliente tribal land	**Possible but Challenging**
	"Midway Junction" to Devers Substation		
	Devers Substation to Valley Substation	• Crossing of about 6 miles of tribal land of the Morongo Band of Mission Indians • Proximity to homes: Whitewater area, southern Banning, into Valley Substation • Potential effects on the Potrero Core Reserve for Stephens' kangaroo rat	**Challenging**
	Valley Substation to Inland Substation area (HVDC Underground)	• Existing buried utilities in road ROW • Engineering considerations in design	**Possible but Challenging**
	Inland Substation area to Talega and SONGS	• Expanded ROW through Camp Pendleton and into Talega Substation • Expansion of ROW through Santa Margarita Ecological Reserve	**Challenging**
Alternative 10. SCE Midway to Devers	Midway Substation to "Midway Junction"	• Acquisition of ROW across private and/or agricultural land • Expansion of existing ROW due to proximity of residences • Crossing of Agua Caliente tribal land	**Possible but Challenging**
	"Midway Junction" to Devers Substation		

Source: Aspen Environmental, 2014

CHAPTER 1:
Overview of the Alternative Corridors and Segments Addressed in This Addendum

Figure 1 (at the end of this chapter) presents an overview of the two alternatives evaluated in this report. Alternative 9 is the STEP alternative submitted by the IID, and Alternative 10 is the Midway-Devers route submitted by SCE.

As shown on Figure 1, Alternatives 9 and 10 both start near the southeast corner of the Salton Sea, in Imperial County. The proposed starting substations, a proposed Hoober and the existing Midway, are separated by about 7 miles, and the two routes would follow a very similar corridor for about 75 miles after they join. Table 1 summarizes the route segments considered. The point referenced in the table as "Midway Junction" is the junction of the proposed Hoober-Devers and Midway-Devers routes, about 10 miles north of each substation.

Table 1: Overview of Transmission Segments in Alternatives 9 and 10

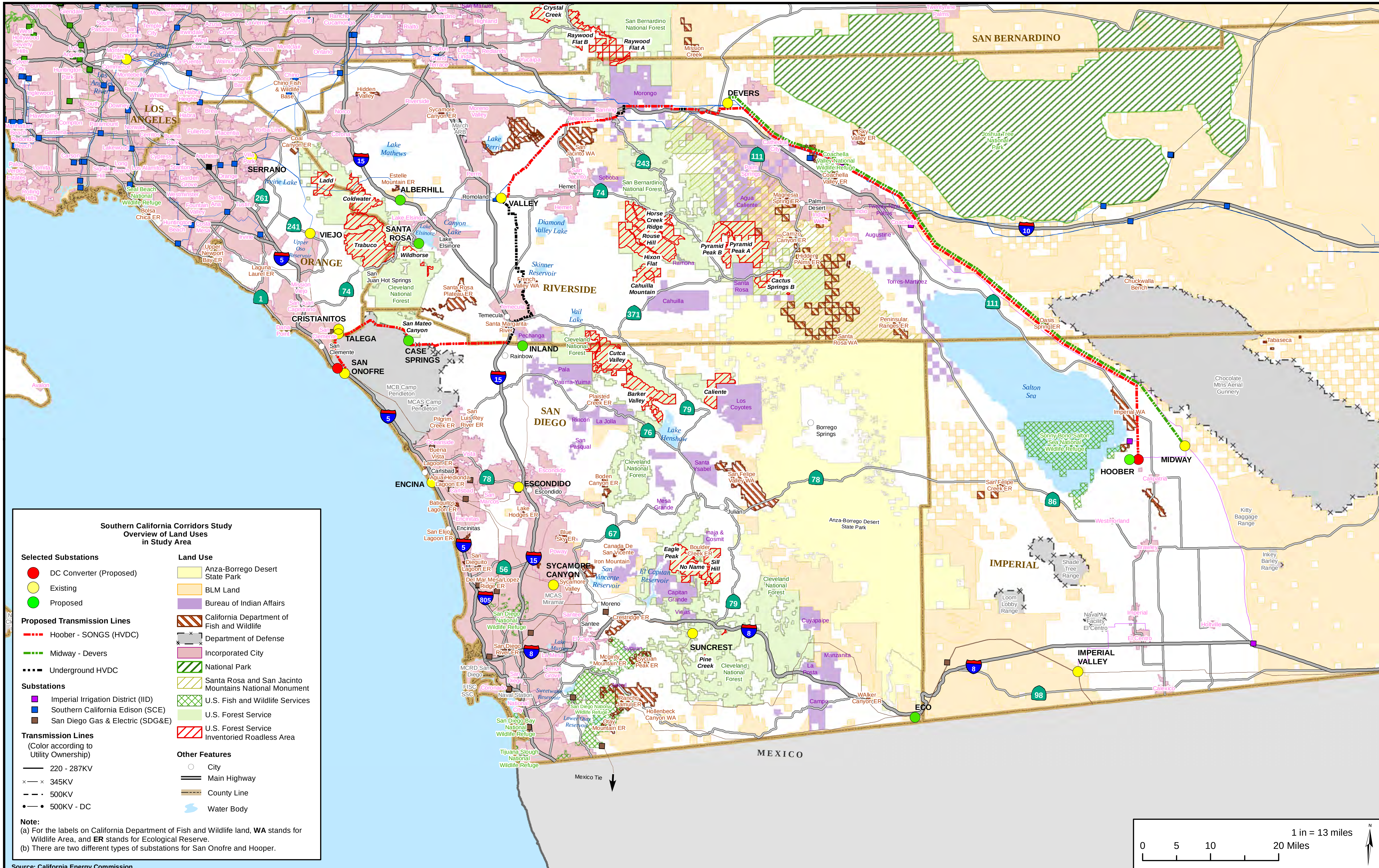
	Alternative 9 Hoober to SONGS	Alternative 10 Midway to Devers
Hoober Substation to Midway Junction	x	
Midway Substation to Midway Junction		x
Midway Junction to Devers Substation	x	x
Devers Substation to Valley Substation	x	
Valley Substation to SONGS Substation	x	

Chapter 2, which describes the land uses and potential development constraints for the IID route from the proposed Hoober Substation to SONGS, includes the analysis of the junction to Devers segment of the SCE Midway to Devers. That analysis is referenced in Chapter 3, which evaluates the Midway-Devers route, but the analysis is not repeated.

Similar to the original report published in May 2014, the discussions of Alternatives 9 and 10 are presented in three sections:

- Routing Summary
- Land Uses
- Constraints

Figure 1 Overview of Hoober-Devers-Valley and Midway-Devers Transmissions



Document Path: T:\Projects\CEC\Tline R\Special Request\SONGS Alternatives Feasibility Analysis\SONGS_Susan Lee_Aspen\Fig_1_Overview_of_Hoober_DeversValley_MesaDevers_Transmission_B_Size.mxd Date Saved: 9/2/2014 7:42:42 AM

CHAPTER 2:
Alternative 9, Imperial Irrigation District's Strategic Transmission Expansion Plan

Project Description Provided by Developer

The project requires construction of a new double-circuit 1,100 MW, 500 kV DC transmission line from the Salton Sea area to the SONGS substation. Components include the following:

a. IID will use existing right-of-way (ROW) from the proposed Hoober substation, located on Hoober Road and 4.5 miles east of the Salton Sea shoreline, to the Devers substation. (See map below for proposed route.)
b. IID will assist with permitting of new ROW from Devers to SONGS.
c. The DC line from the proposed Hoober Substation to SONGS will be built as a double-circuit DC line with a rating of 2,200 MW to allow for a future upgrade (initially to be operated with 1,100 MW, with another 1,100 MW for future expansion).
d. New 500kV and 230kV facilities will be constructed at the proposed Hoober Substation
e. DC converter facilities will be constructed at the proposed Hoober Substation and at SONGS.

Routing Summary

This project is described in four segments: (1) from the proposed Hoober Substation to Midway Junction;[1] (2) from Midway Junction to Devers Substation; (3) from Devers Substation to Valley Substation; (4) Valley Substation to near the Inland Substation; and (5) Inland Substation area to Talega Substation and SONGS. Each route segment is described below.

Segment 1: Hoober to Midway Junction

Figure 2 (presented at the end of Chapter 2) illustrates the area between the proposed Hoober Substation and Midway Junction, as well as the area between Midway Substation and Midway Junction. This portion of the route would begin at the proposed Hoober Substation located on Hoober Road midway between Brandt Road and English Road, 4.5 miles east of the Salton Sea shoreline. It would then head north for 10.5 miles, crossing State Route 111.

