

# Contents

**Acronyms and Abbreviations..... xv**

**1. Executive Summary..... 1-1**

1.1 Proposed Project Summary..... 1-1

1.2 Land Ownership and Right-of-Way Requirements ..... 1-1

1.3 Areas of Controversy..... 1-2

1.4 Summary of Impacts ..... 1-2

1.5 Summary of Alternatives..... 1-2

1.6 Pre-filing Consultation and Public Outreach Summary ..... 1-4

1.7 Conclusions..... 1-4

1.8 Remaining Issues ..... 1-4

**2. Introduction..... 2-1**

2.1 Purpose and Need ..... 2-1

2.1.1 California Independent System Operator Consideration of the Project..... 2-1

2.1.2 Project Objectives ..... 2-4

2.1.3 Project Applicant..... 2-5

2.2 Pre-filing Consultation and Public Outreach..... 2-6

2.2.1 California Independent System Operator..... 2-6

2.2.2 Public Agencies and Other Entities with Jurisdiction over Project Areas or Resources that May Occur in the Project Area..... 2-6

2.2.3 Native American Tribes Affiliated with the Project Area..... 2-9

2.2.4 Private Landowners..... 2-10

2.2.5 Other Utility Owners and Operators ..... 2-10

2.2.6 Federal, State, and Local Fire Management Agencies..... 2-10

2.2.7 Significant Outcomes..... 2-11

2.2.8 Development that Could Coincide or Conflict with Project Activities ..... 2-11

2.2.9 Records of Consultation and Public Outreach ..... 2-11

2.3 Environmental Review Process..... 2-11

2.3.1 Environmental Review Process..... 2-11

2.3.2 California Environmental Quality Act Review ..... 2-11

2.3.3 National Environmental Policy Act Review (not applicable)..... 2-12

2.3.4 Pre-filing CEQA and NEPA Coordination..... 2-12

2.4 Document Organization ..... 2-12

2.4.1 Proponent’s Environmental Assessment Organization ..... 2-12

**3. Proposed Project Description..... 3-1**

3.1 Project Overview ..... 3-1

3.2 Existing and Proposed System ..... 3-2

3.2.1 Existing System ..... 3-2

3.2.2 Proposed Project System..... 3-4

3.2.3 System Reliability ..... 3-4

3.2.4 Planning Area..... 3-4

3.3	Project Components .....	3-5
3.3.1	Preliminary Design and Engineering.....	3-5
3.3.2	Segments, Components, and Phases.....	3-5
3.3.3	Existing Facilities .....	3-6
3.3.4	Proposed Facilities .....	3-17
3.3.5	Other Potentially Required Facilities.....	3-17
3.3.6	Future Expansions and Equipment Lifespans .....	3-18
3.3.7	Belowground Conductor/Cable Installations.....	3-18
3.3.8	Electric Substations .....	3-18
3.3.9	Telecommunication Lines.....	3-18
3.4	Land Ownership, Rights-of-Way, and Easements .....	3-19
3.4.1	Land Ownership .....	3-19
3.4.2	Existing Rights-of-Way or Easements.....	3-19
3.4.3	New or Modified Rights-of-Way or Easements.....	3-19
3.4.4	Temporary Rights-of-Way or Easements.....	3-23
3.5	Construction .....	3-23
3.5.1	Construction Access .....	3-23
3.5.2	Staging Areas .....	3-26
3.5.3	Construction Work Areas .....	3-27
3.5.4	Site Preparation .....	3-30
3.5.5	Power Line Construction (Aboveground) .....	3-38
3.5.6	Power Line Construction (Below Ground) .....	3-43
3.5.7	Substations and Switching Station .....	3-45
3.5.8	Public Safety and Traffic Control.....	3-46
3.5.9	Dust, Erosion, and Runoff Controls .....	3-48
3.5.10	Water Use and Dewatering .....	3-49
3.5.11	Hazardous Materials and Management .....	3-49
3.5.12	Waste Generation and Management.....	3-50
3.5.13	Fire Prevention and Response .....	3-52
3.6	Construction Workforce, Equipment, Traffic, and Schedule .....	3-53
3.6.1	Construction Workforce .....	3-53
3.6.2	Construction Equipment.....	3-53
3.6.3	Construction Traffic.....	3-64
3.6.4	Construction Schedule .....	3-64
3.6.5	Work Schedule.....	3-65
3.7	Post-Construction .....	3-66
3.7.1	Configuring and Testing.....	3-66
3.7.2	Landscaping .....	3-66
3.7.3	Demobilization and Site Restoration.....	3-67
3.8	Operation and Maintenance .....	3-67
3.8.1	Regulations and Standards .....	3-68
3.8.2	System Controls and Operation Staff.....	3-69

