

TABLE OF CONTENTS

2.0 OVERVIEW..... 2-1
2.1 PROJECT OBJECTIVES..... 2-2
2.2 REFERENCES..... 2-11

LIST OF FIGURES

Figure 2-1: NREL Wind Resources Map..... 2-3
Figure 2-2: CEC Wind Resources Map 2-5

CHAPTER 2 – PROJECT PURPOSE AND NEED

This section defines the objectives, purpose, and need for the proposed San Diego Gas & Electric Company (SDG&E) East County (ECO) Substation Project (Proposed Project), as required by the California Public Utilities Commission’s (CPUC) Proponent’s Environmental Assessment Guidelines (CPUC Information and Criteria List, Appendix B, Section V) and the California Environmental Quality Act (CEQA) Guidelines (Section 15126.6(a)). Additional information regarding the Proposed Project’s purpose and need is provided in SDG&E’s application to the CPUC, in accordance with CPUC General Order 131-D.

2.0 OVERVIEW

SDG&E is a regulated public utility that provides electric service to 3.4 million customers within a 4,100-square-mile service area that encompasses 25 cities throughout San Diego and southern Orange counties. SDG&E is proposing the Proposed Project to provide an economical interconnection platform for renewable energy projects and to improve reliability to electric customers in southeastern San Diego County.

Established under the 2003 Energy Action Plan I, which was codified into law on September 26, 2006 by Senate Bill Number 107 (Smitian and Perata, Chapter 464, Statutes of 2006), California's Renewables Portfolio Standard (RPS) is one of the most ambitious renewable energy standards in the country. The RPS program requires the CPUC to establish and implement a renewable portfolio standard that will direct the electric corporations to increase procurement from eligible renewable energy resources by at least 1 percent of their retail sales annually, until they reach 20 percent by 2010.

In 2003, the three key energy agencies in California—the California Energy Commission (CEC), the California Power Authority, and the CPUC—came together to adopt an Energy Action Plan that identifies joint goals for California’s energy future and sets forth a commitment to achieve these goals through specific actions. In 2005, the CEC and the CPUC adopted a second plan, Energy Action Plan II, to reflect policy changes and actions that had ensued over the previous two years. In 2008, an Energy Action Plan Status Update was released to incorporate the CEC’s 2007 Integrated Energy Policy Report (IEPR), reflecting the passage of Assembly Bill 32, the California Global Warming Solutions Act of 2006. The IEPR includes advanced policies intended to enable California to meet its energy needs in a carbon-constrained world. The report also provides a comprehensive set of recommended actions to achieve the goals outlined in these policies. On November 17, 2008, the Governor issued Executive Order S-14-08, which sets a further target of 33 percent by 2020.

With the advent of new technology, wind energy has become a more viable renewable resource in certain areas of California. The Department of Energy’s Wind Program and the National Renewable Energy Laboratory (NREL) recently published a wind resource map for California identifying several key areas in southeastern California and Baja Norte for utility-scale wind development. These key wind resource areas are shown on Figure 2-1: NREL Wind Resources Map. According to the research, notable good-to-excellent resource regions include the mountains east of San Diego, which is within the service area of the Proposed Project. The CEC

also has California Wind Resource Maps and numerical modeling with similar data, as shown on Figure 2-2: CEC Wind Resources Map.

SDG&E's Long-Term Resource Plan (LTRP) sets forth a strategy of mixed resources to ensure long-term, reliable, and affordable power in the region, as established by the CPUC in Decisions D.04-09-060 and D.05-09-043. SDG&E is aggressively implementing measures to ensure that the energy service it provides to customers is sufficiently adequate, affordable, technologically advanced, environmentally sound, and consistent with the objectives of SDG&E's LTRP and the CPUC's RPS.

According to RPS compliance filings made in August of 2007, SDG&E has incrementally increased renewable power to 5.2 percent with 2007 retail electricity sales. The Proposed Project is essential to meeting the current and future RPS goals.

