BEFORE THE PUBLIC UTILITIES COMMISSION OF THE

STATE OF CALIFORNIA

In the Matter of the Application of SOUTHERN CALIFORNIA EDISON COMPANY (U 338-E) for a Permit to Construct Electrical Facilities: Eldorado-Lugo-Mohave Series Capacitor Project.	Application No. 18-05-xxx

PROPONENT'S ENVIRONMENTAL ASSESSMENT (PEA)

ELDORADO-LUGO-MOHAVE SERIES CAPACITOR PROJECT

VOLUME 1 OF 8

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Acronyms and Abbreviations

µg/m^3	Micrograms per cubic meter
A&P	Atlantic & Pacific Railroad
A.D.	Anno Domini
AADT	Average annual daily traffic
AADT	Average annual daily traffic
AB	Assembly Bill
AC/DC	Alternating current/direct current
ACEC	Area of Critical Environmental Concern
ACSR	Aluminum conductor steel-reinforced
af	Acre-feet
amsl	Above mean sea level
APE	Area of Potential Effect
APLIC	Avian Power Line Interaction Committee
APM	Applicant-proposed measure
APN	Assessor's Parcel Number
APSA	Aboveground Petroleum Storage Act
AQCR	Air Quality Control Region
AQMP	Air Quality Management Plan
ASCE	American Society of Civil Engineers
AT&SF	Atchison, Topeka, and Santa Fe Railway
B.P.	Before Present
BCCE	Boulder City Conservation Easement
BCFD	Boulder City Fire Department
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BMP	Best management practice
BMRR	Bureau of Mining Regulation and Reclamation
BOR	Bureau of Reclamation
BRSA	Biological Resources Survey Area
BWPC	Bureau of Water Pollution Control
BWQP	Bureau of Water Quality Planning
°C	Degrees Celsius
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CadnaA	Computer-aided noise abatement
CAISO	California Independent System Operator

CAL FIRE	California Department of Forestry and Fire Protection
Cal Water	California Water Service Company
Cal/OSHA	California Division of Occupational Safety and Health
CalEPA	California Environmental Protection Agency
Caltrans	California Department of Transportation
CAP	Criteria air pollutant
CARB	California Air Resources Board
CBC	California Building Code
CCAA	California Clean Air Act
CCFD	Clark County Fire Department
CCPW	Clark County Public Works
CCR	California Code of Regulations
CCRFCD	Clark County Regional Flood Control District
CCSD	Clark County School District
CCWRD	Clark County Water Reclamation District
CDCA	California Desert Conservation Area
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Act Information System
CERLIS-NFRAP	CERCLIS-No Further Response Actions Planned
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CGC	California Government Code
CGP	Construction General Permit
CGS	California Geological Survey
CH_4	Methane
CHMIRS	California Hazardous Material Incident Report System
CHP	California Highway Patrol
CIP	Capital Improvement Program
CJUTCM	California Joint Utility Traffic Control Manual
cm/sec	Centimeters per second
CMP	Congestion Management Program
CMP	Corridor Management Plan
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society

CNPS Inventory	Inventory of Rare and Endangered Vascular Plants of California
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalents
CORRACTS	Resource Conservation and Recovery Act Corrective Action Report
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CRIR	Colorado River Indian Reservation
CRMP	Cultural Resources Management Plan
CRPR	California Rare Plant Rank
CSLC	California State Lands Commission
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
CY	Cubic yard
DAQ	Clark County Department of Air Quality
dB	Decibel
dBA	A-weighted decibel
DOC	California Department of Conservation
DoD	Department of Defense
DOGGR	DOC Division of Oil, Gas, and Geothermal Resources
DOT	Department of Transportation
DRECP	Desert Renewable Energy Conservation
DTRP	Desert Tortoise Recovery Plan
DTSC	California Department of Toxic Substances Control
DWMA	Desert Wildlife Management Area
DWR	Department of Water Resources
EA	Environmental Assessment
EDR	Environmental Data Resources, Inc.
Eilar	Eilar Associates, Inc.
EIS	Environmental Impact Statement
ENA	Energy Needs Area
EO	Executive Order
EOP	Emergency Operations Plan
EPA	Environmental Protection Agency
ERNS	Emergency Response Notification System
ESA	Environmentally Sensitive Area
ESL	Environmentally Sensitive Lands
°F	Degrees Fahrenheit
FAA	Federal Aviation Administration

FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Maps
FLPMA	Federal Land Policy and Management Act
FMMP	Farmland Mapping and Monitoring Program
FP	Fully Protected
FPPA	Farmland Protection Policy Act
FTA	Federal Transit Administration
G.O.	General Order
GBN	Ground-borne noise
GBV	Ground-borne vibration
GHG	Greenhouse gas
GIP	Generation Interconnection Planning
GIS	Geographic information system
GIS	Gas insulated switchgear
gpm	Gallons per minute
GPS	Global Positioning System
GSWC	Golden State Water Company
GWP	Global warming potential
HCP	Habitat Conservation Plan
HFD	Hesperia Fire Department
HMBP	Hazardous Materials Business Plan
HMIS	Hazardous Materials Inventory Statement
HMMP	Hazardous Materials Management Plan
HMTA	Hazardous Materials Transporatation Act
hp	Horsepower
HPTP	Historic Properties Treatment Plan
HSC	Health and Safety Code
HVAC	Heating, ventilating, and air conditioning
HWCL	Hazardous Waste Control Law
I-	Interstate
IBC	International Building Code
ICU	Intersection Capacity Utilization
IEEE	Institute of Electrical and Electronic Engineers
IEUA	Inland Empire Utilities Agency
Insignia	Insignia Environmental
IPCC	Intergovernmental Panel on Climate Change

ITP	Incidental Take Permit
kg	kilogram
KOP	Key observation point
kV	kilovolt
kW	kilowatt
LADWP	Los Angeles Department of Water and Power
L_{dn}	Day-night average sound level
LDS	Land disposal sites
L_{eq}	Equivalent noise level
LOS	Level of Service
LSAA	Lake and Streambed Alteration Agreement
LST	Lattice steel tower
LTP	Leachate treatment plant
LTPP	Long-Term Procurement Plan
LUST	Leaking underground storage tank
LVCVA	Las Vegas Convention and Visitors Authority
LVMPD	Las Vegas Metropolitan Police Department
MAST	Mountain Area Safety Taskforce
MBTA	Migratory Bird Treaty Act
MCAGCC	Marine Corps Air Ground Combat Center
MDAB	Mojave Desert Air Basin
MDAQMD	Mojave Desert Air Quality Management District
MEER	Mechanical Electrical Equipment Room
MLD	Most Likely Descendant
MNP	Mojave National Preserve
MNPGMP	Mojave National Preserve General Management Plan
Mojave	Mojave Basin and Range
mph	Miles per hour
MRF	Materials Recovery Facility
MRZ	Mineral Resource Zones
MS4	Municipal Separate Storm Sewer System
MSHCP	Multiple Species Habitat Conservation Plan
MT	Metric tons
$MTCO_2e$	metric tons carbon dioxide equivalent
MWD	Metropolitan Water District of Southern California
NAAQS	National Ambient Air Quality Standards
NAC	Nevada Administrative Code
NAGPRA	Native American Graves Protection and Repatriation Act
NAHC	Native American Heritage Commission

NB	Northbound
NBMG	Nevada Bureau of Mines and Geology
NCCP	Natural Community Conservation Planning
NDEP	Nevada Department of Environmental Protection
NDMA	n-nitrosodimethamine
NDOT	Nevada Department of Transportation
NDOW	Nevada Department of Wildlife
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Corporation
NFIP	National Flood Insurance Program
NFMA	National Forest Management Act
NHP	Nevada Highway Patrol
NHPA	National Historic Preservation Act
NIWMP	Noxious and Invasive Weed Management Plan
NNHP	Nevada Natural Heritage Program
NO_2	Nitrogen dioxide
NOAA Fisheries	National Oceanic and Atmospheric Administration's National Marine Fisheries Service
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NPPA	Native Plant Protection Act
NPS	National Park Service
NRCS	National Resources Conservation Service
NRHP	National Register of Historic Plance
NRS	Nevada Revised Statutes
NSRHP	Nevada State Register of Historic Places
NV SHWS	Nevada State Hazardous Waste Sites
NWP	Nationwide Permit
NWPS	National Wilderness Preservation System
O&M	Operation and Maintenance
O_3	Ozone
OEM	Office of Emergency Management
OES	Office of Emergency Services
OHGW	Overhead ground wire
OHP	Office of Historic Preservation
OPGW	Optical ground wire
OPLMA	Omnibus Public Land Management Act
OSHA	Occupational Safety and Health Administration