3.8.3	Inspection Programs.....	3-69
3.8.4	Maintenance Programs .....	3-70
3.8.5	Vegetation Management Program.....	3-71
3.9	Decommissioning.....	3-72
3.9.1	Decommissioning.....	3-72
3.10	Anticipated Permits and Approvals.....	3-72
3.10.1	Anticipated Permits and Approvals.....	3-72
3.10.2	Rights-of-Way or Easement Applications .....	3-73
3.11	Applicant-Proposed Measures.....	3-73
<b>4.</b>	<b>Description of Alternatives .....</b>	<b>4-1</b>
4.1	Alternatives Evaluation Methodology.....	4-1
4.2	Alternatives Considered .....	4-3
4.2.1	Process to Identify Potential Alternatives to the Project .....	4-3
4.2.2	Identified Alternatives.....	4-8
4.2.3	Alternatives Carried Forward for PEA Evaluation.....	4-8
4.3	No Project Alternative.....	4-19
4.4	Rejected Alternatives.....	4-20
4.4.1	Alternative D: All Overhead Rebuild in Existing Alignment.....	4-20
4.4.2	Alternative F: Conceptual South Overhead Alignment.....	4-21
4.4.3	Alternative G: Distribution Energy Resources.....	4-21
4.4.4	Alternative H: Energy Storage.....	4-23
<b>5.</b>	<b>Environmental Analysis.....</b>	<b>5-1</b>
5.1	Aesthetics.....	5.1-1
5.1.1	Methodology and Environmental Setting.....	5.1-1
5.1.2	Regulatory Setting.....	5.1-12
5.1.3	Impact Questions .....	5.1-15
5.1.4	Potential Impact Analysis .....	5.1-16
5.2	Agriculture and Forestry Resources .....	5.2-1
5.2.1	Methodology and Environmental Setting.....	5.2-1
5.2.2	Regulatory Setting.....	5.2-3
5.2.3	Impact Questions .....	5.2-4
5.2.4	Potential Impact Analysis .....	5.2-5
5.3	Air Quality.....	5.3-1
5.3.1	Methodology and Environmental Setting.....	5.3-1
5.3.2	Regulatory Setting.....	5.3-5
5.3.3	Impact Questions .....	5.3-11
5.3.4	Potential Impact Analysis .....	5.3-11
5.4	Biological Resources.....	5.4-1
5.4.1	Methodology and Environmental Setting.....	5.4-1
5.4.2	Regulatory Setting.....	5.4-33
5.4.3	Impact Questions .....	5.4-38
5.4.4	Potential Impact Analysis .....	5.4-39

5.5	Cultural Resources .....	5.5-1
5.5.1	Methodology and Environmental Setting.....	5.5-1
5.5.2	Regulatory Setting.....	5.5-12
5.5.3	Impact Questions .....	5.5-14
5.5.4	Potential Impact Analysis .....	5.5-14
5.6	Energy .....	5.6-1
5.6.1	Methodology and Environmental Setting.....	5.6-1
5.6.2	Regulatory Setting.....	5.6-3
5.6.3	Impact Questions .....	5.6-7
5.6.4	Potential Impact Analysis .....	5.6-7
5.7	Geology, Soils, and Paleontological Resources.....	5.7-1
5.7.1	Methodology and Environmental Setting.....	5.7-1
5.7.2	Regulatory Setting.....	5.7-16
5.7.3	Impact Questions .....	5.7-19
5.7.4	Potential Impact Analysis .....	5.7-20
5.8	Greenhouse Gas Emissions.....	5.8-1
5.8.1	Methodology and Environmental Setting.....	5.8-1
5.8.2	Regulatory Setting.....	5.8-2
5.8.3	Impact Questions .....	5.8-6
5.8.4	Potential Impact Analysis .....	5.8-7
5.9	Hazards, Hazardous Materials, and Public Safety.....	5.9-1
5.9.1	Methodology and Environmental Setting.....	5.9-1
5.9.2	Regulatory Setting.....	5.9-9
5.9.3	Impact Questions .....	5.9-13
5.9.4	Potential Impact Analysis .....	5.9-14
5.10	Hydrology and Water Quality .....	5.10-1
5.10.1	Methodology and Environmental Setting.....	5.10-1
5.10.2	Regulatory Setting.....	5.10-7
5.10.3	Impact Questions .....	5.10-12
5.10.4	Potential Impact Analysis .....	5.10-13
5.11	Land Use and Planning.....	5.11-1
5.11.1	Methodology and Environmental Setting.....	5.11-1
5.11.2	Regulatory Setting.....	5.11-8
5.11.3	Impact Questions .....	5.11-9
5.11.4	Potential Impact Analysis .....	5.11-9
5.12	Mineral Resources .....	5.12-1
5.12.1	Methodology and Environmental Setting.....	5.12-1
5.12.2	Regulatory Setting.....	5.12-2
5.12.3	Impact Questions .....	5.12-4
5.12.4	Potential Impact Analysis .....	5.12-4
5.13	Noise 5.13-1	
5.13.1	Methodology and Environmental Setting.....	5.13-1