Regional input is an additional key consideration in meeting the RPS goals. In 2003, the San Diego Association of Governments adopted a regional energy strategy consistent with SDG&E's LTRP in the first 10 years and identified the need for developing local, in-basin renewable energy.

Lastly, an August 2005 report titled Potential for Renewable Energy in the San Diego Region was authored by several local organizations including San Diego State University, California Center for Sustainable Energy (formerly SDREO), Rohy Consulting, SDG&E, and others. This report identified the potential for wind, among other renewable sources, in San Diego and noted that some of the largest wind resource areas (near Interstate 8) in the San Diego region are proximate to an existing 500 kilovolt (kV) transmission line.

2.1 PROJECT OBJECTIVES

The Proposed Project is being proposed to meet objectives identified by SDG&E and the CPUC. Specifically, the Proposed Project has the following six primary objectives:

1. Provide an interconnection hub for renewable generation that eliminates the need for multiple generator-owned or -operated switching stations along SDG&E's existing Southwest Powerlink (SWPL) 500 kV transmission line.
2. Expand the interconnection capability of the southeastern transmission system to accommodate all of the region's planned generation (based on data in the California Independent System Operator [CAISO] Generator Interconnection Queue [CAISO Queue] as of June 2009) and provide for the future as-yet-unplanned generation, thus increasing opportunities for California investor-owned utilities to meet or exceed California's renewable energy source mandate of 20 percent by 2010 and Governor Schwarzenegger's proposed goal of 33 percent renewable energy source by 2020.
3. Facilitate the interconnection of renewable generation sources in the Boulevard area.