PEA	Proponent's Environmental Assessment
PFYC	Potential Fossil Yield Classification
PM	Particulate matter
PM_{10}	Particulate matter less than 10 microns in diameter
$PM_{2.5}$	Particulate matter less than 2.5 microns in diameter
ppm	Parts per million
PPV	Peak particle velocity
PRC	California Public Resources Code
PRMMP	Paleontological Resource Mitigation and Monitoring Plan
Proposed Project	Eldorado-Lugo-Mohave Series Capacitor Project
PSHA	Probabilistic Seismic Hazard Assessment
PUCN	Public Utilities Commission of Nevada
RAS	Remedial Action Scheme
RCRA	Resource Conservation and Recovery Act of 1976
RFP	Reasonable Further Progress
RMP	Raven Management Plan
RMS	Root mean square
ROG	Reactive organic compound
ROW	Right-of-way
RPS	Renewables Portfolio Standard
RTC	Regional Transportation Commission
RTP	Regional Transportation Plan
RTU	Remote terminal unit
RWQCB	Regional Water Quality Control Board
SANBAG	San Bernardino Associated Governments
SARA	Superfund Amendments and Reauthorization Act
SB	Senate Bill
SBCFCD	San Bernardino County Flood Control District
SBCFIRE	San Bernardino County Fire Department
SBCSD	San Bernardino County Sheriff's Department
SBVMWD	San Bernardino Valley Municipal Water District
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison Company
SDC	Seismic design category
SDG&E	San Diego Gas & Electric Company
SDWA	Safe Drinking Water Act
SEI	Structural Engineering Institute
SF_6	Sulfur hexifluoride

SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SMARA	Surface Mining and Reclamation Act
SMGB	State Mining and Geology Board
SNRPC	Southern Nevada Regional Planning Coalition
SNTC	Southern Nevada Transit Coalition
SO_2	Sulfur dioxide
SO_x	Sulfur oxides
SP, LA & SL	San Pedro, Los Angeles & Salt Lake Railroad
SPCC	Spill Prevention, Control, and Countermeasure
SQG	Small Quantity Generator
SR-	State Route
SSC	Species of special concern
SWEEPS	Statewide Environmental Evaluation and Planning System
SWF/LF	Solid Waste Disposal Facilities or Landfills
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
T&T	Tonopah & Tidewater Railroad
TAC	Toxic air contaminant
TMDL	Total maximum daily load
tpy	Tons per year
TPZ	Timberland Production Zone
TQ	Threshold quantity
TSP	Tubular steel pole
U.S.	United States
U.S.C.	United States Code
UBC	Uniform Building Code
UFC	Uniform Fire Code
UP	Union Pacific
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Services
USGS	United States Geological Survey
UST	Underground Storage Tank
V/C	Volume-to-capacity
VdB	Vibration velocity level
VOC	Volatile organic compound
VRM	Visual Resource Management

VVTA	Victor Valley Transit Authority
VVWRA	Victor Valley Wastewater Reclamation Authority
WDR	Waste discharge requirement
WDS	Waste Discharge System
WEAP	Worker Environmental Awareness Program
WECC	Western Electricity Coordinating Council
WEMO	West Mojave Route Network Project and Plan Amendment/West Mojave Plan
WOR	West of Colorado River
WQC	Water Quality Certification

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Chapter 1
PEA Summary

In accordance with California Public Utilities Commission (CPUC) General Order (G.O.) 131-D, Southern California Edison Company (SCE) is submitting this Proponent's Environmental Assessment (PEA) as part of its application for a Permit to Construct for the Eldorado-Lugo-Mohave Series Capacitor Project (Proposed Project) in San Bernardino County, California; Clark County, Nevada; the cities of Hesperia, California and Boulder City, Nevada; the unincorporated community of Lucerne Valley in California; and the unincorporated communities of Searchlight and Laughlin in Nevada. The Proposed Project would also cross lands under the jurisdiction of the Bureau of Land Management (BLM), the National Park Service (NPS), the Bureau of Reclamation, and the Department of Defense, as well as lands managed by the California State Lands Commission and the Nevada State Parks. The CPUC and the BLM are the lead agencies for compliance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA), respectively. The Nevada Utilities Commission is the Lead Agency for compliance with the Nevada Utility Environmental Protection Act.

