

TABLE OF CONTENTS

1.0 PEA SUMMARY	1-1
1.1 PROJECT LOCATION	1-1
1.2 PROPOSED PROJECT COMPONENTS	1-1
1.2.1 Artesian 230kV Substation Expansion.....	1-2
1.2.2 69kV System Upgrades and Getaways	1-2
1.2.3 Other System Upgrades.....	1-2
1.3 PROJECT NEED AND RANGE OF ALTERNATIVES CONSIDERED	1-3
1.4 PROPONENT'S ENVIRONMENTAL ASSESSMENT CONTENTS	1-3
1.4.1 PEA Part A	1-3
1.4.2 PEA Part B (Technical Appendices)	1-5
1.4.3 Other PEA Requirements	1-6
1.5 MAJOR PEA CONCLUSIONS	1-6
1.5.1 Resource Areas with No Impact or Less than Significant Impacts	1-6
1.5.2 Resource Areas Requiring Applicant Proposed Measures.....	1-7
1.5.3 Significant, Unavoidable Impacts	1-7
1.6 PUBLIC OUTREACH EFFORTS	1-8
1.7 INTER-AGENCY AND OTHER CONSULTATIONS.....	1-8
1.7.1 Project Support	1-9
1.7.2 Project Opposition	1-9
1.8 AREAS OF CONTROVERSY	1-9
1.9 ISSUES TO BE RESOLVED.....	1-9
2.0 PROPOSED PROJECT PURPOSE AND NEED.....	2-1
2.1 OVERVIEW OF PROJECT NEED.....	2-1
2.1.1 Existing and Projected Electric System Constraints	2-1
2.1.2 CAISO Review/ Approval and SDG&E's Proposed Project	2-5
2.2 PROJECT OBJECTIVES	2-5
2.2.1 Objective 1: Meet mandatory NERC reliability criteria and mitigate existing NERC thermal violations identified in the Poway Area Load Pocket	2-6
2.2.2 Objective 2: Alleviate existing 69kV Congestion at the Sycamore Canyon Substation	2-6
2.2.3 Objective 3: Locate Proposed Facilities within Existing Transmission Corridors, SDG&E Right Of Way, and Utility Owned Property	2-9
2.3 CONCLUSION.....	2-10

3.0 PROPOSED PROJECT DESCRIPTION	3-1
3.1 PROJECT LOCATION	3-1
3.1.1 Artesian Substation.....	3-1
3.1.2 Power Line Location	3-1
3.1.3 Other Affected Substations	3-1
3.2 EXISTING SYSTEM	3-2
3.2.1 Artesian Substation.....	3-2
3.2.2 Bernardo Substation	3-2
3.2.3 Rancho Carmel Substation	3-2
3.2.4 Transmission and Power Lines.....	3-2
3.3 PROJECT OBJECTIVES	3-11
3.4 PROPOSED PROJECT	3-11
3.5 PROJECT COMPONENTS	3-12
3.5.1 Transmission Lines.....	3-12
3.5.2 Poles/Towers	3-13
3.5.3 Conductor/Cable.....	3-16
3.5.4 Substations.....	3-19
3.6 RIGHT-OF-WAY REQUIREMENTS	3-22
3.7 PROJECT CONSTRUCTION	3-22
3.7.1 General Construction (For All Projects)	3-22
3.7.2 Transmission Line Construction (Above Ground).....	3-32
3.7.3 Transmission Line Construction (Below Ground)	3-36
3.7.4 Substation Construction	3-39
3.7.5 Construction Workforce and Equipment.....	3-45
3.7.6 Construction Schedule.....	3-48
3.8 OPERATION AND MAINTENANCE	3-50
3.8.1 Artesian Substation Operation and Maintenance	3-50
3.8.2 Other General Project Operation and Maintenance Activities and Practices.....	3-51
3.9 APPLICANT PROPOSED MEASURES	3-53
3.10 REQUIRED APPROVALS	3-58
3.11 REFERENCES	3-61