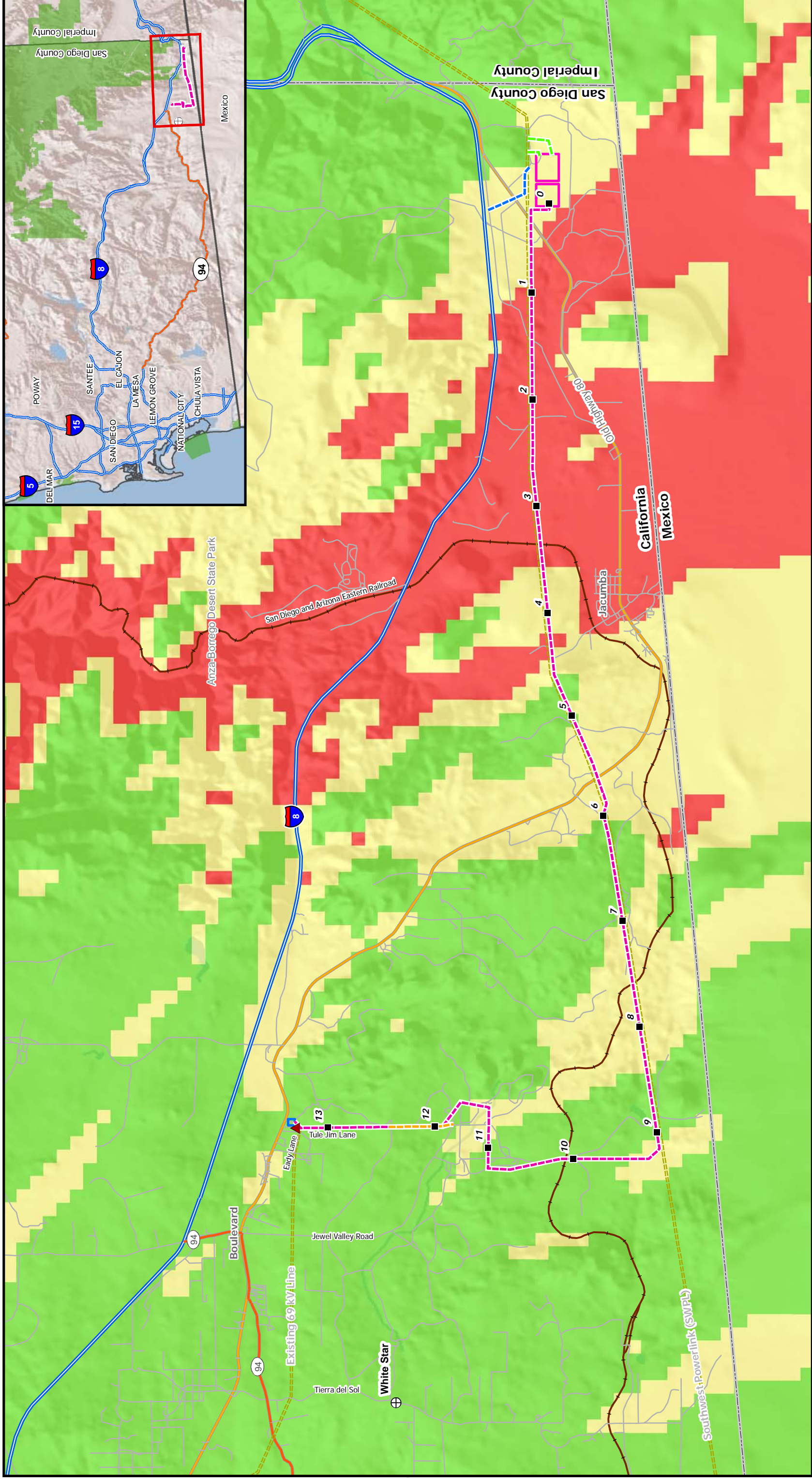


Figure 2-1: NREL Wind Resources Map

- Proposed SWPL Loop-In
- Proposed 138 kV Line
- Proposed 12 kV Temporary Distribution Tap
- 445 Circuit Collocated with 138 kV Line
- Existing Transmission Line
- Proposed ECO Substation
- Boulevard Substation Rebuild
- Proposed 138 kV Line Milepost
- ▲ Existing Boulevard Substation
- ⊕ Existing Transmission Line
- Class 1 - Generally Not Suitable
- Class 2 - Marginally Suitable
- Class 3 - Most Suitable
- Interstate
- Highway
- Local Road
- Major Road
- Railroad
- ⊕ Communication Facility