5.13.2	Regulatory Setting.....	5.13-16
5.13.3	Impact Questions.....	5.13-27
5.13.4	Potential Impact Analysis.....	5.13-27
5.14	Population and Housing.....	5.14-1
5.14.1	Methodology and Environmental Setting.....	5.14-1
5.14.2	Regulatory Setting.....	5.14-2
5.14.3	Impact Questions.....	5.14-3
5.14.4	Potential Impact Analysis.....	5.14-3
5.15	Public Services.....	5.15-1
5.15.1	Methodology and Environmental Setting.....	5.15-1
5.15.2	Regulatory Setting.....	5.15-5
5.15.3	Impact Questions.....	5.15-5
5.15.4	Potential Impact Analysis.....	5.15-6
5.16	Recreation.....	5.16-1
5.16.1	Methodology and Environmental Setting.....	5.16-1
5.16.2	Regulatory Setting.....	5.16-4
5.16.3	Impact Questions.....	5.16-4
5.16.4	Potential Impact Analysis.....	5.16-5
5.17	Transportation.....	5.17-1
5.17.1	Methodology and Environmental Setting.....	5.17-1
5.17.2	Regulatory Setting.....	5.17-7
5.17.3	Impact Questions.....	5.17-11
5.17.4	Potential Impact Analysis.....	5.17-11
5.18	Tribal Cultural Resources.....	5.18-1
5.18.1	Methodology and Environmental Setting.....	5.18-1
5.18.2	Regulatory Setting.....	5.18-9
5.18.3	Impact Questions.....	5.18-10
5.18.4	Potential Impact Analysis.....	5.18-10
5.19	Utilities and Service Systems.....	5.19-1
5.19.1	Methodology and Environmental Setting.....	5.19-1
5.19.2	Regulatory Setting.....	5.19-5
5.19.3	Impact Questions.....	5.19-7
5.19.4	Potential Impact Analysis.....	5.19-8
5.20	Wildfire.....	5.20-1
5.20.1	Methodology and Environmental Setting.....	5.20-1
5.20.2	Regulatory Setting.....	5.20-16
5.20.3	Impact Questions.....	5.20-21
5.20.4	Potential Impact Analysis.....	5.20-21
5.21	Mandatory Findings of Significance.....	5.21-1
5.21.1	Impact Assessment: Potential to Substantially Degrade the Quality of the Environment	5.21-1
5.21.2	Impact Assessment: Potential for Impacts that are Cumulatively Considerable.....	5.21-3
5.21.3	Impact Assessment: Potential for Substantial Adverse Effects on Human Beings.....	5.21-3

<b>6.</b>	<b>Comparison of Alternatives.....</b>	<b>6-1</b>
6.1	Alternatives Comparison.....	6-1
6.1.1	Alternatives Compared.....	6-1
6.1.2	Comparison Approach.....	6-2
6.1.3	Proposed Project Impact Summary.....	6-3
6.2	Potential Impacts of Alternatives.....	6-7
6.2.1	Alternative A: Moraga–Oakland X 3-Circuit Replacement with Moraga–Claremont Reconductoring and Park Boulevard/Lincoln Avenue Underground.....	6-8
6.2.2	Alternative B: Manzanita Drive–Colton Boulevard–Estates Drive Underground.....	6-11
6.2.3	Alternative C: Shepherd Canyon Road Underground.....	6-15
6.2.4	Alternative E: Proposed Project with Campground Overhead Option.....	6-18
6.3	Alternatives Ranking.....	6-20
<b>7.</b>	<b>Cumulative Impacts and Other CEQA Considerations.....</b>	<b>7-1</b>
7.1	Cumulative Impacts.....	7-1
7.1.1	List of Cumulative Projects.....	7-1
7.1.2	Geographic Scope.....	7-6
7.1.3	Cumulative Impact Analysis.....	7-7
7.2	Growth-Inducing Impacts.....	7-15
7.2.1	Growth-Inducing Impacts.....	7-15
<b>8.</b>	<b>List of Preparers.....</b>	<b>8-1</b>
8.1	List of Preparers.....	8-1
<b>9.</b>	<b>References.....</b>	<b>9-1</b>
9.1	Chapter 1. Executive Summary.....	9-1
9.2	Chapter 2. Introduction.....	9-1
9.3	Chapter 3. Proposed Project Description.....	9-1
9.4	Chapter 4. Description of Alternatives.....	9-1
9.5	Chapter 5. Environmental Analysis.....	9-1
9.5.1	Section 5.1. Aesthetics.....	9-2
9.5.2	Section 5.2. Agriculture and Forestry Resources.....	9-3
9.5.3	Section 5.3. Air Quality.....	9-4
9.5.4	Section 5.4. Biological Resources.....	9-6
9.5.5	Section 5.5. Cultural Resources.....	9-11
9.5.6	Section 5.6. Energy.....	9-14
9.5.7	Section 5.7. Geology, Soils, and Paleontological Resources.....	9-15
9.5.8	Section 5.8. Greenhouse Gas Emissions.....	9-18
9.5.9	Section 5.9. Hazards, Hazardous Materials, and Public Safety.....	9-19
9.5.10	Section 5.10. Hydrology and Water Quality.....	9-21
9.5.11	Section 5.11. Land Use and Planning.....	9-22
9.5.12	Section 5.12. Mineral Resources.....	9-24
9.5.13	Section 5.13. Noise.....	9-25
9.5.14	Section 5.14. Population and Housing.....	9-26
9.5.15	Section 5.15. Public Services.....	9-27