1.1 Project Components

The main activity associated with the Proposed Project involves the construction of two new 500 kilovolt (kV) mid-line series capacitors—the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor. The proposed mid-line series capacitors would each be located on approximately 3.3- and 3.2-acre sites within the Eldorado-Lugo and Lugo-Mohave 500 kV Transmission Line rights-of-way (ROWs).

SCE currently operates various 500 kV transmission lines, 220 kV transmission lines, 115 kV subtransmission lines, 12 kV distribution lines, telecommunications lines, and a substation in the vicinity of the proposed Newberry Springs and Ludlow Series Capacitors. As part of the Proposed Project, SCE would connect the proposed mid-line series capacitors to SCE's existing system by installing transmission interface, as well as distribution and telecommunications facilities. In addition, the Proposed Project involves the modification of existing transmission, subtransmission, and distribution facilities (including minor grading) at approximately 14 locations along the Eldorado-Lugo, Eldorado-Mohave, and Lugo-Mohave 500 kV Transmission Lines to address 16 potential overhead clearance discrepancies.[1] The Proposed Project would also include the installation of optical ground wire (OPGW) on approximately 235 miles of the Eldorado-Mohave and Lugo-Mohave 500 kV Transmission Lines. Lastly, the Proposed Project would include modifications within the existing Eldorado, Lugo, and Mohave Substations,

[1] SCE has defined "discrepancies" as potential clearance problems between an energized conductor and its surroundings, such as the structure, another energized conductor on the same structure, a different line, or the ground. SCE has identified approximately 16 discrepancies along the Eldorado-Lugo, Eldorado-Mohave, and Lugo-Mohave 500 kV Transmission Lines where minor grading or relocation, replacement, or modification of transmission, subtransmission, or distribution facilities are needed to address CPUC G.O. 95 and National Electrical Safety Code (NESC) overhead clearance requirements.

including the replacement of mid-line series capacitor banks and installation of new terminal equipment.

The Proposed Project consists of the following major components:

- Construct two new 500 kV mid-line series capacitors (i.e., the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor) and associated equipment
- Relocate, replace, or modify existing transmission, subtransmission, and distribution facilities at approximately 12 locations along the Eldorado-Lugo, Eldorado-Mohave, and Lugo-Mohave 500 kV Transmission Lines to address 14 potential overhead clearance discrepancies
- Perform minor grading at two discrepancy locations along the Lugo-Mohave 500 kV Transmission Line
- Extend or reroute approximately 2 miles of overhead and approximately 700 feet of underground 12 kV distribution circuits to provide station light and power to the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor (the distribution poles are supporting the overhead telecommunication facilities on the same route)
- Install distribution facilities to provide station light and power to three proposed fiber optic repeater sites
- Install approximately 235 miles of OPGW (173 miles on the Lugo-Mohave 500 kV Transmission Line, approximately 59 miles on the Eldorado-Mohave 500 kV Transmission Line, including approximately 3 miles of underground telecommunications facilities in the vicinity of Mohave Substation)
- Modify the ground wire peak of existing suspension towers used as splice locations for the OPGW work; some of these towers would also require minor modifications to the steel in the tower body
- Install approximately 2 miles of overhead and approximately 500 feet of underground telecommunications facilities to connect the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor to SCE's existing system as one communication path (the telecommunications facilities would share the same poles with overhead distribution)
- Install approximately 2 miles of underground telecommunications facilities to connect the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor to SCE's existing system as a second communication path
- Install underground telecommunications facilities from existing transmission structures to three fiber optic repeater sites—Barstow, Kelbaker, and Lanfair—within the Lugo-Mohave 500 kV Transmission Line ROW