East County Substation Project

A Scudder Energy Utility

1:55,000

0 0.5 1 2 3 Miles

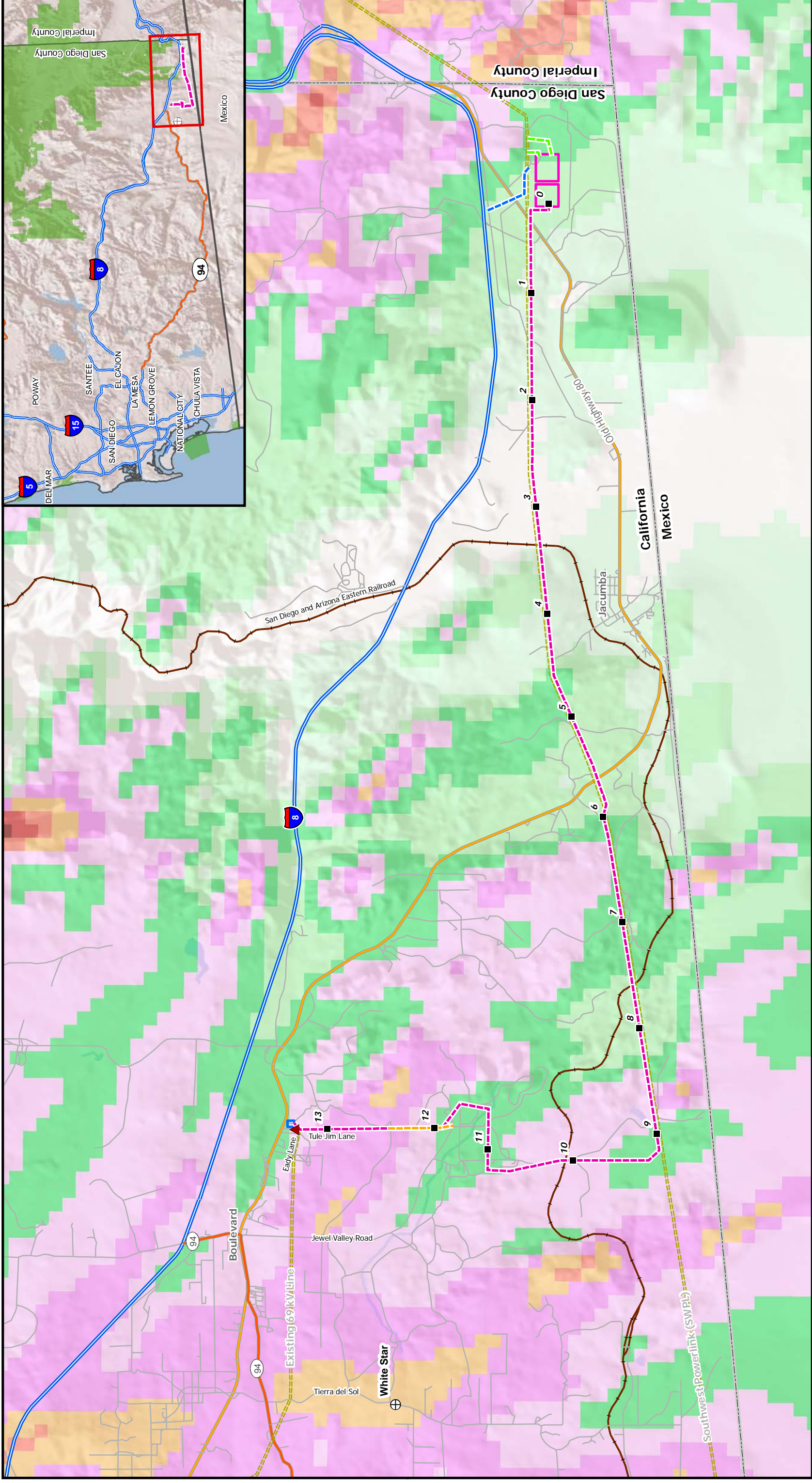


Figure 2-2: CEC Wind Resources Map

East County Substation Project

<ul style="list-style-type: none"> Proposed SWPL Loop-In Proposed 138 kV Line Proposed 12 kV Temporary Distribution Tap 445 Circuit Collocated with 138 kV Line Existing Transmission Line 	<ul style="list-style-type: none"> Proposed ECO Substation Boulevard Substation Rebuild Proposed 138 kV Line Milepost Existing Boulevard Substation Communication Facility 	<ul style="list-style-type: none"> Interstate Highway Local Road Major Road Railroad 	<ul style="list-style-type: none"> Mean Speed at 70 m mph m/s 	<ul style="list-style-type: none"> 14.5 - 15.7 15.7 - 16.8 16.8 - 17.9 17.9 - 19.0 19.0 - 20.1 20.1 - 21.3 > 21.3 6.5 - 7.0 7.0 - 7.5 7.5 - 8.0 8.0 - 8.5 8.5 - 9.0 9.0 - 9.5 > 9.5
---	---	---	--	---

N
W E
S

0 0.5 1 2 3 Miles

1:55,000

SDGE
A Scipra Energy utility

NSIGNIA
ENVIRONMENTAL

4. Create a Supervisory Control and Data Acquisition (SCADA)-controlled, normally open loop in the southeastern transmission system to improve control, increase operational flexibility, and enhance the reliability of the regional transmission system.
5. Provide a second source for the southeastern transmission system that avoids the vulnerability of common structure outages, thus increasing the reliability of electrical service for Boulevard, Jacumba, and other surrounding communities.
6. Maximize the use of existing utility rights-of-ways (ROWs) and access roads and follow Garamendi Principles¹ for the transmission component of the Proposed Project.

The five Proposed Project components, their locations, preliminary configuration, and the existing and proposed system configuration, are presented in Chapter 3 – Project Description. Each of the Proposed Project objectives is more thoroughly described as follows.