9.5.16 Section 5.16. Recreation..... 9-29

9.5.17 Section 5.17. Transportation ..... 9-30

9.5.18 Section 5.18. Tribal Cultural Resources ..... 9-31

9.5.19 Section 5.19. Utilities and Service Systems..... 9-33

9.5.20 Section 5.20. Wildfire ..... 9-35

9.5.21 Section 5.21. Mandatory Findings of Significance..... 9-38

9.6 Chapter 6. Comparison of Alternatives ..... 9-38

9.7 Chapter 7. Cumulative Impacts and Other CEQA Considerations..... 9-38

9.8 Chapter 8. List of Preparers..... 9-38

**Appendices**

- Appendix 1A. Parcel List within 1,000 Feet
- Appendix 1B. Electric Meter Mailing Addresses Within 1,000 Feet
- Appendix 2. Stakeholder Meeting Information
- Appendix 3. Index to CPUC PEA Guidelines
- Appendix 4. EMF Discussion
- Appendix A. Emission Calculations
- Appendix B1. Botanical Resource Survey Report
- Appendix B2. Aquatic Resources Delineation Report
- Appendix B3. Wildlife Assessment Report
- Appendix B4. Special-Status Species Tables
- Appendix B5. Species Lists
- Appendix B6. Nesting Birds: Species-Specific Buffers for PG&E Activities
- Appendix C. Cultural Resources Identification and Evaluation Report
- Appendix D. Energy Calculations
- Appendix E1. Paleontological Resources Impact Evaluation
- Appendix E2. Hayward and Chabot Fault Location Uncertainty Evaluation for a Utility Corridor
- Appendix E3. Geotechnical Evaluation (Confidential and sent under separate cover to CPUC)
- Appendix E4. Landslide Evaluation
- Appendix F1. EDR Report and Well Report
- Appendix F2. FAA Determinations
- Appendix G. Sacred Lands File and Native American Contacts List Request

**Tables**

Table 2.1-1. Oakland X Substation 10-Year Annual and 15-Year Load Forecast..... 2-5

Table 3.3-1. Construction Components, Phases, and Timing (Approximate Metrics) ..... 3-5

Table 3.3-2. Types of Existing Facilities to be Removed or Modified, Approximate Metrics ..... 3-7

Table 3.3-3. Power Line Facilities Design Summary, Approximate Length ..... 3-8

Table 3.3-4. Double-Circuit Line Structure Components Upgrade, Approximate Metrics..... 3-10

Table 3.4-1. Existing, Modified and New Land Rights or Easements, Approximate Dimensions ..... 3-20

