## TABLE OF CONTENTS

**CHAPTER 2 – PROJECT PURPOSE AND NEED ..... 2-1**
2.0 Overview ..... 2-1
2.1 Project Objectives ..... 2-3
2.2 Conclusion ..... 2-4
2.3 References ..... 2-4

## LIST OF TABLES

Table 2-1: TL666D Outage History ..... 2-2

# CHAPTER 2 – PROJECT PURPOSE AND NEED

This chapter of the Proponent's Environmental Assessment (PEA) identifies the objectives, purpose, and need for San Diego Gas & Electric Company's (SDG&E's) proposed TL674A Reconfiguration & TL666D Removal Project (Proposed Project), as required by the California Public Utilities Commission's (CPUC's) PEA Guidelines (CPUC Information and Criteria List, Appendix B, Section V) and the California Environmental Quality Act (CEQA) Guidelines (California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387). Additional information about the Proposed Project's purpose and need is provided in SDG&E's application to the CPUC, in accordance with CPUC General Order (G.O.) 131-D.

## 2.0 OVERVIEW

### 2.0.0 Existing and Projected Electric System Constraints

As shown in Figure 3-3: Existing System Configuration in Chapter 3 – Project Description, the Del Mar Substation is primarily fed by three 69 kilovolt (kV) power lines—TL610, TL666, and TL667. These three lines are sourced from SDG&E's Peñasquitos Substation. TL666 is a multi-terminal line that feeds the Del Mar, Torrey Pines, Dunhill, and Doublet substations. Segment D of TL666 (i.e., TL666D), which extends approximately six miles from the Del Mar Substation to the Del Mar Tap, has been highly susceptible to outages, as demonstrated in Table 2-1: TL666D Outage History.

The location of TL666D further complicates its unreliability. TL666D passes through environmentally sensitive areas, including the San Dieguito Lagoon, Los Peñasquitos Lagoon, and Torrey Pines State Natural Reserve Extension. Prior to conducting maintenance work within these areas, SDG&E is currently required to obtain permits from several agencies, including the California Coastal Commission, United States Army Corps of Engineers, California State Parks, Torrey Pines State Natural Reserve, and additional agencies with jurisdiction over wetlands and waterways. Furthermore, TL666D is located in an area with eroded cliffs, where vehicle and equipment access is limited or impeded. These restrictions make outage restoration and mandatory maintenance extremely difficult. Due to these restrictions, SDG&E cannot always complete mandatory maintenance, as required by G.O. 165.

### 2.0.1 California Independent System Operator Review/Approval

The need to upgrade the transmission system in the vicinity of the Del Mar Substation has been identified in both SDG&E's and the California Independent System Operator's (CAISO's) long-term assessment of this area. The Proposed Project was identified and approved in the 2012-2013 Transmission Planning Process (TPP). In the CAISO's 2012-2013 TPP, SDG&E identified environmental constraints related to TL666D with which the CAISO concurred and approved the Proposed Project in March 20, 2013.

### 2.0.2 NERC Reliability Standards

SDG&E is required to abide by North American Electric Reliability Corporation (NERC) Reliability Standard TPL-001-4, which is a mandatory standard under the Energy Policy Act of 2005, and to mitigate any violations.

**Table 2-1: TL666D Outage History**

| Outage Date | Substation Load Dropped[1] | Field Notes[2] |
|---|---|---|
| 8/11/12 | Doublet and Dunhill | TL666 flashed over at structure 90251 due to conductor contact with a mylar balloon. |
| 9/3/12 | Doublet and Dunhill | TL666 tripped due to animal contact at structure 932823. |
| 11/3/12 | Doublet and Dunhill | TL666 tripped due to animal contact at structure 165617. |
| 1/2/13 | None | Low sulfur hexafluoride gas levels were detected on the Torrey Pines terminal. |
| 2/17/13 | None | TL666 tripped at the Torrey Pines terminal only; the power line was patrolled, and no conditions were found. |
| 9/21/13 | None | TL666 Sections A, B, and D only. |
| 10/28/13 | Dunhill | |
| 11/14/13 | None | Torrey Pines terminal only. |
| 7/27/14 | None | TL666 tripped due to lightning at structure 90253. |
| 12/27/14 | Dunhill | |
| 6/9/15 | Doublet and Dunhill | TL666 tripped due to animal contact at structure 63404 and switch 666-2. |
| 6/9/15 | Doublet and Dunhill | 1044 (Del Mar-Doublet-Peñasquitos) and 1334 (Dunhill-Torrey Pines). De-energized for safety, and a fire occurred in the area. |
| 1/9/16 | Doublet and Dunhill | Damaged insulator was replaced. |
| 1/9/16 | None | Del Mar Switch 666-3 was repaired. |
| 1/31/16 | Doublet and Dunhill | TL666 tripped due to animal contact at structure 63404 and switch 666-2. |
| 2/2/16 | Doublet and Dunhill | TL666 tripped due to mylar balloon contact at structure 97308; insulators were replaced. |
| 2/2/16 | None | Switch 666-3 was de-energized for repairs. |
| 2/12/16 | Doublet and Dunhill | TL666 was tripped due to flashovers at structures 15726 and 12312; Peñasquitos restored on 2/13/16. |

