

# CHAPTER 2 – PROJECT PURPOSE, NEED, AND OBJECTIVES

## 2.0 Introduction

The following section identifies the purpose, need, and objectives for SDG&E's proposed Salt Creek 120-MVA 69/12-kV Substation and associated tie lines. The following information is provided in accordance with the CPUC's Information and Criteria List (Appendix B, Section V); the PEA Checklist for Transmission Line and Substation Projects prepared by CPUC's Energy Division, dated October 7, 2008; and CEQA, including the CEQA Guidelines. In accordance with CPUC General Order 131-D, additional data pertaining to the purpose and need for the Proposed Project is provided in SDG&E's PTC application prepared for the CPUC.

## 2.1 Overview

SDG&E is a regulated public utility that provides electric service to 1.4 million customers within a 4,100-square-mile service area that encompasses 25 cities and unincorporated areas within San Diego County and a portion of Orange County. The Proposed Project would consist of construction of a new substation and associated 69-kV power tie lines. The primary objective of the Proposed Project is to meet existing and anticipated customer-driven electrical load growth, and to provide the necessary distribution and power network to avoid potential long-term outages or disruptions of service to existing and future customers in SDG&E's service territory in the southeastern Chula Vista area.

The proposed Salt Creek Substation would add capacity in the southeastern Chula Vista area. Expected electrical load growth, the desire to avoid extended outages and disruption of services to new and existing customers in the area, and the need to maintain reliable service to SDG&E customers are primary driving factors in determining the need to construct a new substation in the area.

In providing electrical service to the southeastern Chula Vista area, SDG&E currently operates two substations: Proctor Valley Substation and Telegraph Canyon Substation. Residential and commercial growth in the area has brought the Telegraph Canyon Substation to its ultimate capacity. The ultimate planned load for southeastern Chula Vista is 286 megawatts (MW), which consists of Telegraph Canyon Substation at 84% loading, Proctor Valley Substation at 83% loading, and the new Salt Creek Substation at 87% loading. Proctor Valley Substation is planned to serve the northern portion of southeastern Chula Vista, Telegraph Canyon Substation is planned to serve the western section, and the proposed Salt Creek Substation is planned to serve the eastern section.

The 2016 substation forecast has Telegraph Canyon Substation loaded at 86% with all four transformer banks in-service, and Proctor Valley Substation at 90% loaded with two transformer banks in-service. A 15 to 20% reserve capacity is desired for each substation to

handle outages and routine maintenance by transferring load to avoid disruption of customer service. This reserve capacity is not possible with only the two existing substations.

An additional benefit of developing a new substation is to ensure reliability of service to customers. SDG&E designs and develops substations to meet this objective. SDG&E considers additional substation transformer capacity when the loss of a single transformer may cause an interruption to major commercial/industrial load that cannot be restored through use of 12-kV circuit ties to other substations. The proposed Salt Creek Substation meets this requirement, as it would provide needed capacity and additional 12-kV distribution circuit ties with the substations currently serving the area to avoid service interruptions.

The existing power network (TL 6910) provides only two 69-kV sources with the loop-in of TL 6910 into the new 120-MVA Salt Creek Substation. This falls short of NERC/WECC/CAISO regulatory requirements (NERC/WECC 2007). Without an additional power line, the region is vulnerable to bulk power system failures, such as outages of lines, transformers, or busses, which may lead to the interruption of power to customers. An additional source from the Miguel Substation (herein referred to as the Existing Substation) into the proposed Salt Creek Substation would provide the third power line necessary to meet NERC/WECC/CAISO regulatory requirements (NERC/WECC 2007) and ensure reliability.

The Proposed Project was designed to meet engineering and site design objectives to ensure feasibility of construction, operation, and maintenance. These objectives include adequate electric power and distribution system access, acceptable site development characteristics, community acceptance, and cost efficiency.

Over approximately 10 years, SDG&E's site selection team met with City of Chula Vista staff and the major property owners in the surrounding area to assist SDG&E in identifying an acceptable location for a new substation. The proposed substation site was identified as the preferred location for the new substation in two separate evaluations of alternative site locations (see further discussion in 2.2.5 below and in Chapter 5.4). The first evaluation occurred from 2002 through mid-2008, and a second evaluation of site locations occurred from mid-2008 through early 2011. Eight substation sites were considered for construction of the proposed Salt Creek Substation.