4.0 DESCRIPTION AND EVALUATION OF ALTERNATIVES	4-1
4.1 INTRODUCTION	4-1
4.2 METHODOLOGY	4-1
4.3 DESCRIPTION OF ALTERNATIVES	4-2
4.3.1 No Project Alternative.....	4-2
4.3.2 Alternative 1 – 3rd Sycamore Canyon to Pomerado 69kV Power Line	4-2
4.3.3 Alternative 2 – Proposed Project with 230kV GIS Substation Yard Design	4-4
4.3.4 Alternative 3 – Chicarita 69kV Conversion	4-5
4.4 EVALUATION OF ALTERNATIVES	4-7
4.4.1 Proposed Project Objectives.....	4-8
4.4.2 No Project Alternative.....	4-8
4.4.3 Alternative 1 – 3rd Sycamore Canyon to Pomerado 69kV Power Line	4-9
4.4.4 Alternative 2 – Proposed Project with 230kV GIS Substation Yard Design	4-12
4.4.5 Alternative 3 – Chicarita 69kV Conversion	4-14
5.0 ENVIRONMENTAL IMPACT ASSESSMENT	5-1
5.1 AESTHETICS	5.1-1
5.1.1 Introduction	5.1-1
5.1.2 Methodology	5.1-1
5.1.3 Existing Conditions	5.1-3
5.1.4 Potential Impacts and Significance Criteria	5.1-33
5.1.5 Applicant Proposed Measures	5.1-57
5.1.6 Detailed Discussion of Significant Impacts	5.1-57
5.1.7 References	5.1-57
5.2 AGRICULTURE AND FORESTRY RESOURCES.....	5.2-1
5.2.1 Introduction	5.2-1
5.2.2 Methodology	5.2-1
5.2.3 Existing Conditions	5.2-2
5.2.4 Potential Impacts	5.2-13
5.2.5 Applicant Proposed Measures	5.2-16
5.2.6 Detailed Discussion of Significant Impacts	5.2-16
5.2.7 References	5.2-16

5.3 AIR QUALITY.....	5.3-1
5.3.1 Introduction	5.3-1
5.3.2 Methodology	5.3-2
5.3.3 Existing Conditions	5.3-2
5.3.4 Potential Impacts	5.3-12
5.3.5 Applicant Proposed Measures	5.3-19
5.3.6 Detailed Discussion of Significant Impacts	5.3-19
5.3.7 References	5.3-19
5.4 BIOLOGICAL RESOURCES.....	5.4-1
5.4.1 Introduction	5.4-1
5.4.2 Methodology	5.4-2
5.4.3 Existing Conditions	5.4-8
5.4.4 Potential Impacts	5.4-35
5.4.5 Applicant Proposed Measures	5.4-54
5.4.6 Detailed Discussion of Significant Impacts	5.4-55
5.4.7 References	5.4-55
5.5 CULTURAL RESOURCES.....	5.5-1
5.5.1 Introduction	5.5-1
5.5.2 Methodology	5.5-2
5.5.3 Existing Conditions	5.5-3
5.5.4 Potential Impacts	5.5-16
5.5.5 Applicant Proposed Measures	5.5-21
5.5.6 Detailed Discussion of Significant Impacts	5.5-22
5.5.7 References	5.5-23
5.6 GEOLOGY AND SOILS	5.6-1
5.6.1 Introduction	5.6-1
5.6.2 Methodology	5.6-2
5.6.3 Existing Conditions	5.6-2
5.6.4 Potential Impacts	5.6-15
5.6.5 Applicant Proposed Measures	5.6-22
5.6.6 Detailed Discussion of Significant Impacts	5.6-22
5.6.7 References	5.6-22