- Install approximately 1,000 feet of underground telecommunications facilities within the existing Lugo, Mohave, and Eldorado Substations
- Perform modifications within the existing Lugo Substation on the existing series capacitors and install new terminating equipment; remove two existing TSPs within the substation and install two new TSPs within the substation on the Eldorado and Mohave 500 kV Transmission Lines
- Perform modifications within the existing Eldorado Substation on the existing series capacitors and upgrade the terminal equipment on the Lugo 500 kV Transmission Line
- Replace existing series capacitors on the Lugo 500 kV Transmission Line, and install new terminal equipment on the Eldorado and Lugo 500 kV Transmission Lines at the existing Mohave Substation

1.2 Project Location

The Proposed Project is located in California and Nevada, within the Mojave Basin and Range. The Proposed Project would extend northeast from Lugo Substation (located in San Bernardino County, California) to Eldorado Substation (located in the City of Boulder City, Nevada) and Mohave Substation (located in Clark County, Nevada), and from Mohave Substation northwest to Eldorado Substation, as depicted in Figure 1-1: Proposed Project Location. Portions of the Proposed Project would also cross the City of Hesperia, California, the unincorporated community of Lucerne Valley in California, as well as the unincorporated communities of Searchlight and Laughlin in Nevada.

The Proposed Project would serve the Electrical Needs Area (ENA) of the entire Los Angeles Basin. The Los Angeles Basin, in the context of transmission facilities, consists of SCE-owned 500 kV and 220 kV facilities that serve major metropolitan areas in Orange, Riverside, San Bernardino, Los Angeles, Ventura, and Santa Barbara Counties. The boundary of the Los Angeles Basin is marked by the Vincent, Lugo, and Valley 500 kV Substations and the San Onofre 220 kV Substation, as depicted in Figure 1-2: Electrical Needs Area.

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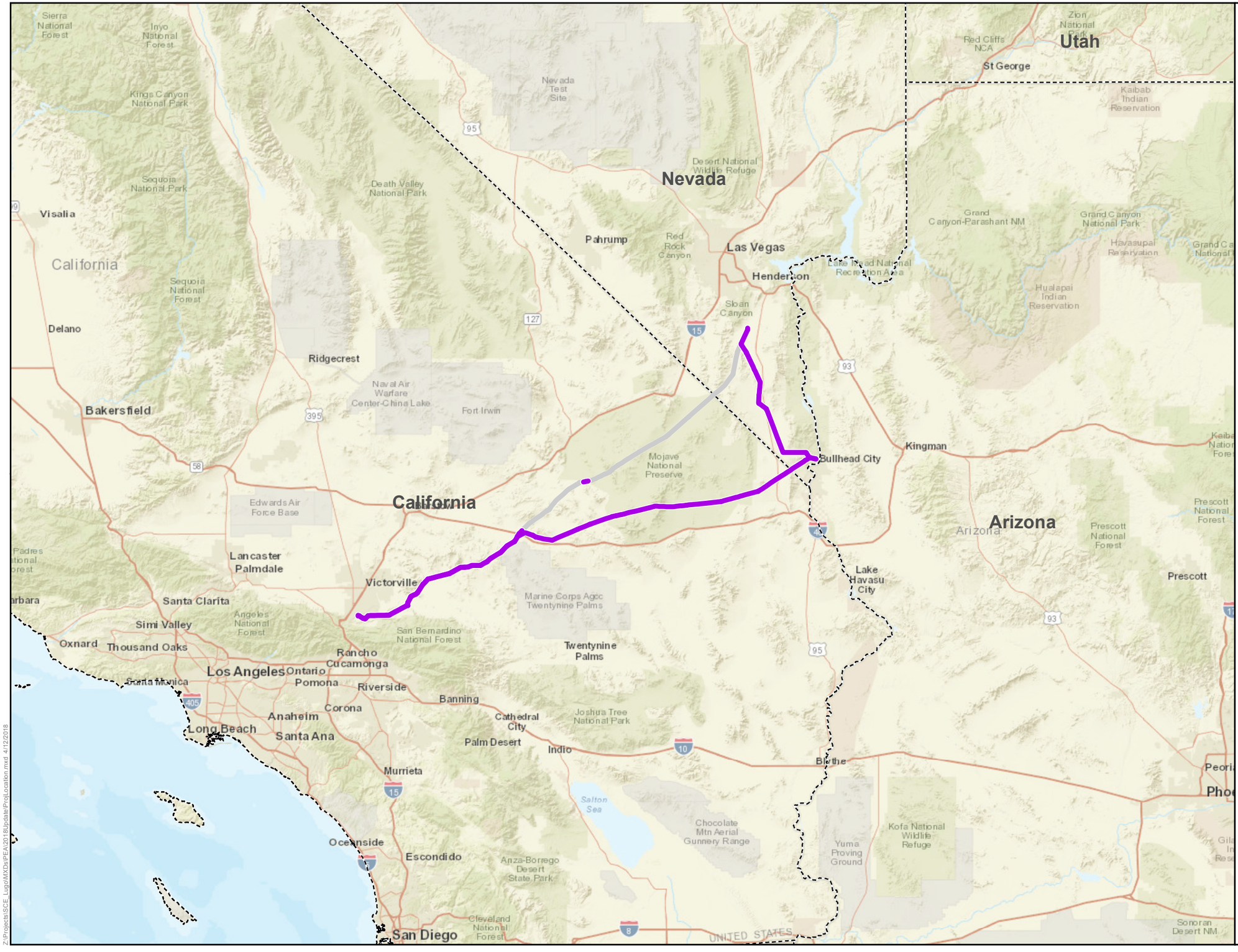