Provide an Interconnection Hub for Renewable Generation that Eliminates the Need for Multiple Generator-Owned or -Operated Switching Stations Along SDG&E’s Existing SWPL 500 kV Transmission Line

The primary purpose of the proposed ECO Substation, the primary Proposed Project component, is to interconnect the planned renewable wind generation in southeastern San Diego County, as required under the CAISO Open Access Transmission Tariff. Currently, five active generator applications have been submitted to CAISO for connections to the SWPL transmission line, through the ECO Substation, totaling approximately 1,700 megawatts (MW) of wind generation. In addition, there is one active generator application that has been submitted to the CAISO for connection to the Boulevard Substation, totaling approximately 200 MW of wind generation.

Of the six active generator applications in the CAISO Queue, one recently completed the Interconnection Facility Study (IFAS) stage of the interconnection process and has transitioned into the Large Generator Interconnection Agreement (LGIA) negotiation stage. Two of the other generator applications are in the IFAS stage and will be moving into LGIA negotiations within the next couple of months. Other projects, and phases of projects, are currently under study as per the Large Generator Interconnection Procedures. In addition, based on discussions with wind developers and property owners in the region, there are potential wind projects beyond what is currently shown in the CAISO Queue.

The ultimate configuration of the proposed ECO Substation will be designed to accommodate additional renewable generation in the future, beyond what is currently in the CAISO Queue.

¹ California Senate Bill 2431, Chapter 1457, declared that it is in the best interest of the state to conduct transmission siting according to the following principles (“Garamendi Principles”):

1. Encourage the use of existing ROW by upgrading existing transmission facilities where technically and economically justifiable.
2. When construction of new transmission line is required, encourage expansion of existing ROW, when technically and economically feasible.
3. Provide for the creation of new ROW when justified by environmental, technical, or economic reasons as determined by the appropriate licensing agency.
4. Where there is a need to construct additional transmission capacity, seek agreement among all interested utilities on the efficient use of that capacity.

The generation tie-lines (gen-ties) from the developers will originate at their respective project sites and connect into the proposed ECO Substation. The voltage of the gen-ties will be determined by the developers and through project CAISO approvals.

The CAISO has been involved in all of the interconnection studies being conducted for the renewable generation in the region and their interconnection to the SWPL via the ECO Substation. The interconnection studies examine the effect of an Interconnection Customer's (IC's) generation; results are provided to the IC via the CAISO. Discussions and coordination with the CAISO continue to take place as the relevant Transition Cluster study examines the effect of further generation interconnecting to the ECO Substation and the surrounding area.

The gen-ties and their points of interconnection can be a significant cost to a generator project and can affect project viability. The proposed ECO Substation places a new point of interconnection between the Imperial Valley Substation and the Miguel Substation, which are approximately 82 miles apart. Without the ECO Substation, each generator would have to decide whether to build a much longer gen-tie (to interconnect at the Miguel Substation or Imperial Valley Substation) or build a new substation to interconnect directly into the SWPL. While Senate Bill 107 (SB 107, Simitian, Chapter 464, Statutes of 2006) recognizes the limitations of long transmission systems to incorporate renewable generation and allows an electrical corporation to reduce its RPS obligation if the CPUC determines that there is insufficient transmission to ensure deliverability of the renewable energy, every effort is being made to tie in renewable energy and, at the same time, reduce the impacts associated with long transmission lines or multiple generator-owned switchyards.

Expand the interconnection capability of the southeastern transmission system to accommodate all of the region's planned generation (based on data in the CAISO Queue as of June 2009) and provide for the future as-yet-unplanned generation, thus increasing opportunities for California investor-owned utilities to meet or exceed California's renewable energy source mandate by 2010 and Governor Schwarzenegger's proposed goal of 33 percent renewable energy source by 2020

The ultimate configuration for the proposed ECO Substation is based on creating an interconnection hub into which renewable generation can efficiently connect. The proposed ECO Substation will provide interconnection capability at three voltage levels (138 kV, 230 kV, and 500 kV). The three voltage levels will also provide generators the option to connect at a voltage level that is appropriately sized for their project, resulting in the most economic plan of service for each of the connecting generators. The gen-ties from the developers will originate at their respective project sites and connect into the proposed ECO Substation at a voltage level selected by each generator.