## **2.2 Project Objectives**

The Proposed Project would achieve several objectives identified by SDG&E: to provide additional capacity to serve existing area load and future customer-driven electrical load growth, and to enhance the distribution and power network to minimize potential for long-term outages or service disruptions to existing customers in the SDG&E southeastern Chula Vista service territory. The main purpose of the Proposed Project is to build a new 69/12-kV substation to serve existing and planned residential and commercial development in the southeastern portion of the City of Chula Vista. Specifically, the Proposed Project has the following fundamental objectives:

1. Meet the area’s projected long-term electric distribution capacity needs by constructing the proposed Salt Creek Substation near planned load growth to maximize system efficiency.
2. Provide three 69-kV circuits into the Salt Creek Substation to serve load growth in the region and meet the regulatory requirements of the North American Electric Reliability Corporation (NERC), Western Electric Coordinating Council (WECC), and California Independent System Operator (CAISO).
3. Provide substation and circuit tie capacity that would provide additional reliability for existing and future system needs.
4. Reduce loading on area substations to optimum operating conditions, providing greater operational flexibility to transfer load between substations within the proposed Salt Creek Substation service territory.
5. Comply with and respect the outcome of the extensive community-based public process to select a site for a new substation in the Otay Ranch area, as evidenced by City of Chula Vista City Council Resolution 2011-073.
6. Meet Proposed Project needs while minimizing environmental impacts by siting the substation on property designated for future development that is located outside of the City of Chula Vista’s MSCP Preserve.
7. Locate proposed new power facilities, as appropriate and as needed, within existing utility ROWs, access roads, and utility-owned property.

The Proposed Project components, their locations, preliminary configurations, and existing and proposed system configurations are presented in Chapter 3.0, Project Description.

### **2.2.1 Meet the Area Electric Capacity Needs**

The new Salt Creek Substation is required to serve the ultimate load for the area of 286 MW. The southeastern Chula Vista area is fed primarily from existing Telegraph Canyon and Proctor Valley Substations, both of which currently exceed the optimum maximum substation loading of 85%. The current 2013 load served by these two existing substations is 141 MW. Telegraph Canyon Substation is at its maximum four-bank transformer configuration, with an 86% substation loading forecasted for 2016. Proctor Valley Substation has a two-bank transformer configuration with a loading of 90%. The ultimate load cannot be cost-effectively or reliably met by expanding existing substations. Moreover, using existing substations would increase distribution circuit cost due to greater circuit distances. The existing two substations are 6 to 7 circuit miles away from the Otay Ranch load center, which is the area of major growth. Installation of new circuits from the two existing substations would cost an average of \$5 million per circuit to serve the Otay Ranch new load. To maintain reliable substation tie capacity, substation loading should be no more than 85%. Installation of the new Salt Creek Substation would allow for new circuits to serve Otay Ranch, averaging a distance of 2.5 circuit miles at a more reasonable cost of \$2 million per circuit, and providing increased circuit and substation reliability with capacity available for the existing two substations.

Installation of additional Proctor Valley transformer banks to serve the Telegraph Canyon Substation area load growth is not cost effective, at an additional \$5 million per circuit. Such a change would also reduce capacity available for the area currently served by the Proctor Valley Substation. The existing residential and commercial growth rate in the Telegraph Canyon Substation area is currently 2-MW per year, which is a low rate due to the current slow economy. At a more moderate (and anticipated) growth rate of 5-MW per year, Telegraph Canyon Substation would be at maximum capacity in 2016.

The proposed Salt Creek Substation would add necessary capacity in the eastern section of the southeastern Chula Vista area to off-load the Telegraph Canyon and Proctor Valley Substations. The location of the proposed Salt Creek Substation would allow for lower distribution circuit cost due to shorter circuit distances.

### **2.2.2 Meet NERC/WECC/CAISO Regulatory Requirements**

NERC/WECC/CAISO regulations require protections against Category B scenarios.<sup>1</sup> The existing power network provides only two 69-kV sources with the loop-in of existing TL 6910 into the proposed Salt Creek Substation. For full build-out of the 120-MVA substation, this would leave the region vulnerable to Category B scenarios, including bulk power system failures and system outages. Line, transformer, or bus outages may lead to the interruption of power to customers. Assuming a new Salt Creek Substation to meet capacity needs, SDG&E's Transmission Planning department identified the need for an additional source to the new substation to mitigate five potential overload conditions caused by Category B scenarios identified on the 69-kV power system: TL 649G (Border Tap–Border), TL 649F (Border Tap–Otay Lakes Tap), TL 623C (Otay Tap–San Ysidro), TL 645 (Otay–South Bay), and TL 646 (Otay–South Bay). An additional source from the Existing Substation on the east side of the existing transmission corridor is the most effective solution to alleviate overload conditions and protect against Category B scenarios.

### **2.2.3 Provide Improved Substation and Circuit Reliability with Added Tie Capacity**

Installation of a new substation would provide additional new substation transformer banks and circuits, and offer an increased number of circuit ties. Reliability improves with balanced circuit loading and more circuits to transfer load in the event of a circuit or branch outage. The proposed Salt Creek Substation would add two new transformer banks to the system, which would enhance the ability to transfer load between area substations.

Additionally, the Proposed Project would include a new 69-kV power tie-line (TL 6965) and three distribution circuits (installed underground) from the proposed Salt Creek Substation. The new power line and distribution circuits would further enhance reliability by tying the new transformer banks into the existing circuits within the Proposed Project area.