Segment 2: Midway Junction to Devers

The Midway Junction to Devers portion of the line would turn northwest immediately north of the Imperial Valley agricultural lands. It would continue northwest for 36 miles. The route would cross from Imperial County to Riverside County after 13.75 miles. After 36 miles, the route would turn north-northwest for 9 miles, crossing Interstate 10 after 6.25 miles. The route

1 "Midway Junction" is the junction of the Hoober-Devers and Midway-Devers routes, about 10 miles north of each substation.

would then turn northwest again for 28 miles, making several minor angle adjustments. Along this portion of the route, it would cross several smaller roadways including Dillon Road, Washington Street, Thousand Palms Canyon Road, Varner Road, Palm Drive, and North Indian Canyon Drive. After 28 miles, the route would turn due west for 0.9 mile to reach a point just south of the Devers Substation. Since this is a DC line, it would not enter the substation and is assumed to turn west in a new corridor north of Dillon Road and about 0.4 mile south of the substation.

Segment 3: Devers to Valley

This route segment is roughly 46 miles long, starting from a point just south of the Devers Substation in North Palm Springs and ending at the Valley Substation in the northern part of Menifee. In general, the route would follow SCE's Devers-Valley (DV) #1 and #2 lines. However, the right-of-way that SCE is using cannot be expanded in certain areas due to land-use or regulatory constraints. As a result, there are several segments in which the STEP route would diverge from the existing SCE corridor. Also due to land-use constraints, some segments would likely have to be installed underground. Figure 3 at the end of this chapter presents the detail of this route segment and shows where the STEP route would likely have to diverge from the existing SCE DV corridor.

Where following the SCE route, the STEP line is assumed to be within a new 200-foot ROW adjacent to the existing ROW. As described in the May 2014 report and Appendix D of the report, the underground segments would require a permanent access right-of-way of about 13 feet. The underground duct bank would be about 2 feet wide and buried at least 3 feet deep. Splice vaults would be located along the route roughly every 1,600 feet.

This route segment is described in six geographic areas because the land uses along this segment drive whether the route could be overhead or whether an underground segment would likely be required.

Devers to Whitewater: New Overhead ROW

The first 3.4 miles of the SCE DV route west of the Devers Substation would pass through a series of wind generation projects between SR 62 and the Interstate 10 (I-10), then cross I-10. Due to the narrow remaining ROW through the wind turbines, the existing DV route would not be followed. Rather, a new ROW of about 5 miles would be located primarily south of the I-10 and adjacent to the highway (but outside the Caltrans ROW). There is an existing lower-voltage line close to the freeway; the new DC line would be located about 150 feet south of that line.

Whitewater River: Overhead ROW Adjacent to DV ROW

For about 0.8 mile, the new line would follow the DV corridor. However, it must diverge from that corridor, turning to the north just west of the I-10 Whitewater exit because the DV corridor turns south and passes through 0.5 mile of the congressionally designated San Jacinto Wilderness Area in the San Bernardino National Forest, as well as through the Santa Rosa San Jacinto National Monument. The 300-foot-wide corridor through the wilderness area already

holds SCE's DV #1 and #2 500 kV transmission lines, leaving no additional space for future lines.

Whitewater: New Overhead and Underground ROW (0.5 mile underground)

The SCE ROW through the Whitewater community is split into two separate corridors, with homes between them. SCE's proposed West of Devers (WOD) Upgrade project would reconfigure the towers in these two ROWs and would leave some vacant space for future transmission lines. However, it is unlikely that SCE would allow IID to use this space, so a separate ROW is considered here.

For about 5.0 miles, the line would be in new ROW, crossing I-10 to the north side about 0.9 mile west of the Whitewater River. Continuing west into the Whitewater community, the line would run along the north side of the Caltrans ROW. The eastern 2 miles of this segment would be in open space but then would enter the residential community of Whitewater. The route would follow Tamarack Road, which has an estimated six to eight homes along it, on both the north and south sides. In this 0.5-mile-long segment, the DC line would likely need to be installed underground within the roadway.

Morongo Land and Vicinity: New Overhead ROW

Two miles of this segment would be separate from (and south of) SCE's WOD 220 kV lines, and the remaining 7 miles would be adjacent to SCE's WOD 220 kV ROW. After passing through the community of Whitewater, the route continues 1.5 miles west along Tamarack Road and north along Rushmore Avenue to join the SCE WOD corridor. This segment crosses the checkerboard pattern of lands owned by the Morongo Band of Mission Indians and private unincorporated lands. There is a 7-mile segment where the new line would be located adjacent to the WOD corridor, currently proposed to be rebuilt by SCE and under study by the California Public Utilities Commission (CPUC) and the U.S. Bureau of Land Management (BLM).

Banning: New Underground ROW

Diverging from the WOD corridor and rejoining the DV corridor heading to the Valley Substation, the STEP route would turn south in an underground segment roughly 2.5 miles through Banning. Land-use constraints in this area would prohibit an overhead high-voltage line. These constraints include the Banning Airport and an area of homes with no available overhead corridor.

The route would turn first south from the DV corridor, continuing for about 1 mile past the east end of the Banning Airport runway, then southwest for a half-mile, and west for a half-mile. The route would then turn south again for a half-mile to rejoin the DV corridor.

Beaumont to Menifee: Adjacent to DV Corridor

The remaining roughly 22 miles of the route would pass through southern Beaumont (south of the Sun Lakes Community), crossing the BLM Potrero Area of Critical Environmental Concern (ACEC) adjacent to the existing DV lines. Continuing west, the route would cross SR 79 then

turn south through low-density residential and open space areas near and within Lakeview, Nuevo, and Menifee.

In particular, the southernmost 3 miles into the Valley Substation would require new ROW because the two existing SCE 500 kV lines pass through residential areas without remaining available adjacent ROW. The STEP route would diverge from the DV corridor in a few short areas by less than one-half mile to avoid homes. This segment would diverge from the DV corridor at Briggs Road, following the road south for about 2 miles, then turning west and following SR 74 (Ethanac Road) to the Valley Substation.

A half-mile of this route, along Briggs Road between Mapes and Watson Roads, would require an underground segment due to the density of residential development. The remaining length of the segment has vacant land on one side of the roads, which may allow overhead towers adjacent to the road ROW.

The STEP line is assumed to pass the Valley Substation but not interconnect there, since interconnection would require an AC/DC converter station.

Segment 4: Valley Substation to Rainbow Valley Boulevard West

For the STEP route between Valley Substation and the proposed Inland Substation, this report assumes the use of the Valley-Inland underground HVDC route developed for Alternative 6, Option 2B, developed for the May 2014 report. The route and associated constraints are presented in Chapter 2 of the May 2014 report and summarized here. As discussed in that report, an underground route for the entire length of this segment is likely to be required due to the density of residential development through Menifee, Murrieta Hot Springs, Murrieta, and Temecula.

The Valley-to-Inland underground HVDC transmission line between the existing SCE Valley Substation and the new SDG&E Inland Substation would be underground within existing roads and assume a ROW width of about 13 feet.

As evaluated in the May report, the HVDC route would require an AC/DC converter stations at the Valley Substation and the proposed Inland Substation. In the STEP alternative, the converter stations would be located at the proposed Hoober and SONGS substations, so they would not be within the Valley-Inland segment.

To minimize traffic delays caused by underground line construction, routes avoiding heavily traveled roadways are preferable. The suggested route is defined as follows:

- Exit the Valley Substation and follow Case Road southeast for 1.3 miles.
- Turn south following Brigg Road for a little more than 1 mile before turning east on Simpson Road for 1 mile.
- Turn south on Leon Road and follow the road for 8.2 miles.
- At Benton Road, jog southeast along Benton Road to Van Gaale Lane then Auld Road, before turning south, southwest on Pourroy Road for 2.2 miles.

- At Murrieta Hot Springs Road, turn west for about 0.8 mile before turning south along Butterfield Stage Road to Walcott Lane and back to Butterfield Stage Road for 4.8 miles.
- At De Portola Road, turn west for 2.6 miles until reaching Jedediah Smith Road, where the route would turn south briefly before continuing west on State Route 79 for 0.4 mile, then southeast on Pechanga Parkway for 0.2 mile to Rainbow Canyon Road.
- The route would follow Rainbow Canyon Road for 3.4 miles until shortly after it becomes Rainbow Valley Boulevard. Near the intersection of Rainbow Valley Boulevard and Rainbow Valley Boulevard West, the route would transition from underground to overhead.

This route is shown as the purple line illustrated in Figure 4 (reproduced from Figure 15 in the May 2014 report and presented at the end of Chapter 2).