Figure 1-1:
Proposed Project Location

Eldorado-Lugo-Mohave Series Capacitor Project

Proposed Project

State Boundary

1:2,500,000

0 20 40 80 Miles

Source: SCE, 2018

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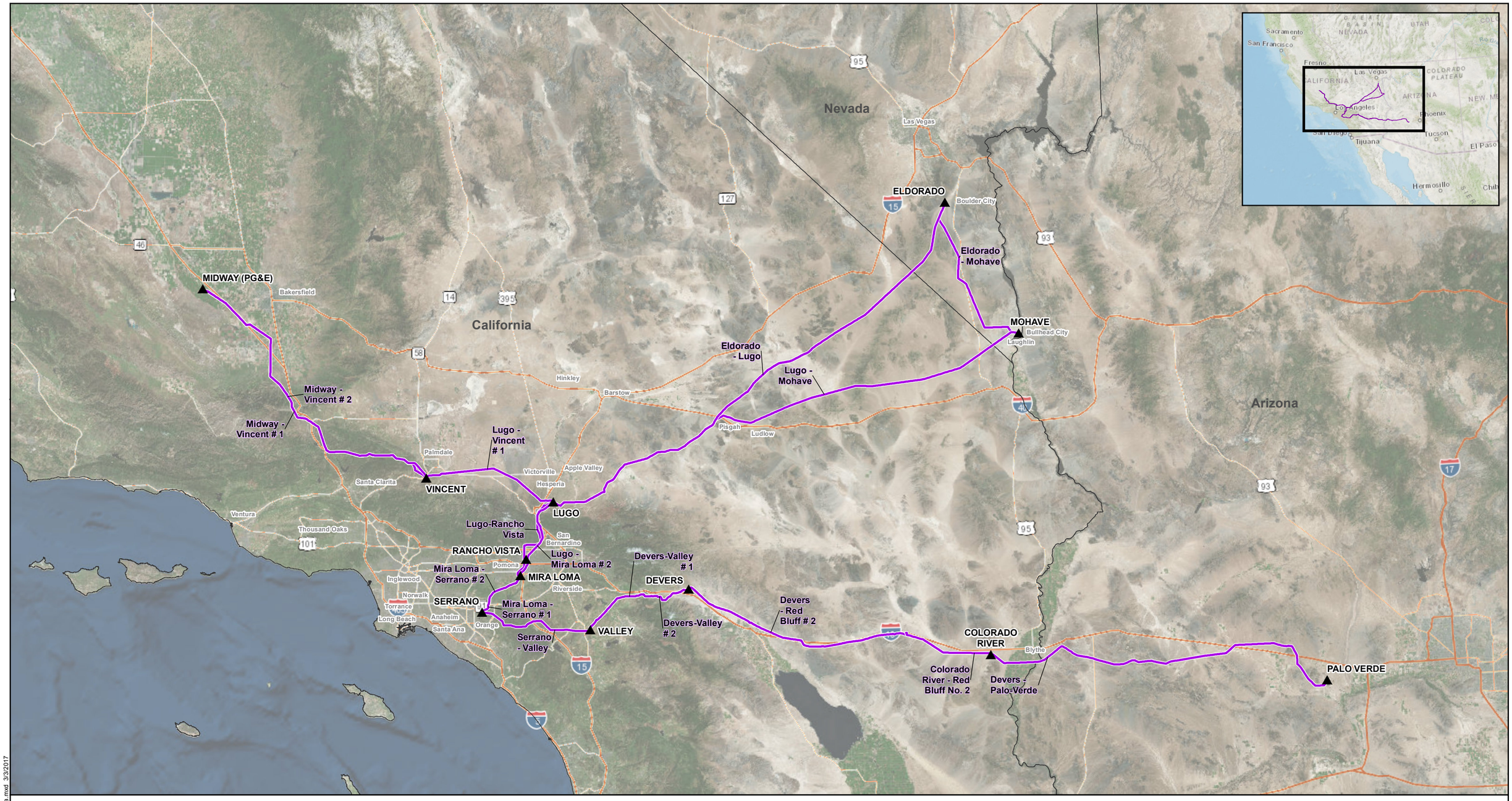