The location of the proposed ECO Substation site was selected, in part, to facilitate the interconnection hub concept; it is located near already planned wind generation projects (CAISO Queue) and is close to a region with favorable wind potential (as determined by the NREL) to increase the likelihood of additional renewable interconnections in the future. Based on the 500/230 kV transformers' capacity at the ECO Substation, the queued generation will account

for approximately 40 percent of the ultimate substation capacity, leaving approximately 2,600 megavolt-ampere available for future generation.

Facilitate Interconnection of Renewable Generation Sources in the Boulevard Area

The hub concept is further extended with a spoke to the proposed rebuilt Boulevard Substation, creating a separate renewable generation interconnection point. This proposed approximately 13.3-mile-long 138 kV transmission line between the ECO Substation and the rebuilt Boulevard Substation will establish a path for the generated power, enabling additional renewable generation that would not be possible without the Proposed Project. Without the Proposed Project, up to 100 miles of reconductoring projects on multiple 69 kV transmission lines and the addition of voltage support devices would be required to integrate planned renewable generation in the Boulevard area. Even if all of the 69 kV transmission lines were upgraded, they would not have the capacity to accommodate all of the potential wind generation in Boulevard. The proposed 138 kV transmission line provides the most efficient plan of service for generators connecting to the transmission system in the Boulevard area, further strengthening the primary purpose of the Proposed Project, which is to support renewable generation.

There is proven interest in the Boulevard area as a location for renewable generation based on one planned interconnection project in the CAISO Queue and several other speculative projects, which are in addition to those mentioned previously for direct interconnection to the SWPL via the proposed ECO Substation. The CAISO Queue shows one project in the Boulevard area with a projected output of 201 MW. Through the confidential generator interconnection request/study process, SDG&E is aware of several other potential wind projects in the Boulevard area, which add approximately 300 MW to the total wind generation scenario. Another project in the conceptual planning stage may be best served by further extension of the 138 kV transmission system west to the Crestwood Substation. Although some of these projects are speculative in nature, the Proposed Project can adequately accommodate the renewable generation potential in the region. It is estimated that the CAISO Queue planned generation will use approximately 50 percent of the substation capacity based on the limitation of the 138 kV outlet to the ECO Substation.

Create a SCADA-controlled, Normally Open Loop in the Southeastern Transmission System to Improve Control, Increase Operational Flexibility, and Enhance the Reliability of the Regional Transmission System

The proposed 138 kV transmission line will increase the reliability of the existing transmission system by transforming the existing 13-mile radial system into a SCADA-controlled normally open loop. The normally open point will be between the rebuilt Boulevard Substation and Crestwood Substation, with the rebuilt Boulevard Substation fed from the ECO Substation via the new ECO-Boulevard 138 kV transmission line and Crestwood Substation served from the existing 69 kV system. In the event of an outage to Crestwood, SCADA controls will isolate the Crestwood Substation from the outage and backfeed it from the proposed ECO Substation. This will transform what would normally be a very extensive outage to a brief momentary outage. Similarly, an outage to Boulevard could be isolated and backfed from the existing 69 kV. As a result, the proposed transmission line will not only improve reliability for customers on distribution circuits coming out of the Boulevard Substation, but will also improve the reliability for distribution circuits coming out of Crestwood Substation.