Segment 5: Rainbow Valley Boulevard West to Talega and SONGS

From the Riverside/San Diego County line, the originally defined Valley-Inland route (see Alternative 3 in the May 2014 report) would have turned east for about 2 miles into the Inland Substation. Instead, the STEP route would turn west from the intersection of the Riverside/San Diego County line, following the Talega-Escondido 230 kV line to the Talega Substation. Near the intersection of Rainbow Valley Boulevard West and Old Highway 395, the underground route from Valley Substation would transition to overhead and head west toward the Talega Substation.

An HVDC line adjacent to the Talega-Escondido ROW would require 16 miles of new ROW from I-15 to the proposed Case Springs Substation. Case Springs is the future substation site that could interconnect with a future Alberhill-Case Springs route. An additional 14 miles of new ROW would be required from Case Springs heading west to Talega.

Between I-15 and Case Springs, the ROW would be on private land and continue east on private land under San Diego County's jurisdiction; then it would enter Camp Pendleton near Fallbrook. Between Case Springs and Talega Substation, the ROW would be within Camp Pendleton.

The Talega Substation-to-I-15 line segment could be installed on new towers adjacent to the existing 230 kV circuit or could be on new towers that would carry both the HVDC line and the existing 230 kV circuit, and the existing towers could be removed.

From Talega to SONGS, there are multiple existing transmission lines. The ROW would need to be expanded to allow the HVDC line to be added adjacent to existing lines, along the entire length of the ROW, most of which is within Camp Pendleton.

Land Uses

Table 2 defines the land ownership for the STEP transmission line for each of its five analysis segments. As indicated, the route would be roughly 190 miles long.

Table 2: Land Jurisdiction – Hoober Substation to SONGS (miles)

Line Segment	Tribal	BLM	Private Land		DOD: Camp Pendleton	Total
			Incorporated	Unincorporated		
Hoober to Junction	0	0	0	10.5	0	**10.5**
Hoober Junction to Devers	1.8	22.7	12.5	37.4	0	**74.4**
Devers to Valley	4.4	0	10.1	29.4	0	**43.9**
Valley to I-15/Rainbow Valley Bl.	0	0	18.7	11.2	0	**29.9**
I-15/Rainbow Valley Bl. to SONGS	0	0	0	21.0	10.0	**31.0**
TOTAL	**6.2**	**22.7**	**41.3**	**109.5**	**10.0**	**189.7**

Source: Aspen Environmental, 2014

The STEP transmission route is described in five segments: Hoober Substation to the junction with the Midway line (Midway Junction), Midway Junction to Devers, Devers to Valley, Valley to Rainbow Valley Boulevard, and Rainbow Valley Boulevard to Talega/SONGS.

Segment 1: Proposed Hoober Substation to Midway Junction

The Hoober Substation to Midway Junction portion would be located on entirely unincorporated private land in the Imperial Valley. This segment is illustrated on Figure 2 (detail) and Figure 5 (land uses of the segment from Hoober to Devers); both maps are presented at the end of Chapter 2.

IID would need to secure a new right-of-way for this portion of the line. The right-of-way width would likely be 100 feet and parallel to the existing 100-foot-wide right-of-way.

This area is dedicated entirely to agriculture. The new right-of-way would require use of agricultural land. An estimated 8 miles of the ROW would cross Farmland of Statewide Importance and Farmland of Local Importance as mapped by the Farmland Mapping and Monitoring Program (DOC, 2010). The line would also cross land mapped as "other"; common examples of "other" land include low-density rural development, brush, wetland and riparian areas, livestock, mines, and borrow pits, among other categories (DOC, 2010).

Just north of State Route 111, the route would span the Southern Pacific Railroad and the IID East Highland Canal. The route would not cross the Coachella Canal in this portion.

The proposed Hoober Substation would be located adjacent to the Midway Solar Farm I, a 66 MW solar photovoltaic (PV) project approved by Imperial County. During environmental review of this project, biological resources surveys were conducted. Special status species in the area include burrowing owl, and some burrowing owls have been found immediately adjacent to the proposed Hoober Substation site (Imperial County, 2011). Riverine and riparian habitat is located close to the transmission line route, including the Alamo River that lies about a mile

west of the route (Imperial County, 2011). Bird deterrents would likely be required to reduce bird strikes.

Segment 2: Midway Junction to Devers

The Midway Junction to Devers portion of the route would parallel the existing 230 kV Coachella Valley-Niland/El Centro Transmission Line to the IID Coachella Valley Substation. From the Coachella Valley Substation to the Ramon Substation, the new line would parallel the IID portion of Path 42. From the Ramon Substation to the Devers Substation, IID would need to secure a new ROW, including obtaining a ROW grant for a new line across land managed by the BLM. On the BLM land, the new line would be within a designated utility corridor, so it would not require a land-use plan amendment. The ROW width would likely be 100 feet wide. The route could follow the SCE route between the SCE Mirage Substation and the Devers Substation; however, there are some locations where there may not be sufficient available land for an additional high-voltage line.

The first 30 miles of the Midway Junction to Devers route would roughly parallel the eastern boundary of the Salton Sea. This area is a checkerboard of land owned by the BLM and private land. Several recreational vehicle (RV) resorts are located about 1 mile north of the line near the community of Frink.

In this portion, the line would cross the West Chocolate Renewable Energy Evaluation Area and would potentially cross authorized and pending geothermal leases on BLM land. IID would need to coordinate with the BLM and lease holders to avoid any conflicts. The line would also cross the Dos Palmas ACEC. The Dos Palmas ACEC has a mission to safeguard the ecological sustainability and natural diversity of the ecoregion (BLM, 2009). The land in the Dos Palmas ACEC area is noncontiguous BLM property mixed with Coachella Valley Water District, San Diego Water Authority, the Center for Natural Lands Management, Bureau of Reclamation, and private property (BLM, 2009). As noted above, the new line would be located within the existing designated utility corridor where it crosses the Dos Palmas ACEC. Mitigation would likely be required to reduce any impacts to the ACEC and the biological resources it was established to protect. North of the ACEC, the line would span the Coachella Canal.

On the north side of the Salton Sea, the line would pass within one mile of several small communities near Mecca. The nearest community would be about 1,000-2,000 feet south of the line on the southern side of the IID Coachella Canal. Almost two miles past the I-10, the line would be adjacent to the Coachella Transfer Station, a privately owned and operated waste transfer station owned by Burtec.

Near Indio, the line would be roughly 1,000 feet from several existing communities and would potentially cross over an existing mining operation. From east of Indio until reaching the Devers Substation, the line would cross or be adjacent to several properties owned by public agencies or conservation groups. These include the following (IID, 2013):

■ Coachella Valley Association of Governments ■ Coachella Valley Water District

- State of California
- Metropolitan Water District
- Mission Springs Water District
- U.S. Fish and Wildlife Service Coachella Valley National Wildlife Refuge
- California Department of Fish and Wildlife, Wildlife Conservation
- Tribal lands
- Bureau of Land Management
- Riverside County Flood Control
- Coachella Valley Conservation Commission
- East Indio Hills Conservation Area
- Thousand Palms Conservation Area

On the northern side of Thousand Palms, the existing IID and SCE lines are located in a corridor with homes on either side. It is uncertain if the corridor could accommodate an additional high-voltage line. To avoid this area, the line would have to travel north for nearly one mile, then west for 0.8 mile, then south for 0.6 mile to rejoin the existing corridor.

On the western border of North Palm Springs, the existing corridor would also be bordered by homes on the southern side and existing infrastructure on the northern side. It is uncertain if the corridor could accommodate an additional high-voltage line. To avoid this area, the line would have to travel north for about 0.35 mile, then west for 0.35 mile to rejoin the existing corridor.

The line would cross several sensitive habitats. Sensitive species located near the route include burrowing owl, desert tortoise, Coachella Valley fringe-toed lizard, and Coachella Valley milk-vetch. New disturbance in these habitats would require mitigation to reduce the impacts.

Segment 3: Devers to Valley

The land uses along the STEP portion of the DV segment are as follows.

- **Devers to Whitewater River: New ROW**. Unincorporated Riverside County, consisting of open space and wind projects.
- **Whitewater River to Whitewater Community: Adjacent to DV ROW.** Unincorporated Riverside County, open space.
- **Whitewater Community to Morongo Tribal Land: New ROW with 0.5 mile underground**. Unincorporated Riverside County, one-half mile through the residential community of Whitewater, and open space.
- **Morongo Tribal Land Segment: New ROW (2 miles) and adjacent to SCE's West of Devers (WOD) 220 kV ROW (7 miles)**. Unincorporated Riverside County and Morongo tribal land. Primarily open space, but about 1 mile is adjacent to the Cabazon Outlet Malls and about a quarter-mile south of the Morongo Tribal Headquarters.
- **Morongo Land to South Banning**: **New ROW – Underground DC**. Diverging from the WOD corridor, the STEP route would turn south in an underground segment to rejoin the DV corridor. The route would turn first south (for about 1 mile) past the east end of

the Banning Airport runway, then southwest for a half-mile through a primarily industrial area, and west for a half-mile, also in an industrial area. The route would then turn south for a half-mile through a residential area along South Hathaway Street to rejoin the DV corridor.