Figure 1-2: Electrical Needs Area

Eldorado-Lugo-Mohave Series Capacitor Project

▲ Existing Substation
Transmission System
Interstate
State Highway/US Highway

Souce: SCE, 2016

1:2,000,000
0 25 50 Miles

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1.3 Project Needs and Alternatives

As described further in Chapter 2, Project Purpose and Need and Objectives, the Proposed Project is being proposed to meet the following objectives:

- Meet the planned in-service date of June 2020 in an effort to meet the requirements as outlined and required by the California Renewables Portfolio Standard (RPS) for SCE to serve at least 33 percent of its retail load with renewable energy by 2020[2]
- Ensure compliance with CPUC G.O. 95 and the NESC
- Continue to provide safe and reliable electrical service
- Maintain system reliability within the Los Angeles Basin, which is defined as the ENA
- Increase power flow on the existing Eldorado-Lugo, Eldorado-Mohave, and Lugo-Mohave 500 kV Transmission Lines for the purpose of increasing the amount of power delivered from California's Ivanpah Valley, Nevada, and Arizona to the ENA through the SCE system in an effort to meet requirements associated with the California RPS
- Reduce SCE's power flow into the Los Angeles Department of Water and Power transmission system for the purpose of mitigating power flow overloads under normal and abnormal system conditions
- Ensure compliance with all applicable reliability planning criteria required by the North American Electric Reliability Corporation, Western Electricity Coordinating Council, and California Independent System Operator
- Integrate planned generation resources in order for those facilities to become fully deliverable[3]
- Meet the requirements of existing Interconnection Agreements that require the Proposed Project to achieve FCDS for generation facilities
- Meet Proposed Project needs while minimizing environmental impacts
- Design and construct the Proposed Project in conformance with SCE's approved engineering, design, and construction standards for substation, transmission, subtransmission, and distribution system projects

[2] The California RPS requires investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 33 percent of total procurement by 2020. The CPUC implements and administers RPS compliance rules for California's retail sellers of electricity. SCE's current renewable procurement status percentages can be found on the CPUC's website (http://www.cpuc.ca.gov/RPS_Homepage/).

[3] A generating facility is referred to as being "fully deliverable" once it has achieved Full Capacity Deliverability Status (FCDS).

Although various 500 kV mid-line series capacitor locations were considered during the development of the Proposed Project, the Proposed Project was ultimately selected because it best meets the Proposed Project objectives while resulting in the fewest potential environmental impacts. A detailed discussion of the alternative series capacitor locations is provided in Chapter 5, Detailed Discussion of Significant Impacts.