Table 3.5-1. Vehicular Access Roads..... 3-24

Table 3.5-2. Potential Staging Areas and Landing Zones .....	3-26
Table 3.5-3. Temporary and Permanent Disturbance Areas.....	3-29
Table 3.5-4. Estimated Disturbance Within Vegetation Communities .....	3-32
Table 3.5-5. Estimated Vegetation Management including Tree Trimming or Removal .....	3-33
Table 3.5-6. Types, Uses, and Approximate Volumes of Hazardous Materials Used in Construction .....	3-50
Table 3.6-1. Anticipated Construction Equipment and Workforce .....	3-54
Table 3.6-2. Estimated Construction Vehicle Trips and Vehicle Miles Traveled.....	3-64
Table 3.6-3. Preliminary Proposed Construction Schedule.....	3-64
Table 3.6-4. Estimated Approximate Construction Duration at Work Area Types.....	3-66
Table 3.10-1. Permits and Approvals that May Be Required .....	3-72
Table 3.11-1. Applicant-Proposed Measures .....	3-73
Table 4.1-1. Evaluation Factors and Existing Setting .....	4-2
Table 4.2-1. Summary of Alternatives Evaluation .....	4-10
Table 5.1-1. Summary of Representative Viewpoints and Photographs .....	5.1-7
Table 5.1-2. CEQA Checklist for Aesthetics .....	5.1-15
Table 5.1-3. Summary of Visual Change at KOPs.....	5.1-17
Table 5.1-4. Consistency with Local Scenic Quality Regulations .....	5.1-39
Table 5.2-1. CEQA Checklist for Agriculture and Forestry Resources .....	5.2-4
Table 5.3-1. Ambient Criteria Pollutants Concentration Data in Oakland and San Pablo.....	5.3-2
Table 5.3-2. Attainment Status for the Project Area .....	5.3-3
Table 5.3-3. Sensitive Receptors –Daycare Facilities, Schools, Elderly Housing, and Parks .....	5.3-4
Table 5.3-4. National and California Ambient Air Quality Standards.....	5.3-5
Table 5.3-5. CEQA Checklist for Air Quality.....	5.3-11
Table 5.3-6. BAAQMD Air Quality Thresholds of Significance .....	5.3-12
Table 5.3-7. Estimated Construction Emissions .....	5.3-14
Table 5.4-1. Survey Types, Dates, and Personnel.....	5.4-3
Table 5.4-2. Vegetation Communities Present in the Botanical Study and Survey Area .....	5.4-7
Table 5.4-3. Vegetation Communities Classification/Mapping Comparison.....	5.4-8
Table 5.4-4. CLN Vegetation Communities Present in the BSA .....	5.4-9
Table 5.4-5. Special-Status Plant Species with Potential to Occur in the BSA.....	5.4-19
Table 5.4-6. Special-Status Wildlife Species.....	5.4-23
Table 5.4-7. CEQA Checklist for Biological Resources.....	5.4-38
Table 5.4-8. Additional CEQA Impact Questions for Biological Resources.....	5.4-39
Table 5.4-9. Relevant Field Protocols from the BAHCP .....	5.4-40
Table 5.4-10. Relevant Species-specific Avoidance and Minimization Measures from the BAHCP.....	5.4-41
Table 5.4-11. Relevant CDFW Measures from the Bay Area O&M ITP .....	5.4-42
Table 5.4-12. Relevant Applicant-Proposed Measures from the ITP FEIR .....	5.4-47
Table 5.4-13. Anticipated Impacts to BAHCP Modeled Habitat for RLF.....	5.4-55
Table 5.4-14. Anticipated Impacts to BAHCP Modeled Habitat for AWS.....	5.4-57
Table 5.4-15. Impacts to All Vegetation and Land Cover Types (CLN 2.0) .....	5.4-59
Table 5.4-16. Impacts to Sensitive Natural Communities (Nomad 2022) .....	5.4-59
Table 5.5-1. Chronology and Regional Cultural Patterns in Bay Area Prehistory .....	5.5-3



Table 5.5-2. Previous Cultural Resource Studies within 0.25 Mile of the Area of Potential Impact..... 5.5-11

Table 5.5-3. Previously Recorded Cultural Resources within 0.25 Mile of the Area of Potential Impact ..... 5.5-17

Table 5.5-4. Previously Identified Resources in the Architectural Area of Potential Impact ..... 5.5-9

Table 5.5-5. Assessment of Potential Impacts to California Register of Historical Resources Eligible Resources..... 5.5-10

Table 5.5-6. CEQA Checklist for Cultural Resources ..... 5.5-14

Table 5.6-1. 2021 Energy Resources for Electricity Service Providers in Contra Costa and Alameda Counties ..... 5.6-2

Table 5.6-2. CEQA Checklist for Energy ..... 5.6-7

Table 5.6-3. Additional CEQA Impact Questions for Energy ..... 5.6-7

Table 5.6-4. Summary of Estimated Fuel Consumption During Construction..... 5.6-8

Table 5.6-5. Summary of Estimated Fuel Consumption During Construction Compared to Statewide Fuel Consumption..... 5.6-9

Table 5.7-1. Mapped Geologic Units and Subsurface Conditions ..... 5.7-4

Table 5.7-2. Significant Faults within 10 to 30 Miles of the Project ..... 5.7-6

Table 5.7-3. Major Historical Earthquakes in San Francisco Bay Area..... 5.7-9

Table 5.7-4. NRCS Soil Units and Properties that the Project Intersects ..... 5.7-11

Table 5.7-5. Paleontological Sensitivity of Geologic Units in Study Area..... 5.7-14

Table 5.7-6. CEQA Checklist for Geology, Soils, and Paleontological Resources..... 5.7-19

Table 5.8-1. 2011 Bay Area GHG Emissions Inventory..... 5.8-2

Table 5.8-2. CEQA Checklist for Greenhouse Gas Emissions..... 5.8-6

Table 5.8-3. Estimated Construction-Related Greenhouse Gas Emissions ..... 5.8-9

Table 5.9-1. RCRA Hazardous Waste Program Facilities within 0.25 Mile of the Rebuilt Project Site ..... 5.9-4

Table 5.9-2. Historic Auto Service and Dry Cleaner Sites with 500 Feet of Project Excavation Areas ..... 5.9-6

Table 5.9-3. Types, Uses, and Volumes of Hazardous Materials Used in Construction..... 5.9-7

Table 5.9-4. CEQA Checklist for Hazards, Hazardous Materials, and Public Safety ..... 5.9-13