- **Beaumont to Menifee: Adjacent to DV Corridor**. The remaining roughly 22 miles of the route passes through Beaumont (south of the Sun Lakes retirement community), crossing State Route (SR) 79 to areas near and within Lakeview, Nuevo, and Menifee. This area is primarily open space and low-density residential areas.

  Within the Beaumont-to-Menifee route segment the route passes just north of the **Potrero Core Reserve** (Riverside County, 2014), part of the Riverside County Habitat Conservation Agency's (RCHCA) preserve for the Stephens' kangaroo rat. The route might be within this reserve on the northwestern corner of the reserve. According to the RCHCA website (RCHCA, 2014), the agency was formed in 1990 for planning, acquiring, and managing habitat for the SKR and other endangered, threatened, and candidate species. The RCHCA is a joint powers agreement agency composed of the cities of Corona, Hemet, Lake Elsinore, Menifee, Moreno Valley, Murrieta, Perris, Riverside, Temecula, and Wildomar, and Riverside County. The specific requirements for passing through this land, if it cannot be avoided and transmission is not a prohibited land use, require further research.

Segment 4: Valley Substation to Rainbow Valley Boulevard West

As described in the May 2014 report for Alternative 6, Option 2B (HVDC underground), the land uses along the route segment between Valley and Inland would be as follows:

- Case Road, adjacent to former Burlington Northern Santa Fe (BNSF) railroad tracks that extend northwest-southeast.
- South on Brigg Road, which is primarily a dirt road about 40 to 50 feet wide. Brigg Road becomes paved where it is adjacent to existing suburban homes within Menifee.
- The corridor would turn east on Simpson Road, adjacent to existing agricultural fields and water ponds.
- The route would turn south on Leon Road, primarily by agricultural lands with some rural residences and smaller portion of suburban homes.
- At the intersection of Leon Road and Lantana Way, Leon Road splits, and the HVDC corridor would follow the unpaved road that is roughly 30 feet wide until reaching Benton Road.
- Benton Road and Van Gaale Lane have adjacent homes on either side. Agricultural lands border Van Gaale Lane to the west, and suburban homes border it to the west. Similarly, Pourroy Road widens into a four-lane, 70-foot right-of-way near suburban areas.

- Pourroy Road and Butterfield Stage Road are surrounded by suburban residential development or planned development.
- Walcott Lane would cross rural residential areas then cross into suburban residential lands. When returning to Butterfield Stage Road, the route would remain surrounded by suburban homes for the majority of this portion.
- De Portola and Jedediah Smith Roads have larger homes, which are located on both sides of the two roads.
- State Road 79 has adjacent to commercial and agricultural lands.
- From SR 79, the corridor would turn onto Pechanga Parkway, which also has three lanes in either direction before turning onto Rainbow Valley Boulevard. Rainbow Valley Boulevard is a two-lane road with a 40-foot ROW that runs through suburban residential development, the Temecula Creek Inn Golf Course, and then open space.
- Just northeast of the intersection of Rainbow Valley Boulevard West and Old Highway 395, the underground route would transition to overhead. From this point, immediately adjacent to the SDG&E Talega-Escondido 230 kV corridor, the overhead DC line would turn west.

Segment 5: Rainbow Valley Boulevard West to Talega and SONGS

As the crow flies, there is a distance of about 25 miles from the intersection of I-15 and the Talega-Escondido corridor to the Talega Substation. Like Alternative 3 evaluated in the May 2014 report, this route segment would cross areas of unincorporated San Diego County with rural residences. It would then pass into Marine Corps Base Camp Pendleton, requiring an expansion of the SDG&E ROW to allow construction of the new line.

The DC line would also run the 6.4-mile distance between the Talega Substation and the SONGS substation, where the AC/DC converter would be located. The May 2014 report considered both the Japanese Mesa and SONGS Mesa sites for potential termination points for the southern end of an offshore DC line; these locations are also potential sites for the DC converter station. They would require an easement from Camp Pendleton for both the transmission line and the converter station.

Constraints

For this transmission line route, the environmental constraints potentially affecting development are diverse because of the length of the route and the varied land uses that would be affected. Constraints are addressed by segment.

Segment 1: Proposed Hoober Substation to Midway Junction

There are few potential constraints in this segment, given the low density of residential properties and the fact that the area is primarily open space. The only constraint is the likely need to acquire new or wider ROW on private agricultural land

Constraint 1: Acquisition of New or Wider ROW on Private Agricultural Land

The proposed Hoober Substation to Midway Junction route would require 10.5 miles of new ROW. This ROW would be located entirely on private land and would require permanent loss of Farmland of Statewide Importance and Farmland of Local Importance. Loss of agricultural lands would typically require mitigation in the form of compensation to the owner of the land and restoration of any land temporarily disturbed.

Segment 2: Midway Junction to Devers Substation

This segment has the potential for two constraints:

1. Required expansion of existing ROW due to proximity of homes
2. Tribal land: Agua Caliente Band of Cahuilla Indians

Constraint 1: Required Expansion of Existing ROW due to Proximity of Homes

The majority of the Midway Junction-to-Devers Substation route would parallel the existing ROW. There is sufficient space along most of the route to include a new line without resulting in impacts to existing structures or land uses. In two specific locations, on the north side Thousand Palms and on the western border of North Palm Springs, the existing transmission corridor may not be able to accommodate an additional line. In these locations, the route would have to jog north and then west to avoid the existing communities. This would require a new ROW outside an existing corridor.

Constraint 2: Tribal Land: Agua Caliente Band of Cahuilla Indians

Because tribes are sovereign nations and not governed by federal or state governments, their land is not subject to eminent domain. Transmission lines crossing tribal land must be sited with full agreement of the tribal government and members. For this reason, transmission line siting often avoids all tribal land. However, Alternative 9 as suggested by IID would cross tribal lands while following the existing corridor. If an agreement cannot be reached with the Agua Caliente tribe, the line would need to jog north and then west to avoid tribal land, resulting in a slightly longer line that would be located instead on BLM and private land.

Segment 3: Devers to Valley

As described in the Routing Summary section, much of this segment would follow the existing SCE Devers-Valley transmission corridor. However, the lack of available space in certain route segments creates some potential land-use conflicts, as described in these three constraints.

1. Morongo Band of Mission Indians
2. Proximity to homes: Whitewater area, southern Banning, into Valley Substation
3. Potrero Core Reserve for Stephens' kangaroo rat

Constraint 1: Morongo Band of Mission Indians

About 6 miles of the route between Whitewater and Banning would be on or adjacent to Morongo tribal land. SCE has existing easements for 3 220 kV transmission lines across tribal lands, but the negotiations to renew these easements over the past 10 years have been challenging because the two parties were not able to agree on terms. In fact, the WOD segment of the Devers-Palo Verde #2 Project could not be constructed as proposed in 2006, even though it was the least environmentally damaging alternative because the SCE-Morongo negotiations had not been completed.

For the WOD Upgrade Project (now under environmental review by the CPUC and BLM), SCE and the Morongo Band have reached an agreement in which the Morongo Band has an option to invest in the line and receive income from its operation. This type of investment option may allow IID to successfully locate an overhead DC transmission line on tribal land. But if the tribe votes not to allow the line, it cannot be pursued, and alternative routes are extremely limited.

Constraint 2: Proximity to Homes

The transmission line would pass through several residential communities. In some cases, it is likely that IID would have to install the line underground due to the lack of available ROW for an overhead line, particularly in Whitewater, in Southern Banning, and into the Valley Substation in Menifee. These segments are defined in the Routing Summary section, in the Segment 3 discussion.

The overhead portions of the line would likely be of concern to other residents who live near the line, given the visual impacts, corona noise, electric and magnetic field (EMF) concerns, and construction disturbance. These types of concern can generate large-scale project opposition, and it may drive the consideration of additional routing alternatives in the California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA) process.