[1] Outages on TL666D did not always result in a loss of substation load. In the instances where "none" is noted, no substantial loss of services to customers occurred.

[2] Field notes were recorded by personnel responding to the outage. As a result, they vary in their level of detailed and are being provided solely to convey the outage history of TL666D.

In early 2016, back-to-back outages occurred on TL666D, inadvertently dropping load at the Dunhill and Doublet substations. To improve reliability at these substations, SDG&E's Grid Operation Department decided to de-energize TL666D (i.e., operate it normally open).[3, 4] SDG&E reanalyzed the system with TL666D operating normally open. Under the credible N-2 outage of TL610 and TL667 (Peñasquitos-Del Mar, circuits 1 and 2), NERC thermal and voltage deviation violations would occur at the Del Mar and Encinitas substations. A NERC thermal violation[5] would also occur on TL674C. The outage of TL610 and TL667 is considered credible because these circuits share the same underground trench and vaults for more than one mile. In addition, the same outage of TL610 and TL667 would result in a voltage deviation that exceeds five percent at the Del Mar and Encinitas substations. Because there is no significant amount of generation available for dispatch within the area, it was determined that an upgrade to the transmission network serving the Del Mar Substation area would be required to meet NERC planning criteria and avoid violating the applicable standard.

As shown in Figure 3-4: Proposed System Configuration in Chapter 3 – Project Description, the Proposed Project will remove TL666D from service and reconfigure TL674A, renaming it TL6973. This configuration will maintain reliability at the Del Mar Substation, while increasing reliability within the area by converting a three-terminal line to a two-terminal line, connecting only the Rancho Santa Fe and Encinitas substations.

The Proposed Project mitigates the concerns identified in the CAISO's 2012-2013 TPP and the new NERC violations found in 2016, where load drop is not allowed.

## 2.1 PROJECT OBJECTIVES

The 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 described in the subsections that follow.

### 2.1.0 Objective 1: Address Safety, Environmental, and Reliability Concerns in the Del Mar Substation Area

As previously discussed, TL666D is located in environmentally sensitive areas, including the San Dieguito Lagoon, Los Peñasquitos Lagoon, and Torrey Pines State Natural Reserve Extension. Access to these locations requires special permitting from several agencies, making it difficult to meet the mandatory maintenance requirements of G.O. 165. In addition, under forced outage scenarios, the difficult access to these locations prolongs outages. By removing TL666D from service, the Proposed Project eliminates the potential for impacts in environmentally sensitive areas and removes the potential for access difficulties going forward.

[3] The state of any power line under normal operating conditions is either "normally open" or "normally closed." When operated normally open, the power line is de-energized.

[4] TL666D was operated normally open to enforce a Single Contingency requirement, as outlined in the NERC Reliability Standard TPL-001-4, P2.1. Under this requirement, interruption of firm transmission service or non-consequential load loss is not allowed.

[5] This violation is a Category P7 – Multiple Contingency, Common Structures

### 2.1.1 Objective 2: Meet Mandatory NERC Reliability Criteria in the Del Mar Substation Area

The Proposed Project will bring a more direct source to Del Mar Substation by replacing a line that is currently operated in the open position (TL666D) with a new line with a higher rating (TL6973). As a result, TL6973 will not experience thermal overload under the N-2 outage of TL610 and TL667 and the Proposed Project will mitigate the previously identified NERC reliability violations. The Proposed Project will also increase SDG&E's Grid Operation Department's flexibility when configuring the system during operation and maintenance activities.

## 2.2 CONCLUSION

In summary, the Proposed Project will address the safety, environmental, and reliability concerns in the area served by the Del Mar Substation and improve operational flexibility to SDG&E's Grid Operation Department. In addition, the NERC violations will be mitigated.

## 2.3 REFERENCES

California Resources Agency. 2014. Title 14 California Code of Regulations, Chapter 3 Guidelines for Implementation of the California Environmental Quality Act. CEQA Guidelines.

NERC. 2015. Standard TPL-001-4 – Transmission System Planning Performance Requirements.