Table 5.9-5. Additional CEQA Impact Questions for Hazards, Hazardous Materials, and Public Safety ..... 5.9-14

Table 5.10-1. Waterbodies Downstream of the Project Area on the Clean Water Act Section 303(d) Impaired Waters List..... 5.10-5

Table 5.10-2. CEQA Checklist for Hydrology and Water Quality ..... 5.10-12

Table 5.11-1. Land Use and Zoning Designations Intersected by the Proposed Project..... 5.11-4

Table 5.11-2. Special Land Uses ..... 5.11-8

Table 5.11-3. CEQA Checklist for Land Use and Planning ..... 5.11-9

Table 5.12-1. Mineral Resource Zones in Project Alignment ..... 5.12-1

Table 5.12-2. CEQA Checklist for Mineral Resources..... 5.12-4

Table 5.13-1. Typical Sound Levels Measured in the Environment..... 5.13-2

Table 5.13-2. Typical Construction Equipment Noise Levels..... 5.13-3

Table 5.13-3. Construction Equipment Noise Levels Versus Distance..... 5.13-6

Table 5.13-4. Average Predicted Pile Driving Noise Levels ..... 5.13-7

Table 5.13-5. Maximum Helicopter Noise Levels ..... 5.13-8

Table 5.13-6. Human Response to Transient Vibration ..... 5.13-9

Table 5.13-7. Construction Vibration Damage Criteria..... 5.13-9

Table 5.13-8. Typical Construction Equipment Vibration Levels..... 5.13-10

Table 5.13-9. Typical Construction Equipment Vibration Levels in Peak Particle Velocity ..... 5.13-11

Table 5.13-10. A-weighted Sound Levels Corresponding to Land Use and Population Density.....	5.13-14
Table 5.13-11. Summary of Long-Term (LT) Noise Measurements .....	5.13-15
Table 5.13-12. Summary of Short-Term (ST) Noise Measurements .....	5.13-16
Table 5.13-13. Summary of Local Noise Regulations by Jurisdiction and Project Component .....	5.13-17
Table 5.13-14. Maximum Allowable Receiving Noise Level Standards, Residential and Civic .....	5.13-22
Table 5.13-15. Maximum Allowable Receiving Noise Level Standards, Commercial.....	5.13-23
Table 5.13-16. Maximum Allowable Receiving Noise Level Standards, Industrial, Agricultural, and Extractive .....	5.13-23
Table 5.13-17. Maximum Allowable Receiving Noise Level Standards, dBA.....	5.13-24
Table 5.13-18. Recommended Maximum Allowable Receiving Noise Level Standards, dBA (L <sub>dn</sub> ) .....	5.13-25
Table 5.13-19. CEQA Checklist for Noise .....	5.13-27
Table 5.14-1. CEQA Checklist for Population and Housing .....	5.14-3
Table 5.15-1. Nearest Fire and Police Stations to the Proposed Project .....	5.15-1
Table 5.15-2. Schools within 0.25 Mile of the Proposed Project.....	5.15-4
Table 5.15-3. Hospitals Near the Proposed Project.....	5.15-5
Table 5.15-4. CEQA Checklist for Public Services .....	5.15-6
Table 5.16-1. CEQA Checklist for Recreation .....	5.16-5
Table 5.16-2. Additional CEQA Impact Questions for Recreation .....	5.16-5
Table 5.17-1. Existing Roadways within Project Area.....	5.17-2
Table 5.17-2. CEQA Checklist for Transportation .....	5.17-11
Table 5.17-3. Additional CEQA Impact Questions for Transportation .....	5.17-11
Table 5.17-4. Peak Construction Trip Generation .....	5.17-15
Table 5.18-1. Summary of the Native American Outreach Efforts .....	5.18-1
Table 5.18-2. Chronology and Regional Cultural Patterns in Bay Area Prehistory .....	5.18-4
Table 5.18-3. CEQA Checklist for Tribal Cultural Resources.....	5.18-10
Table 5.19-1. Landfills and Recycling Facilities.....	5.19-4
Table 5.19-2. CEQA Checklist for Utilities and Service Systems .....	5.19-7
Table 5.19-3. Additional CEQA Impact Questions for Utilities and Service Systems .....	5.19-8
Table 5.20-1. Summary of Weather Data from Station ONOC1 2014-2024.....	5.20-7
Table 5.20-2. Estimated Change in Wildfire Risk with Proposed Project Implementation .....	5.20-8
Table 5.20-3. Access During Local Road Temporary Closures.....	5.20-11
Table 5.20-4. CEQA Checklist for Wildfire.....	5.20-21
Table 5.21-1. CEQA Checklist for Mandatory Findings of Significance .....	5.21-1
Table 6.2-1. Alternatives Comparison Summary and Ranking .....	6-20
Table 7.1-1. Cumulative Projects in the Project Vicinity .....	7-3
Table 7.1-2. Geographic Scope of Analysis for Cumulative Scenario.....	7-6
Table 8-1. Contributor by Section and Qualifications.....	8-1
KOP Figure 5.1-2a through Figure 5.1-2l Photograph Details.....	9-1