Constraint 3: Potrero Core Reserve for Stephens' Kangaroo Rat

South of Beaumont at the end of Highland Springs Drive, there is a large preservation area for the Stephens' kangaroo rat (SKR). The two existing SCE 500 kV DV lines pass just north of this preserve. In this area, the IID line would have to be located south of the existing SCE lines due to residential neighborhoods on the north side, so it is possible that the line would enter a part of the preserve. The Riverside County Habitat Conservation Agency would have to be consulted regarding potential easements across the preserve, and mitigation requirements could be very expensive if construction within the preserve were required.

Segment 4: Valley Substation to Rainbow Valley Boulevard West

The major constraints for the segment south of Valley Substation are the same as those defined in the May 2014 report for Alternative 6, Option 2B. They are presented from most serious to least serious. Because the HVDC underground route would follow existing roads, it would be less constrained by adjacent land uses or natural resources that would be affected by an

overhead line in undisturbed areas. Each constraint is described in more detail in the following paragraphs.

1. Existing utilities in the road ROW
2. Engineering considerations
3. Electric and magnetic fields

Constraint 1: Existing Utilities Within the Road ROW

The underground HVDC construction ROW would require about 13 feet of space parallel to the trench, but the trench itself would be only about 3 to 6 feet wide. In some instances, roadways, in particular older roadways, may be congested due to existing utilities located beneath the surface. For example, while much of the underground route has distribution facilities above ground, some of the newer development may require distribution lines to be underground. Typical underground utilities include water lines, sewer pipes, and natural gas pipelines. Separation from existing utilities would be required to ensure safety of all utilities during both construction and operation.

Constraint 2: Engineering Considerations

The HVDC route follows straight roads wherever possible as doing so would ease the construction of an underground road where trenching is required. The turning radius of the route would need to be carefully engineered, in particular in locations where the road width is limited. Special construction methods (horizontal boring and/or directional drilling) may be required in areas where open trench construction is not feasible. These areas would include railroad tracks (such as along Case Road), large utility crossings, roads, drainage crossings, and environmentally sensitive areas.

Constraint 3: Electric and Magnetic Fields

In some projects that undergo substantial public scrutiny, especially where the lines would be located near homes, a major issue of concern tends to be regarding potential health effects from exposure to EMFs. Generally, providing information and educational materials on these fields can resolve many concerns.

Segment 5: Rainbow Valley Boulevard West to Talega and SONGS

The major constraints within this westernmost segment of the STEP route are those listed below. Each constraint is described in more detail in the following paragraphs.

1. Expansion of ROW through Camp Pendleton
2. Expansion of ROW through Santa Margarita Ecological Reserve

3. Scenic and low-density residential areas in northern San Diego County

Constraint 1: Expansion of ROW Through Camp Pendleton

These concerns were discussed in the May 2014 report as Constraint 4 in Section 3.3.2 (for Alternative 3) and are repeated here. The new HVDC line following the existing Talega-Escondido corridor between Case Springs and Talega would be on land owned by Camp Pendleton. The undeveloped land in the vicinity of the ROW is used for military training and exercises but is largely undisturbed. An agreement between the Navy and SDG&E provides for use of the ROW and a portion of the Talega Substation site. The current easement document would require an amendment by the parties to expand the ROW. Concerns may arise regarding the height and location of towers and spans relative to existing towers and spans and the risk they may pose to military aircraft. The existing ROW grant would have to be examined to determine if a line larger than 230 kV is allowed and if taller towers would be permitted. Additional concerns would relate to the potential for igniting a fire and for impacts on firefighting. The landscape along much of the ROW is undisturbed and has the potential to provide habitat for various special status species.

The potential siting of a transmission line within Marine Corps Base Special Use/Restricted Airspace would require base review of the location of the transmission line (SDG&E, 2002). The 200-foot ROW granted in a 50-year easement in 1974 would not support construction of a 500 kV transmission line in addition to the existing 230 kV transmission line. Acquiring additional ROW would require an amended or new easement document from the U.S. Navy and concurrence in the construction of the line.

The concern about permits from Camp Pendleton also applies to the route segment between Talega and SONGS. While existing transmission is present in this segment, the ROW would need to be widened and space for the AC/DC converter station would need to be identified near SONGS.

Constraint 2: Expansion of ROW Through Santa Margarita Ecological Reserve

The route segment between the I-15 and Case Springs area may require additional ROW width. This segment passes through the Santa Margarita Ecological Reserve, most of which is in Riverside County north of the ROW. However, south of the San Diego County line, parts of the existing Talega-Escondido ROW near the Santa Margarita River fall within the reserve boundary. Adding a new HVDC line between I-15 and Case Springs likely would require substantial mitigation for affected special status species, if a route is allowed in this reserve.

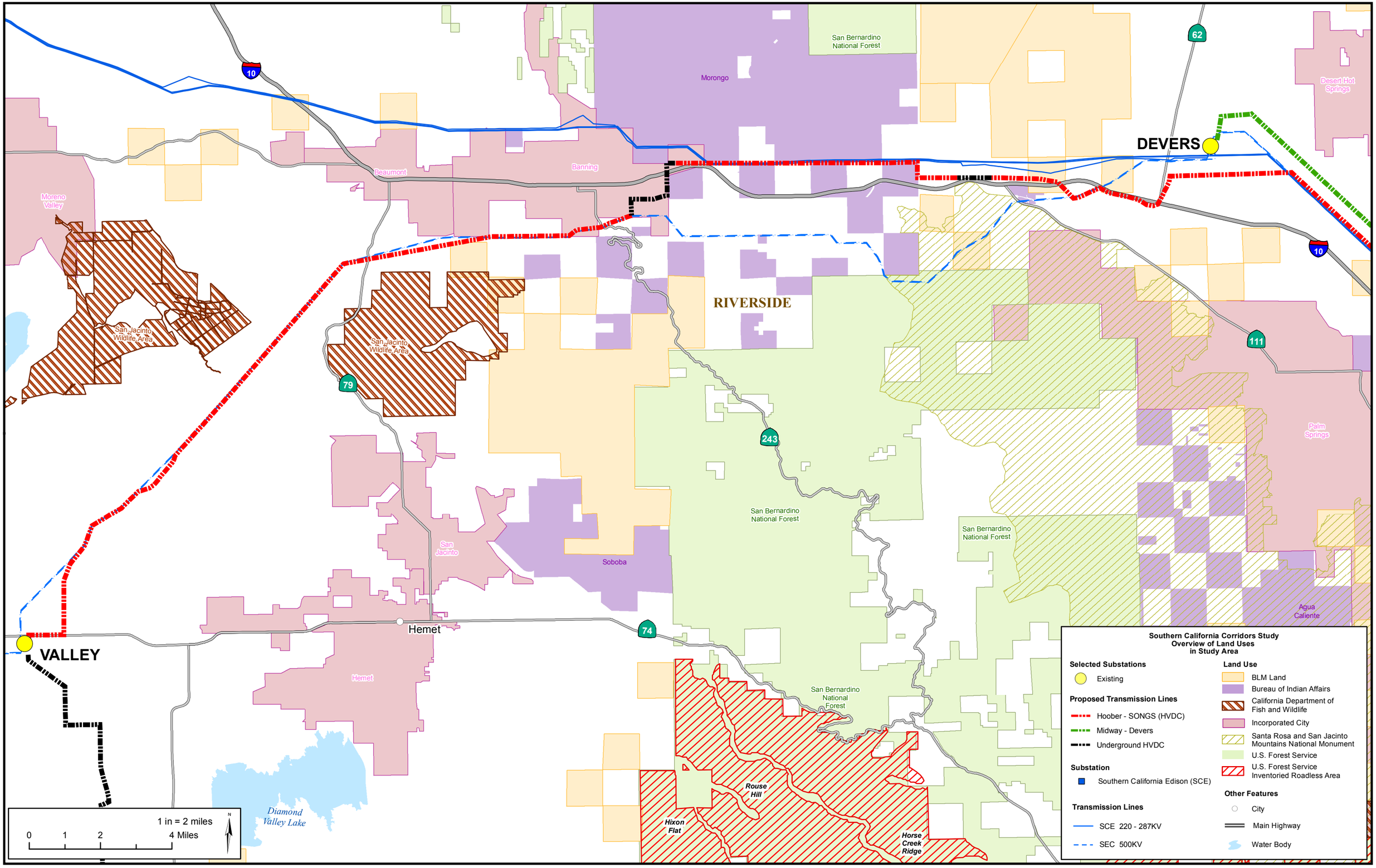
Constraint 3: Scenic and Dispersed Residential Areas and Tribal Concerns in Northern San Diego County

The inland valleys of northern San Diego County are generally open landscapes characterized by grazing, agriculture, and scattered homes. Residents would likely oppose the additional visual disturbance presented by a new transmission line, even adjacent to an existing line.