5.7 GREENHOUSE GASES	5.7-1
5.7.1 Introduction	5.7-1
5.7.2 Methodology	5.7-1
5.7.3 Existing Conditions	5.7-2
5.7.4 Potential Impacts	5.7-8
5.7.5 Applicant Proposed Measures	5.7-10
5.7.6 Detailed Discussion of Significant Impacts	5.7-10
5.7.7 References	5.7-10
5.8 HAZARDS AND HAZARDOUS MATERIALS	5.8-1
5.8.1 Introduction	5.8-1
5.8.2 Methodology	5.8-2
5.8.3 Existing Conditions	5.8-2
5.8.4 Potential Impacts	5.8-23
5.8.5 Applicant Proposed Measures	5.8-29
5.8.6 Detailed Discussion of Significant Impacts	5.8-29
5.8.7 References	5.8-29
5.9 HYDROLOGY AND WATER QUALITY	5.9-1
5.9.1 Introduction	5.9-2
5.9.2 Methodology	5.9-2
5.9.3 Existing Conditions	5.9-2
5.9.4 Potential Impacts	5.9-21
5.9.5 Applicant Proposed Measures	5.9-29
5.9.6 Detailed Discussion of Significant Impacts	5.9-29
5.9.7 References	5.9-29
5.10 LAND USE AND PLANNING	5.10-1
5.10.1 Introduction	5.10-1
5.10.2 Methodology	5.10-1
5.10.3 Existing Conditions	5.10-2
5.10.4 Potential Impacts	5.10-29
5.10.5 Applicant Proposed Measures	5.10-32
5.10.6 Detailed Discussion of Significant Impacts	5.10-32
5.10.7 References	5.10-32

5.11 MINERAL RESOURCES.....	5.11-1
5.11.1 Introduction	5.11-1
5.11.2 Methodology	5.11-1
5.11.3 Existing Conditions	5.11-1
5.11.4 Potential Impacts	5.11-3
5.11.5 Applicant Proposed Measures	5.11-3
5.11.6 Detailed Discussion of Significant Impacts	5.11-4
5.11.7 References	5.11-4
5.12 NOISE	5.12-1
5.12.1 Introduction	5.12-1
5.12.2 Methodology	5.12-1
5.12.3 Existing Conditions	5.12-2
5.12.4 Potential Impacts	5.12-12
5.12.5 Applicant Proposed Measures	5.12-25
5.12.6 Detailed Discussion of Significant Impacts	5.12-26
5.12.7 References	5.12-26
5.13 POPULATION AND HOUSING	5.13-1
5.13.1 Introduction	5.13-1
5.13.2 Methodology	5.13-1
5.13.3 Existing Conditions	5.13-1
5.13.4 Potential Impacts	5.13-3
5.13.5 Applicant Proposed Measures	5.13-5
5.13.6 Detailed Discussion of Significant Impacts	5.13-5
5.13.7 References	5.13-5
5.14 PUBLIC SERVICES	5.14-1
5.14.1 Introduction	5.14-1
5.14.2 Methodology	5.14-1
5.14.3 Existing Conditions	5.14-1
5.14.4 Potential Impacts	5.14-4
5.14.5 Applicant Proposed Measures	5.14-7
5.14.6 Detailed Discussion of Significant Impacts	5.14-7
5.14.7 References	5.14-7

5.15 RECREATION	5.15-1
5.15.1 Introduction	5.15-1
5.15.2 Methodology	5.15-1
5.15.3 Existing Conditions	5.15-2
5.15.4 Potential Impacts	5.15-6
5.15.5 Applicant Proposed Measures	5.15-7
5.15.6 Detailed Discussion of Significant Impacts	5.15-7
5.15.7 References	5.15-7
5.16 TRANSPORTATION AND TRAFFIC	5.16-1
5.16.1 Introduction	5.16-1
5.16.2 Methodology	5.16-2
5.16.3 Existing Conditions	5.16-2
5.16.4 Potential Impacts	5.16-10
5.16.5 Applicant Proposed Measures	5.16-24
5.16.6 Detailed Discussion of Significant Impacts	5.16-24
5.16.7 References	5.16-25
5.17 UTILITIES AND SERVICE SYSTEMS	5.17-1
5.17.1 Introduction	5.17-1
5.17.2 Methodology	5.17-1
5.17.3 Existing Conditions	5.17-2
5.17.4 Potential Impacts	5.17-6
5.17.5 Applicant Proposed Measures	5.17-13
5.17.6 Detailed Discussion of Significant Impacts	5.17-13
5.17.7 References	5.17-14
5.18 CUMULATIVE IMPACTS	5.18-1
5.18.1 Introduction	5.18-1
5.18.2 Significance Criteria.....	5.18-1
5.18.3 Timeframe of Analysis.....	5.18-2
5.18.4 Area of Analysis	5.18-2
5.18.5 Methodology	5.18-2
5.18.6 Existing/Operating Projects.....	5.18-3
5.18.7 Foreseeable Projects Inventory	5.18-3
5.18.8 Potential Cumulative Impacts	5.18-15
5.18.9 Applicant Proposed Measures	5.18-33
5.18.10 References	5.18-34