## Exhibits

Exhibit 2-1. East Bay Transmission System .....	2-2
Exhibit 2-2. Approximate Area of Six Distribution Substations Associated with Project .....	2-3

Exhibit 5.13-1. City of Oakland Long-Term (LT) and Short-Term (ST) Noise Monitoring Locations..... 5.13-15  
 Exhibit 5.13-2. Land Use Compatibility for Community Noise Environments..... 5.13-20  
 Exhibit 5.13-3. Noise-Land Use Compatibility Matrix..... 5.13-21

**Figures**

*Provided in a separate section after Chapter 9 and prior to the Appendices.*

- Figure 3.1-1. Overview with Existing Lines
- Figure 3.1-2a. Existing Lattice Steel Towers, Tubular Steel Pole, and Lattice Steel Pole
- Figure 3.1-2b. Existing Tubular Steel Pole Types
- Figure 3.2-1. Overview with Proposed Lines Rebuild
- Figure 3.3-3a. Lattice Steel Tower (Typical)
- Figure 3.3-3b. Lattice Steel Pole (Typical)
- Figure 3.3-3c. Modified Tubular Steel Pole (Typical) with a Drilled Pier Foundation
- Figure 3.3-3d. Tubular Steel Pole (Typical)with a Monopile Foundation
- Figure 3.3-4a. Vertical Single Circuit Transition Structure Tubular Steel Pole (Typical)
- Figure 3.3-4b. Vertical Double Circuit Transition Structure Tubular Steel Pole (Typical)
- Figure 3.3-4c. H-Frame Double Circuit Transition Structure Tubular Steel Pole (Typical)
- Figure 3.3-5. Example Single Circuit and Double Circuit Transition Structure Tubular Steel Poles
- Figure 3.3-6. Underground Duct Bank Cross Sections (Preliminary Drawing)
- Figure 3.3-7. Underground Vault Details (Preliminary Drawing)
- Figure 3.4-1. Existing and Anticipated Modified and New Easements
- Figure 3.5-1. Proposed Project - Detail
- Figure 3.5-2. Typical Conductor Stringing Diagram (including typical equipment)
- Figure 3.5-3. Example Guard Structures
- Figure 4.2-1a. Replacement Route (Overhead and Underground) Options
- Figure 4.2-1b. Replacement Route (Overhead and Underground) Options Eastern Section
- Figure 4.2-1c. Replacement Route (Overhead and Underground) Options Central Section
- Figure 4.2-1d. Replacement Route (Overhead and Underground) Options Western Section
- Figure 4.2-2. Alternative A: Moraga–Oakland X 3-Circuit Replacement with Moraga–Claremont Reconductoring and Park Boulevard/Lincoln Avenue Underground
- Figure 4.2-3a. Alternative B: Manzanita Drive-Colton Boulevard-Estates Drive Underground
- Figure 4.2-3b. Alternative B: Manzanita Drive-Colton Boulevard-Estates Drive Underground - Eastern Section
- Figure 4.2-3c. Alternative B: Manzanita Drive-Colton Boulevard-Estates Drive Underground - Central Section
- Figure 4.2-3d. Alternative B: Manzanita Drive-Colton Boulevard-Estates Drive Underground - Western Section
- Figure 4.2-4a. Alternative C: Shepherd Canyon Road Underground
- Figure 4.2-4b. Alternative C: Shepherd Canyon Road Underground - Eastern Section
- Figure 4.2-4c. Alternative C: Shepherd Canyon Road Underground - Central Section
- Figure 4.2-4d. Alternative C: Shepherd Canyon Road Underground - Western Section
- Figure 4.2-5. Alternative D: All Overhead Replacement in Existing Alignment
- Figure 4.2-6. Alternative E: Proposed Project with Campground Overhead Option
- Figure 4.2-7. Alternative F: Conceptual South Overhead Alignment

---

Figure 4.2-8. Example Transition Station with Two 230 kV Circuits in an Approximately 0.3-acre Yard

Figure 4.2-9. Example Landslide Failure Plane and Roadway Uplift of Redwood Road in Novato, California