Figure 2 Detail of Hoober and Midway Substation Area

Document Path: T:\Projects\CEC\Tline R\Special Request\SONGS Alternatives Feasibility Analysis\SONGS_Susan Lee_Aspen\Fig_2_Overview_of_Hoober_DeversValley_MesaDevers_Transmission_B_Size.mxd Date Saved: 8/29/2014 3:28:05 PM

Figure 3 Detail of Devers to Valley



Document Path: T:\Projects\CEC\Tline R\Special Request\SONGS Alternatives Feasibility Analysis\SONGS_Susan Lee_Aspen\Fig_3_Overview_of_Hoober_DeversValley_MesaDevers_Transmission_B_Size.mxd Date Saved: 8/29/2014 3:28:04 PM

Figure 4: Underground HVDC Route From Valley to Inland Substation

(Taken From Figure 15 in May 2014 Report. Underground HVDC Route in Red)

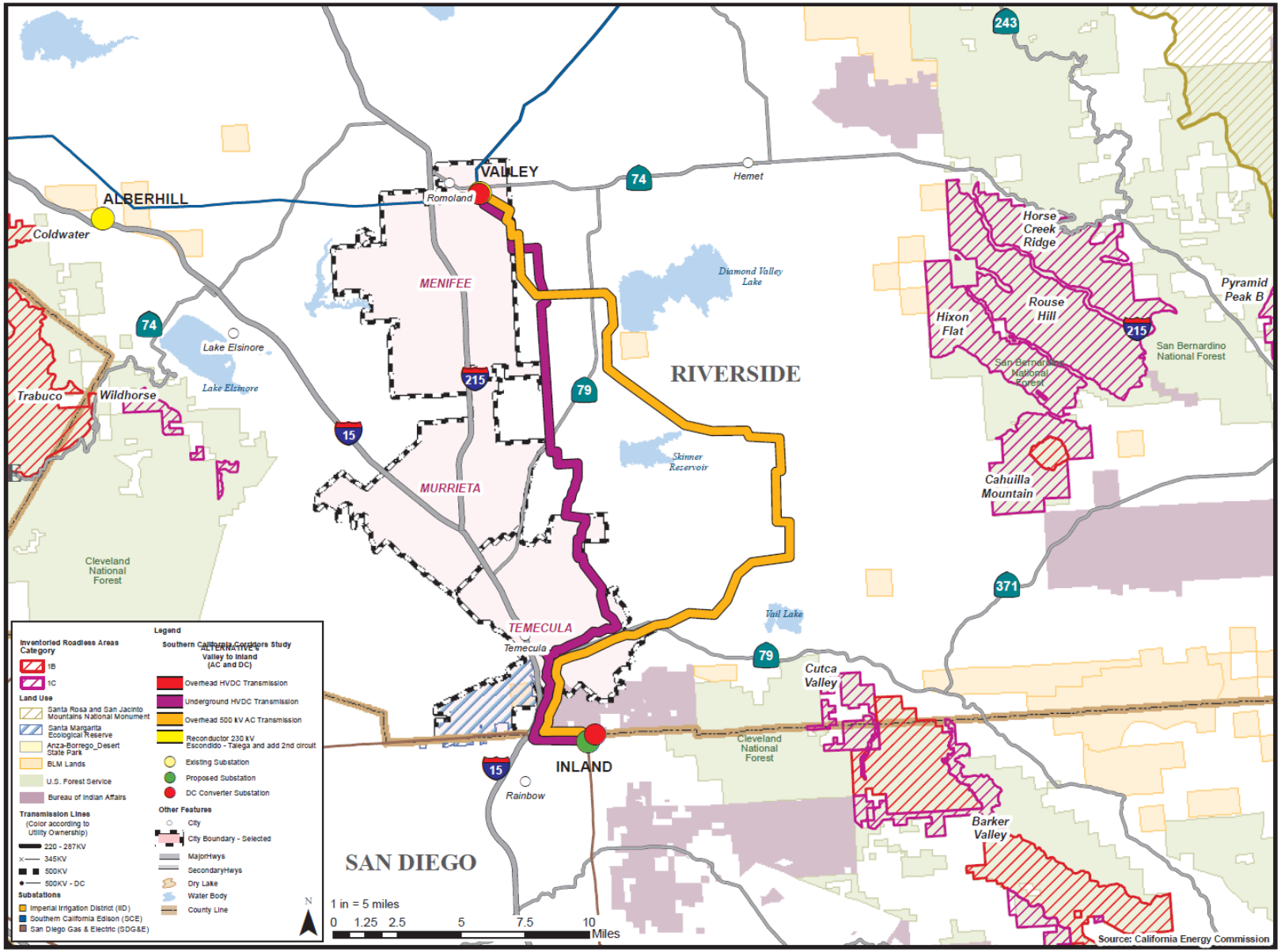
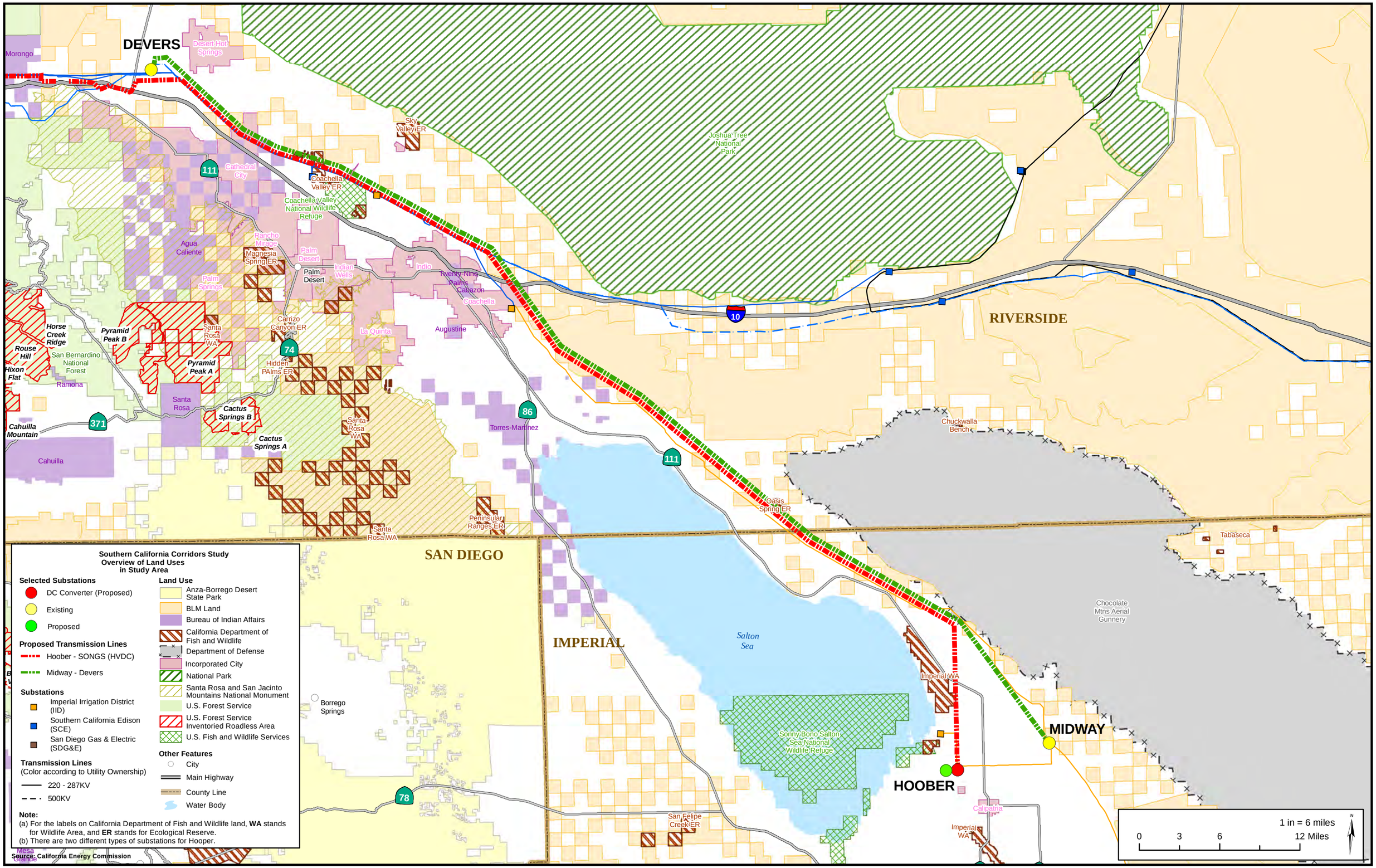


Figure 5 Detail of Hoober/Midway to Devers Area



Southern California Corridors Study
Overview of Land Uses
in Study Area

Selected Substations
- DC Converter (Proposed)
- Existing
- Proposed

Proposed Transmission Lines
- Hoober - SONGS (HVDC)
- Midway - Devers

Substations
- Imperial Irrigation District (IID)
- Southern California Edison (SCE)
- San Diego Gas & Electric (SDG&E)

Transmission Lines
(Color according to Utility Ownership)
- 220 - 287KV
- 500KV

Land Use
- Anza-Borrego Desert State Park
- BLM Land
- Bureau of Indian Affairs
- California Department of Fish and Wildlife
- Department of Defense
- Incorporated City
- National Park
- Santa Rosa and San Jacinto Mountains National Monument
- U.S. Forest Service
- U.S. Forest Service Inventoried Roadless Area
- U.S. Fish and Wildlife Services

Other Features
- City
- Main Highway
- County Line
- Water Body

Note:
(a) For the labels on California Department of Fish and Wildlife land, **WA** stands for Wildlife Area, and **ER** stands for Ecological Reserve.
(b) There are two different types of substations for Hooper.