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<sup>1</sup> According to the WECC reliability criteria, a Category B scenario is an event resulting in the loss of a single element.

#### **2.2.4 Reduce Area Substation Loading to Optimum Operating Conditions**

The optimum maximum substation loading is 85%, which allows transformer bank load transfer in the event of a transformer bank outage. Optimum operating conditions improve substation reliability and reduce outage time. This is important in the highly commercial area served by the Proposed Project. The Proposed Project would reduce existing and anticipated substation overloading, as described in Section 2.2.1.

#### **2.2.5 Respect Results of Lengthy Community-Based Process to Select and Secure a Substation Site**

Approximately a decade ago, SDG&E initially identified the need to construct a new substation in southeastern Chula Vista within the Otay Ranch area. SDG&E spent approximately 10 years on the site selection process for the new substation. In 2002, SDG&E began working with the City of Chula Vista and the University Framework Committee to identify a suitable location for a new substation as part of the early planning efforts for a proposed university within Chula Vista's Otay Ranch area. In early 2007, after extensive discussion and consideration of several substation site alternatives, SDG&E and the City of Chula Vista reached consensus on the preferred substation location, which was the Proposed Project location (Hunte West). SDG&E spent approximately 2 years working on substation design with the City of Chula Vista.

The site acquisition process was suspended in 2008, when the City of Chula Vista entered into a Land Offer Agreement with the adjacent property owner, and the Hunte West property was no longer available for development of a substation. This resulted in the need to re-analyze alternative site locations for the proposed Salt Creek Substation. Based on changes in circumstances in early 2011, Hunte West became available again as a viable location for the proposed Salt Creek Substation. In June 2011, SDG&E purchased the 11.64-acre Salt Creek Substation site for future development of a substation to service existing and future development in the surrounding area.

Using property that SDG&E already owns decreases the cost of new facilities and respects the lengthy public process leading to site selection.

#### **2.2.6 Meet Project Need While Minimizing Environmental Impacts**

The proposed Salt Creek Substation site was chosen, in part, because it could be constructed with minimal impacts to the environment. One of the primary environmental criteria is selecting a substation site that is outside of the City of Chula Vista MSCP Preserve (City of Chula Vista 1997) and within an area designated for development. The proposed substation site is outside of the MSCP Preserve and is designated for development by the City of Chula Vista's MSCP (City of Chula Vista 1997). In addition, portions of the Proposed Project have been previously disturbed, and the proposed substation was designed to avoid impacts to adjacent wetlands. No known cultural resources are located within the proposed substation site.

The proposed substation pad is situated approximately 45 to 50 feet south of Hunte Parkway and the residences to the north of Hunte Parkway. This location provides both a horizontal and vertical land and visual buffer from Hunte Parkway and residents to the north. The site is

located adjacent to an existing transmission corridor, which would accommodate construction of the proposed new 69-kV power line within its footprint.

### **2.2.7 Locate New Power Facilities within Existing ROWs and Utility-Owned Property**

Locating new power facilities within existing ROWs and utility-owned property would decrease the cost of the new facilities, to the benefit of ratepayers. All new power facilities would be located within either existing SDG&E ROWs or on SDG&E fee-owned property. A minor portion of the new power line would be located on utility-owned property that surrounds SDG&E's Existing Substation. The balance of the new power line would be located within SDG&E's 120-foot-wide transmission corridor ROW.

## **2.3 Conclusion**

The Proposed Project would involve construction of a new substation and a new 69-kV power line from the Existing Substation to the proposed Salt Creek Substation, and looping TL 6910 into the proposed Salt Creek Substation. The proposed Salt Creek Substation would be a 120-MVA 69/12-kV substation to serve the southeastern Chula Vista region. Anticipated load growth in this region requires an additional power line to provide another source to meet NERC/WECC/CAISO regulatory criteria.

After evaluating other engineering options to meet projected load demand (discussed in Chapter 5, Alternatives), SDG&E selected the Proposed Project because it would provide a robust and reliable distribution system well into the future. In addition, the Proposed Project would meet all of the stated objectives, including minimizing environmental impacts.

## **2.4 References**

City of Chula Vista. 1997. City of Chula Vista Multiple Species Conservation Plan (MSCP). Available at [http://www.chulavistaca.gov/city\\_services/development\\_services/planning\\_building/Planning/Environmental/Habitat.asp](http://www.chulavistaca.gov/city_services/development_services/planning_building/Planning/Environmental/Habitat.asp). Accessed 2012.

North American Electric Reliability Corporation and Western Electric Coordinating Council (NERC/WECC). Revised April 10, 2003. Revised September 2007. WECC Planning Standards, Table 1 (Transmission System Standards). Available at <http://www.wecc.biz/library/Library/Planning%20Committee%20Handbook/WECC-NERC%20Planning%20Standards.pdf>.