Figure 5.1-1a. Photograph Viewpoint Locations

Figure 5.1-1b. Viewshed Analysis

Figures 5.1-2a to 5.1-2l. Representative Photos

Figure 5.1-3a. Existing View - Sibley Volcanic Regional Preserve

Figure 5.1-3b. Visual Simulation - Sibley Volcanic Regional Preserve

Figure 5.1-4a. Existing View - East Bay Skyline Trail

Figure 5.1-4b. Visual Simulation - East Bay Skyline Trail

Figure 5.1-5a. Existing View - East Bay Skyline Trail SW

Figure 5.1-5b. Visual Simulation - East Bay Skyline Trail SW

Figure 5.1-6a. Existing View - Manzanita Drive

Figure 5.1-6b. Visual Simulation - Manzanita Drive

Figure 5.1-7a. Existing View - Skyline Boulevard

Figure 5.1-7b. Visual Simulation - Skyline Boulevard

Figure 5.1-8a. Existing View - Balboa Drive

Figure 5.1-8b. Visual Simulation - Balboa Drive

Figure 5.1-9a. Existing View - Thackeray Drive

Figure 5.1-9b. Visual Simulation - Thackeray Drive

Figure 5.1-10a. Existing View - Montclair Railroad Trail

Figure 5.1-10b. Visual Simulation - Montclair Railroad Trail

Figure 5.1-11a. Existing View - Drake Drive

Figure 5.1-11b. Visual Simulation - Drake Drive

Figure 5.1-12a. Existing View - Drake Drive NE

Figure 5.1-12b. Visual Simulation - Drake Drive NE

Figure 5.1-13a. Existing View - State Route 13

Figure 5.1-13b. Visual Simulation - State Route 13

Figure 5.1-14a. Existing View - Park Boulevard

Figure 5.1-14b. Visual Simulation - Park Boulevard

Figure 5.1-15a. Existing View - Estates Drive

Figure 5.1-15b. Visual Simulation - Estates Drive

Figure 5.1-16a. Existing View - Hollywood Avenue

Figure 5.1-16b. Visual Simulation - Hollywood Avenue

Figure 5.1-17a. Existing View - Holman Road

Figure 5.1-16b. Visual Simulation - Hollywood Avenue

Figure 5.1-17a. Existing View - Holman Road

Figure 5.1-17b. Visual Simulation - Holman Road

Figure 5.3-1. Residential Receptors Near Project Features

Figure 5.4-1. Biological Study/Survey Areas Overview

Figure 5.4-2. Project Components and Biological Study/Survey Areas

Figure 5.4-3. Vegetation Communities

Figure 5.4-4. Aquatic Resources Delineation Map

- Figure 5.4-5a. Animals: CNDDDB Occurrences and USFWS Critical Habitat Within 5 Miles of the Biological Study Area – Confidential version with mapped CNDDDB occurrences is provided under separate cover to the CPUC
- Figure 5.4-5b. Plants: CNDDDB Occurrences and USFWS Critical Habitat Within 5 Miles of the Biological Study Area – Confidential version with mapped CNDDDB occurrences is provided under separate cover to the CPUC
- Figure 5.4-5c. Rare Plants Locations and CNDDDB Sensitive Natural Communities – Confidential and provided under separate cover to the CPUC. Refer to Figure 5.4-5b for a list of rare plants observed and CNDDDB communities.
- Figure 5.4-6. BAHCP Modeled Habitat and USFWS Critical Habitat in the Wildlife Assessment Field Survey Area
- Figure 5.4-7. Alameda Whipsnake HCP Modeled Habitat and Impacts
- Figure 5.4-8. California Red-Legged Frog HCP Modeled Habitat and Impacts
- Figure 5.4-9. Potential Tree Trimming and Removal
- Figure 5.4-10. CDFW Terrestrial Connectivity Areas
- Figure 5.7-1. Geologic Maps
- Figure 5.7-2. Fault Map
- Figure 5.7-3. Liquefaction Potential
- Figure 5.7-4. Landslide Susceptibility
- Figure 5.7-5. Soil Map
- Figure 5.9-1 Hazardous Materials Sites Located within 500 Feet of Project Excavation Areas
- Figure 5.10-1 Groundwater Basins
- Figure 5.10-2 Surface Water and Watersheds
- Figure 5.10-3 Potential Flood Zones and Inundation Areas Due to Dam/Reservoir Failure
- Figure 5.11-1. Zoning Designations
- Figure 5.11-2. General Plan Land Use Designations
- Figure 5.12-1. Mineral Resource Zones
- Figure 5.15-1. Service Providers and Facilities
- Figure 5.16-1. Park and Recreation Facilities
- Figure 5.17-1. Existing Roadway Network
- Figure 5.17-2. Existing Transit Services
- Figure 5.17-3. Existing and Planned Bicycle Facilities
- Figure 5.17-4. Existing Pedestrian Facilities
- Figure 5.19-1. City of Oakland Sewer and Storm Drain Facilities Underground Portion of Proposed Project
- Figure 5.20-1. CAL FIRE Fire Hazard Severity Zones
- Figure 5.20-2. CPUC High Fire Threat Districts
- Figure 5.20-3. Wildland Urban Interface
- Figure 5.20-4. Project Area Elevation
- Figure 5.20-5. Project Area Slope
- Figure 5.20-6. Project Area Vegetation Fuels
- Figure 7.1-1. Cumulative Projects