Source: California Energy Commission

Document Path: T:\Projects\CEC\Tline R\Special Request\SONGS Alternatives Feasibility Analysis\SONGS_Susan Lee_Aspen\Fig_4_Overview_of_Hoober_DeversValley_MesaDevers_Transmission_B_Size.mxd Date Saved: 8/29/2014 3:28:06 PM

CHAPTER 3:
Alternative 10, Southern California Edison Midway Substation to Devers Substation Route

Project Description Provided by Developer

This route proposed by SCE would require construction of a 500 kV AC line between the IID Midway Substation and the SCE Devers Substation.

a. The project would use existing IID ROW between IID Midway and SCE Devers Substation to the extent possible for a single 500 kV AC circuit construction
b. Where existing ROW is not possible, new potential routing would need to be identified
c. New 500 kV facilities will be constructed at Midway.

Routing Summary

The SCE route between the Midway Substation and SCE's Devers Substation would require 12 miles of additional ROW from the Midway Substation to Midway Junction. The remaining 74.4 miles would be the same route as described for the Midway Junction to Devers Substation segment of Alternative 9 (See Chapter 2). This project is described in two segments, as described in Table 3.

Table 3: Land Jurisdiction – Midway Substation to Devers Substation

Line	Tribal	BLM	Private Land		Total
			Incorporated	Unincorporated	
Midway to Midway Junction	0	5.9	0	6.1	**12.0**
Midway Junction to Devers	1.7	22.8	12.3	37.6	**74.4**
TOTAL	**1.7**	**28.7**	**12.3**	**43.7**	**86.4**

Source: Aspen Environmental, 2014

Segment 1: Midway to Midway Junction

This portion of the route would begin at the Midway Substation located on East Simpson Road just west of East Highline Canal Road. The line would follow the existing IID ROW, north for about 3 miles, then turn west for 0.9 mile before trending northwest for 8 miles.[2]

Segment 2: Midway Junction to Devers

This segment is the same as the STEP route between Midway Junction and Devers, described in Chapter 2.

2 The Midway Junction is from the Hoober Substation to the junction with the Midway line.

Land Uses

The two project segments are described as follows.

Segment 1: Midway to Midway Junction

The Midway-to-Midway Junction portion would be located on unincorporated private land and on land managed by the BLM. On the BLM land, the new line would be within a designated utility corridor, so it would not require a land-use plan amendment. IID would need to secure a new ROW for this portion of the line. The ROW width would likely be 100 feet wide and parallel to the existing IID 100-foot-wide ROW.

This area is primarily open space. The route would travel adjacent to agriculture for the first 4 miles but would be located outside any active agriculture areas. Shortly after exiting the Midway Substation, the line would cross the East Highline Canal and would span the Southern Pacific Railroad line. It would run roughly 0.5 mile south of "Slab City," the abandoned Camp Dunlap Marine Training Facility that is used for RV camping during winter months. This land is owned and managed by the State. The route would cross the West Chocolate Mountain Renewable Energy Evaluation Area.

The region is characterized by desert scrub vegetation, desert washes, and some areas of disturbed soils. The most common vegetation community in the region is creosote bush scrub, with saltbush scrub and desert wash also present (BLM, 2012). Sensitive species located near the route include burrowing owl, desert tortoise, and potentially flat-tailed horned lizard (BLM, 2012). Many resident and migrating bird species also use this area. New disturbance in this habitat would require mitigation to reduce the impacts.

Segment 2: Midway Junction to Devers

This segment is the same as the STEP route between Midway Junction and Devers, described in Chapter 2.

Constraints

The constraints for developing the SCE Midway-to-Devers project are essentially the same as those defined for the STEP alternative presented in Chapter 2, but this project would end at Devers Substation. The potential constraints presented in that section are summarized below.

Segment 1: Proposed Hoober Substation to Midway Junction

There are few potential constraints in this segment given the low density of residential properties and the fact that the area is primarily open space. The only constraint is the likely need to acquire new or wider ROW on private agriculture land

Segment 2: Midway Junction to Devers Substation

This segment would encounter two potential constraints. First, the proximity of homes to the existing ROW may restrict IID's ability to expand the ROW in certain areas. Second, the route

passes through tribal land (Agua Caliente Band of Cahuilla Indians), so the tribe would have to approve the expanded ROW.

CHAPTER 4:
Summary of Original Report and Alternatives Evaluated

This chapter summarizes the alternatives considered in the May 2014 report and explains how they relate to the two alternatives evaluated in this addendum.

After the May 2014 publication of the report *Transmission Options and Potential Corridor Designations in Southern California in Response to Closure of San Onofre Nuclear Generating Station*, in July 2014, the California ISO held a workshop titled "Imperial County Transmission Consultation Stakeholder Meeting" to discuss the issues associated with delivering renewable generation out of the Imperial Irrigation District to the rest of the electrical transmission system. Aspen authors presented a summary of the findings of the May 2014 report, and stakeholders were invited to provide comments. Some of the comments, due on July 28, 2014, suggested that the initial report be expanded to include additional transmission alternatives following specific routes.

The eight alternatives evaluated in the May 2014 report included:

- Alternative 1, Offshore DC Alternatives.
- Alternative 2, Alberhill to Suncrest.
- Alternative 3, Enhanced Talega-Escondido/Valley-Serrano (TE/VS) (Inland Route).
- Alternative 4, Enhanced TE/VS (Coastal Route).
- Alternative 5, Inland Valley Powerlink (AC and DC).
- Alternative 6, Valley to Inland (AC or DC Underground).
- Alternative 7, Imperial Valley Expansion.
- Alternative 8, Mesa Substation Loop-In.

The analysis of these routes presented an early stage evaluation of the potential transmission corridors in the Southern California study area. Comprehensive environmental and technical studies would still need to occur before any agency could approve a project within any of the corridors.

The results of the May 2014 study are summarized in Table 1 of that report in the executive summary (titled "Transmission Alternatives – Descriptions and Major Constraints"). The conclusions were that permitting the submarine cable HVDC and five of the onshore transmission alternatives would be possible but challenging. Furthermore, the Mesa Substation Loop-In alternative could be implemented in a shorter time frame than the other onshore transmission alternatives.

The onshore routes and segments are summarized in the following sections, and the segments related to those studied in this addendum are highlighted.

Overview of Onshore Alternative Corridors and Segments: May and September Alternatives

The five onshore transmission routes (Alternatives 2 through 6) that were evaluated in the May 2014 study had several transmission segments in common and interconnect a variety of substations. Table 4 shows the transmission segments that each of the originally studied alternatives would use. In this updated table, the route segments that are assumed to be required also in this addendum to complete Alternatives 9 and 10 are shown with diagonal hatching and yellow shading.

Table 4: Transmission Segments for Onshore Alternatives

	Alt 2 Alberhill to Suncrest	Alt 3 TE/VS (Forest)	Alt 4 TE/VS (Talega–Serrano)	Alt 5 Imperial Valley–Inland	Alt 6 Valley–Inland
500 kV – Alberhill to Warner	x				
500 kV – Alberhill to Case Springs		x			
500 kV – Talega to Case Springs to Inland		**x**			
500 kV – Inland to Warner		x	x		
500 kV – Warner to Suncrest	x	x	x		
500 kV – Serrano to Talega			x		
500 kV – Talega to Inland			**x**		
500 kV – Imperial Valley to Inland				x	
HVDC Option – Imperial Valley to Inland				x	
500 kV – Valley to Inland					**x**
HVDC Option – Valley to Inland					**x**
230 kV – Inland to Escondido (new 2nd circ.)		x	x		
230 kV – Talega to Escondido (reconductor; 2nd circuit; loop into Inland Sub.)				x	X

Source: Aspen Environmental, 2014

Figure 6 at the end of this chapter is a map schematically showing all the substations and segments that would be affected by the onshore alternatives considered in the May 2014 report.