6.0 DETAILED DISCUSSION OF SIGNIFICANT AND GROWTH-INDUCING IMPACTS	6-1
6.1 APPLICANT PROPOSED MEASURES TO MINIMIZE SIGNIFICANT EFFECTS	6-1
6.2 GROWTH-INDUCING IMPACTS.....	6-1
6.2.1 Economic or Population Growth.....	6-2
6.2.2 New Employment.....	6-3
6.2.3 Extended Access or Public Services	6-3
6.2.4 Existing Community Services	6-4
6.2.5 New Development.....	6-4
6.2.6 Conclusion.....	6-4
6.3 REFERENCES	6-5

ACRONYMS AND ABBREVIATIONS

LIST OF PEA PREPARERS AND CONTRIBUTORS

LIST OF FIGURES

Figure 2-1: Poway Area Load Pocket Existing System.....	2-2
Figure 2-2: NERC Violation in the Poway Area Load Pocket	2-4
Figure 2-3: Flow Directions in Powat Area Load Pocket – Pre Project	2-7
Figure 2-4: Flow Directions in Powat Area Load Pocket – Post Project.....	2-8
<hr/>	
Figure 3-1: Proposed Project Vicinity Map.....	3-3
Figure 3-2: Proposed Project Overview Map	3-5
Figure 3-3: Existing Artesian Substation Site.....	3-7
Figure 3-4: Existing and Proposed System Configuration	3-9
<hr/>	
Figure 4-1: Alternative 1 System Overview	4-3
Figure 4-2: Alternative 3 System Overview	4-6
<hr/>	
Figure 5.1-1: Regional Landscape Context	5.1-4
Figure 5.1-2: Photograph Viewpoint Locations.....	5.1-6
Figure 5.1-3: Photograph Viewpoint Locations – Rancho Carmel Substation.....	5.1-8
Figure 5.1-4a: Photographs 1 and 2	5.1-13
Figure 5.1-4b: Photographs 3 and 4.....	5.1-14
Figure 5.1-4c: Photographs 5 and 6	5.1-15

Figure 5.1-4d: Photographs 7 and 8.....	5.1-17
Figure 5.1-4e: Photographs 9 and 10.....	5.1-18
Figure 5.1-4f: Photographs 11 and 12.....	5.1-20
Figure 5.1-4g: Photographs 13 and 14.....	5.1-21
Figure 5.1-4h: Photographs 15 and 16.....	5.1-22
Figure 5.1-4i: Photographs 17 and 18.....	5.1-24
Figure 5.1-4j: Photographs 19 and 20.....	5.1-25
Figure 5.1-4k: Photographs 21 and 22.....	5.1-26
Figure 5.1-5: Existing View and Simulation from Camino Del Sur.....	5.1-39
Figure 5.1-6: Existing View and Simulation from Camino Del Sur at Babcock Street	5.1-40
Figure 5.1-7: Existing View and Simulation from Camino Del Sur at Maranatha Drive	5.1-42
Figure 5.1-8: Existing View and Simulation from Camino Del Sur at Babcock Street	5.1-44
Figure 5.1-9: Existing View and Simulation from White Alder Court.....	5.1-45
Figure 5.1-10: Existing View and Simulation from Rancho Bernardo Rd. at Camino Del Norte.....	5.1-47
Figure 5.1-11: Existing View and Simulation from Rancho Bernardo Rd.....	5.1-48
<hr/>	
Figure 5.2-1: Proposed Route FMMP Map	5.2-7
<hr/>	
Figure 5.6-1: Geologic Map.....	5.6-5
<hr/>	
Figure 5.8-1: Hazardous Sites Map	5.8-13
Figure 5.8-2: Very High Fire Hazard Zone Map	5.8-17
<hr/>	
Figure 5.9-1: Impaired Waters Map.....	5.913
Figure 5.9-2: FEMA Flood Zone Map.....	5.9-15
<hr/>	
Figure 5.10-1: Proposed Project Land Use Features Map	5.10-5
Figure 5.10-2: General Plan Land Use Map	5.10-15
Figure 5.10-3: Zoning Map.....	5.10-21
<hr/>	
Figure 5.12-1: Ambient Noise Measurement Locations.....	5.12-9
Figure 5.12-2: Predicted Noise Level Contours for the Artesian Substation	5.12-21
<hr/>	
Figure 5.18-1: Potential Cumulative Projects Map.....	5.18-9