Provide a second source for the southeastern transmission system that avoids the vulnerability of common structure outages, thus increasing the reliability of electrical service for Boulevard, Jacumba, and the surrounding communities

An additional benefit of the proposed 138 kV transmission line between the proposed ECO Substation and the Boulevard Substation would be to provide a second source for the southeastern transmission system, thus increasing its reliability. Currently, two radially fed (single transmission source) substations serve the customers in the communities of Bankhead Springs, Boulevard, Jacumba, and Manzanita, as well as the Campo, La Posta, and Manzanita Indian Reservations. These two substations are currently connected at the end of a long series of 69 kV lines, and connect to the grid via a 13-mile radial feed. The 69 kV lines in southeastern San Diego traverse some of the most diverse and challenging operational environments in the county, resulting in frequent outages due to lightning, snow, ice, wind, fire, and vandalism. Also, due to the radial nature of the line connecting the Crestwood Substation and the existing Boulevard Substation to the grid, maintenance on the transmission lines and the associated substation terminal equipment requires periodic outages to customers in the surrounding area. Records indicate that over 40 outage events have occurred at the existing Boulevard Substation over the last five years. All of the other substations in the area have each experienced only one to three outages over the past five years, with one exception that experienced 14. As a result, the 69 kV line to Boulevard performed the worst over this five-year duration. This 13-mile radial transmission line is a major factor in both the number of outages and their duration because there is no backup transmission source to the area. Many of the residents and businesses in this area are dependent upon electric service to power wells for water, so the lack of a reliable electric system greatly affects their access to this important resource.

The reliability at the Boulevard Substation will be further improved by rebuilding it, which will include replacing aging equipment and installing SCADA. The existing Boulevard Substation was constructed in 1958 and supplies power to 1,416 customers in Boulevard. The substation contains a single 69/12 kV transformer that dates back to 1952 and the 12 kV equipment is 50 years old. There is no SCADA to remotely control and monitor the system. The majority of the SDG&E transmission and distribution substations have been fitted with SCADA systems to provide reliability, safety, remote switching capability, and managed maintenance. The Proposed Project will alleviate these issues, thereby greatly improving electric service reliability in the area.

Maximize the Use of Existing Utility ROWs and Access Roads and Follow Garamendi Principles for the Transmission Component of the Proposed Project

SDG&E has designed the Proposed Project to utilize existing transmission lines and ROWs to the extent possible. By creating an interconnection hub between Imperial Valley and the Miguel Substation at a location beneficial to multiple generators, the Proposed Project will save each individual generator tens of miles of additional gen-tie length and related ROW issues, and/or eliminate the need for each generator to have its own station to tie into the SWPL. In addition, the proposed 138 kV transmission line parallels the existing SWPL ROW, existing access roads, or existing distribution lines for approximately 98 percent of its length.

2.2 REFERENCES

- California Energy Commission. Energy Facility Status. Online.
http://www.energy.ca.gov/sitingcases/all_projects.html. Site visited June 15, 2009.
- California Energy Commission. Renewables Portfolio Standards Proceeding Docket # 03-RPS-1078. Online. <http://www.energy.ca.gov/portfolio/>. Site visited June 23, 2009.
- CAISO. Generator Interconnection Queue. Online.
<http://www.caiso.com/14e9/14e9ddda1ebf0ex.html>. Site visited June 15, 2009.
- California Resources Agency. 2007. Title 14 California Code of Regulations, Chapter 3 Guidelines for Implementation of the California Environmental Quality Act. CEQA Guidelines.
- California State Senate. 2006. *Senate Bill 107*.
- CEC. 2007. *Integrated Energy Policy Report*.
- CEC, CPUC. 2005. *Energy Action Plan II*.
- CEC, CPUC. 2008. *2008 Update Energy Action Plan*.
- CEC, California Power Authority, CPUC. 2003. *Energy Action Plan*.
- CPUC. Memorandum. Applicants Filing Proponent’s Environmental Assessment. November 24, 2008.
- CPUC. 2004. Interim Opinion: Energy Savings Goals for Program Year 2006 and Beyond. D.04-09-060.
- CPUC. 2005. Interim Opinion: Energy Efficiency Portfolio Plans and Program Funding Levels for 2006-2008- Phase 1 Issues. D.05-09-043.
- RPS. California Renewables Portfolio Standard. Online.
<http://www.cpuc.ca.gov/PUC/energy/electric/RenewableEnergy/> Site visited June 24, 2009.
- San Diego State University, California Center for Sustainable Energy, Rohy Consulting, SDG&E. 2005. *Potential for Renewable Energy in the San Diego Region*.