Table 5 shows the substations with which each of the original alternatives would interconnect. The cells highlighted in yellow show the substations that would also be affected by Alternatives 9 and 10.

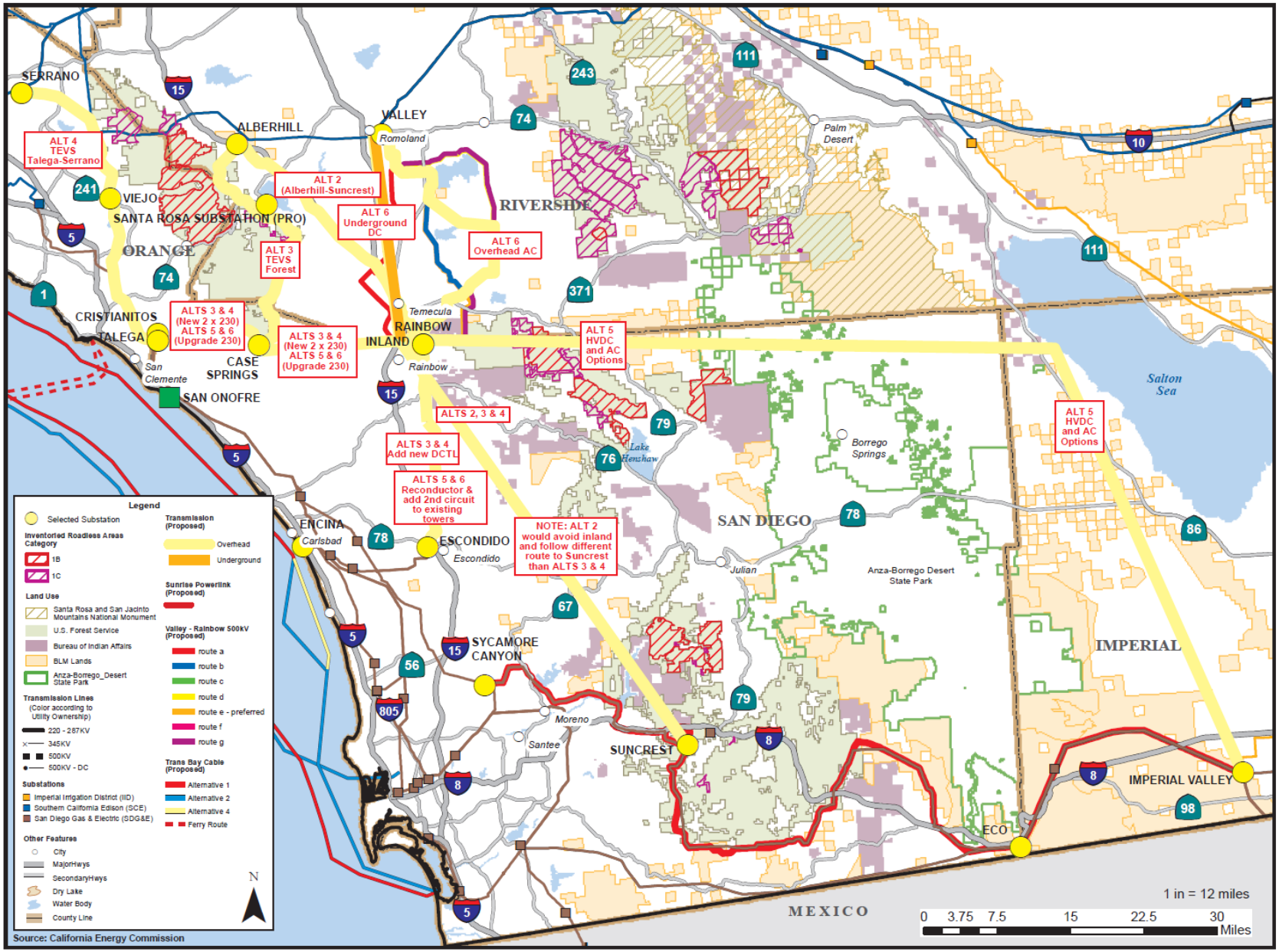
Table 5: Substations by Alternative

	Alt 2 Alberhill to Suncrest	Alt 3 TE/VS (Forest)	Alt 4 TE/VS (Talega–Serrano)	Alt 5 Imperial Valley–Inland	Alt 6 Valley–Inland
Alberhill (New 500/115 kV)	x	x			
Case Springs (New 500 kV)		x			
Inland (New 500 kV)		x	x	x	x
Suncrest (Existing 500/230 kV)	x	x	x		
Talega (Add 500 kV to 230/138 kV)		x	x		
Talega (Existing 230 kV)				x	x
Serrano (Existing 500/230 kV)			x		
Escondido (Existing 230 kV)		x	x	x	x
Imperial Valley (Add 500 kV or HVDC)				x	
Valley (Add 500 kV or HVDC)					x
San Onofre and Huntington Beach (Synchronous Condenser Sites)		x	x		
Japanese Mesa (SDG&E San Onofre Nuclear Generating Station (SONGS) Mesa 69 kV)				x	x

Source: Aspen Environmental, 2014

Figure 6: Schematic Map of Onshore Substations and Segments

(Figure 7 from May 2014 Report)



ACRONYMS

AC	Alternating current
AC/DC	Alternating current/direct current
ACEC	Area of Critical Environmental Concern
BLM	U.S. Bureau of Land Management
BNSF	Burlington Northern Santa Fe railroad
California ISO	California Independent System Operator
Caltrans	California Department of Transportation
CDCA	California Desert Conservation Area
CEQA	California Environmental Quality Act
CPUC	California Public Utilities Commission
DC	direct current
DOC	California Department of Conservation
DOD	U.S. Department of Defense
DV	Devers-Valley
EIS	Environmental impact statement
EMF	electric and magnetic fields
FEIS	Final environmental impact statement
HVDC	high-voltage direct current
I-10	Interstate 10
IID	Imperial Irrigation District
MW	Megawatt(s)
NEPA	National Environmental Policy Act
PV	Photovoltaic
RCHCA	Riverside County Habitat Conservation Agency
ROW	Right-of-way
RV	Recreational vehicle
SCE	Southern California Edison
SDG&E	Southern California Gas and Electric Company
SKR	Stephens' kangaroo rat
SONGS	San Onofre Nuclear Generating Station
SR	State Route
STEP	Strategic Transmission Expansion Plan
TE/VS	Talega-Escondido/Valley-Serrano (transmission route)
WOD	West of Devers

REFERENCES

BLM (Bureau of Land Management). 2009. Project Description for Grants and Cooperative Agreements Program – 2008/2009: Application Restoration, Dos Palmas Fence. http://ohv.parks.ca.gov/pages/1140/files/PSSC-R01%20Restoration%20-%20Dos%20Palmas%20Fence.pdf. Accessed August 2014.

BLM (Bureau of Land Management). 2012. *Final EIS and Proposed CDCA Plan Amendment: West Chocolate Mountains Renewable Energy Evaluation Area.* http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/elcentro/nepa/fy11/wcm.Par.59394.File.dat/WCM_REEA_FEIS_Volume_1.pdf. Accessed August 2014.

DOC (Department of Conservation). 2010. Division of Land Resource Protection Farmland Mapping and Monitoring Program: Imperial County Important Farmland 2010. ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/2010/imp10.pdf. Accessed August 2014.

CPUC (California Public Utilities Commission). 2002. SDG&E Valley-Rainbow 500 kV Interconnect Project – Interim Preliminary Report on Alternatives Screening (Page 3-30).

IID (Imperial Irrigation District). 2013. Path 42 Alignment Draft Public Agency Property Ownership.

Imperial County. 2011. *Cluster I Solar Power Project Draft Environmental Impact Report.* ftp://ftp.co.imperial.ca.us/icpds/eir/cluster-I-solar/09ch3-bio-resources.pdf. Accessed August 2014.

Riverside County. 2014. Map of Potrero Core Reserve, viewed on August 26, 2014 at http://www.skrplan.org/docs/reserve_maps/Potrero.pdf.

RCHCA (Riverside County Habitat Conservation Agency). 2014. Website viewed on August 26, 2014 at http://www.skrplan.org/index.html