LIST OF TABLES

Table 1-1: PEA Checklist Key Table.....	1-10
<hr/>	
Table 2-1: 2013 Non-coincident Loads (MW) in Poway Area Load Pocket	2-3
<hr/>	
Table 3-1: Transmission, Distribution, and Power Line Components.....	3-13
Table 3-2: Typical Pole Metrics	3-14
Table 3-3: Transmission, Distribution, and Power Line Structures.....	3-15
Table 3-4: Temporary Work Areas Summary	3-24
Table 3-5: Summary of Permanent Work Areas.....	3-26
Table 3-6: Approximate Access Road Metrics	3-28
Table 3-7: Proposed Project Cut and Fill Summary	3-30
Table 3-8: Common Destination of Retired Project Components	3-32
Table 3-9: Standard Construction Equipment and Use.....	3-46
Table 3-10: High-Level Approximate Project Schedule	3-49
Table 3-11: Operation and Maintenance Increase Summary1	3-50
Table 3-12: Applicant Proposed Measures by Resource Area	3-54
Table 3-13: Applicant Proposed Measures	3-55
Table 3-14: Anticipated Potential Permit, Approval, and Consultation Requirements	3-59
<hr/>	
Table 5.1-1: Summary of Proposed Project Components.....	5.1-11
Table 5.1-2: Summary of Simulation Views (KOPs)	5.1-36
<hr/>	
Table 5.3-1: National and California Ambient Air Quality Standards	5.3-9
Table 5.3-2: Local Escondido Air Quality Levels	5.3-11
Table 5.3-3: SDAPCD Pollutant Thresholds	5.3-13
Table 5.3-4: Proposed Project Construction Air Emissions	5.3-14
<hr/>	
Table 5.4-1: Vegetation Communities within the Survey Area.....	5.4-19
Table 5.4-2: Special Status Plant Species' Potential to Occur	5.4-21
Table 5.4-3: Special-Status Plant Species Observations within the Survey Area	5.4-25
Table 5.4-4: Special-Status Wildlife Species' Potential to Occur	5.4-27
Table 5.4-5: Anticipated Impacts to Natural Communities.....	5.4-49

Table 5.5-1: Recorded Cultural Resources within/just adjacent to the Proposed Project	5.5-12
Table 5.6-1: Geologic Units Along the Proposed Project.....	5.6-7
Table 5.6-2: Major Faults in the Region	5.6-8
Table 5.6-3: Soils in the Proposed Project Footprint.....	5.6-11
Table 5.6-4: Grading Disturbance Area.....	5.6-16
Table 5.7-1: Global Warming Potentials and Atmospheric Lifetimes of Greenhouse Gases ...	5.7-2
Table 5.7-2: State of California Greenhouse Gases Emissions by Sector	5.7-4
Table 5.7-3: Greenhouse Gas Construction Emissions.....	5.7-8
Table 5.8-1: Hazardous Materials Release or Contamination Sites withinwithin ¼ Mile of the Proposed Project	5.8-10
Table 5.10-1: Designated and Existing Land Uses in the Proposed Project Area	5.10-27
Table 5.12-1: USEPA Guidelines	5.12-3
Table 5.12-2: Human Response to Transient Vibration	5.12-4
Table 5.12-3: City of San Diego Sound Level Limits	5.12-5
Table 5.12-4: County of San Diego Sound Level Limits	5.12-6
Table 5.12-5: Summary of Hourly Background Measured Ambient Noise Levels (dBA)	5.12-8
Table 5.12-6: Summary of Measured Ambient Noise Levels (dBA)	5.12-11
Table 5.12-7: Range of Typical Average Noise Levels by Construction Phase with Minimum to Maximum Required Equipment in Operation (dBA)	5.12-13
Table 5.12-8: Typical Overhead Transmission Line Construction Sound Levels.....	5.12-14
Table 5.12-9: Overhead Line Construction Sound Levels Adjusted for Workday.....	5.12-15
Table 5.12-10: Typical Underground Line Construction Sound Levels.....	5.12-16
Table 5.12-11: Underground Line Construction Sound Levels Adjusted for Workday.....	5.12-17
Table 5.12-12: Proposed Project Staging Yards	5.12-17
Table 5.12-13: Vibration Source Levels for Construction Equipment at 50 Feet	5.12-20
Table 5.13-1: Population Estimates and Projections	5.13-2
Table 5.13-2: Total Housing Units and Vacancy Rates (2010).....	5.13-2
Table 5.13-3: Total Employment and Unemployment (2014).....	5.13-2
Table 5.13-4: Median Household Income (2009-2013)	5.13-3
Table 5.16-1: Level of Service Calculation Values	5.16-2

Table 5.16-2: Existing Average Daily Trips for Key Project Area Major Roadways	5.16-7
Table 5.16-3: Bus Lines within the Proposed Project Area.....	5.16-9
Table 5.16-4: Designated Bikeways within the Proposed Project Area	5.16-10
Table 5.16-5: Construction Personnel Daily Trips for Major Tasks	5.16-13
Table 5.16-6: Construction Hauling Daily Trips for Major Tasks1	5.16-14
Table 5.16-7: Daily Trips at Construction Peak1	5.16-15
Table 5.16-8: Project Traffic Effects on LOS.....	5.16-16
Table 5.16-9: Effects of Underground Construction on LOS	5.16-18
Table 5.16-10: Substation Inspection and Maintenance Trips.....	5.16-20
<hr/>	
Table 5.17-1: Capacity of Landfills Servicing the Proposed Project.....	5.17-12
<hr/>	
Table 5.18-1: Potential Cumulative Projects within One Mile of the Proposed Project Area	5.18-5

LIST OF APPENDICES

Appendix 1-A	Proposed Project Geographic Information System Data (Confidential)
Appendix 1-B	Water Availability Letter
<hr/>	
Appendix 3-A	Existing and Proposed Preliminary Substation Design and Grading (portions of this Appendix are Confidential)
Appendix 3-B	Proposed Project Detailed Route Map
Appendix 3-C	Typical Structure Diagrams
Appendix 3-D	Proposed Project Structure Detail Table
Appendix 3-E	Proposed Project Rights-of-Way Map
Appendix 3-F	Proposed Project Detailed Construction Schedule and Equipment Table
<hr/>	
Appendix 5.3-A	Air Quality Construction Emissions Calculations
<hr/>	
Appendix 5.4-A	Biological Technical Report
Appendix 5.4-B	SDG&E Subregional NCCP Operational Protocols
Appendix 5.4-C	SDG&E Low-Effect Habitat Conservation Plan for Quino Checkerspot Butterfly
<hr/>	
Appendix 5.5-A	Archaeological Survey Report (Confidential)
Appendix 5.5-B	Paleontological Resources Record Search (Confidential)
<hr/>	
Appendix 5.6-A	Geotech Report – Artesian Substation (portions of this Appendix are Confidential)
<hr/>	
Appendix 5.7-A	SF ₆ Emissions Calculations
<hr/>	
Appendix 5.8-A	Environmental Data Resources, Inc. (EDR) Radius Report
<hr/>	
Appendix 5.9-A	Best Management Practices Manual for Water Quality Construction
<hr/>	
Appendix 5.12-A	Project Noise Analysis: Artesian Substation
<hr/>	