1.4 Agency Coordination

1.4.1 Bureau of Land Management/National Park Service

On June 15, 2016, SCE met with representatives from the BLM's Barstow and Needles offices and the NPS to introduce several projects to them, including the Proposed Project. The BLM and NPS recommended combining some of the projects proposed in the region in order to reduce their workload. Additionally, the BLM and NPS did not determine which agency would be the Lead Agency and asked for additional time to make this decision. After several internal BLM meetings, it was decided the BLM's Desert District office would be the Lead Agency for the Proposed Project. A Standard Form 299 application was submitted to the BLM on June 14, 2016.

1.4.2 County of San Bernardino, California

In May 2016, SCE met with staff from the Third District of the County of San Bernardino, including Supervisor James Ramos, Mark Lundquist (field representative), and Christina Garcia (executive aide) to introduce several projects to them, including the Proposed Project. There were no major concerns raised at the time and they appreciated the information regarding the Proposed Project.

Additionally, in May 2016, SCE met with Robert Lovingood, the First District supervisor of the County of San Bernardino, and provided him with a brief overview of the Proposed Project. There were no concerns raised at the time and they appreciated the information regarding the Proposed Project.

In October 2016, SCE met with Supervisor Ramos' staff in San Bernardino regarding vegetation management. At this meeting, SCE provided a brief overview of the Proposed Project. Additionally, in October 2016, SCE provided a briefing and a fact sheet to Supervisor Lovingood's entire staff. Furthermore, notification letters were sent via email to County staff to let them know that desert tortoise (*Gopherus agassizii*) surveys were being conducted in the Proposed Project area. There were no major concerns raised at the time and they appreciated the information regarding the Proposed Project.

Individual emails were sent in October 2016 to the County Board of Supervisors and key County staff with the fact sheet and a link to the Proposed Project's website. No concerns were raised and no follow up was requested.

In November 2016, SCE met with Molly Wiltshire, Supervisor Ramos' Deputy Chief of Staff, regarding another project in the unincorporated community of Lucerne Valley. At the conclusion of the meeting, there were no major concerns regarding the Proposed Project.

1.4.3 Clark County, Nevada

In October and November 2016, Proposed Project fact sheets were sent to Kim Jenkins, Principle Environmental Specialist from the Clark County Boulder City Conservation Authority and to Sami Real, Planning Manager, from the Clark County Department of Comprehensive Planning. Additionally, a fact sheet was sent to Steve Sisolak, a Clark County commissioner.

In December 2016, SCE had a phone conversation with Sami Real from the Clark County Department of Comprehensive Planning. Ms. Real requested additional information regarding the Proposed Project. The scope of work for the Proposed Project was sent to Ms. Real twice in January 2017. Ms. Real is reviewing Proposed Project to determine potential permitting requirements.

1.4.4 City of Hesperia, California

In November 2016, SCE briefed the City of Hesperia's Engineering Department on the Proposed Project. The Engineering Department did not have any major concerns regarding the Proposed Project.

1.4.5 City of Boulder City, Nevada

In October 2016, a Proposed Project fact sheet and environmental inspections letter was sent to Brok Armantrout, the city's community development director. Additionally, SCE also met with Mr. Armantrout in October. SCE did not receive a response from the City of Boulder City.

1.4.6 Town of Apple Valley, California

In October 2016, a Proposed Project fact sheet and environmental inspections letter was sent to Town Manager Frank Robinson. SCE did not receive a response from the Town of Apple Valley.[4]

1.4.7 Unincorporated Community of Laughlin, Nevada

In October 2016, a Proposed Project fact sheet was mailed to Town Manager Brian Paulson. Additionally, in October, SCE met with Mr. Paulson, and he indicated that he appreciated receiving the information regarding the Proposed Project. Mr. Paulson did not raise any issues.

1.4.8 Local Tribes

Although SCE is not the CEQA Lead Agency responsible for tribal consultations per Public Resources Code Section 21080.3.1, SCE submitted a request to the Native American Heritage Commission (NAHC) for a search of its Sacred Lands File and a list of Native American individuals and organizations that might have knowledge of cultural resources in the Proposed Project area. SCE then contacted the individuals and organizations; these letters are included in Appendix C: Agency Consultation.

[4] The Proposed Project does not actually cross the incorporated Town of Apple Valley; Proposed Project information was provided as a courtesy.

1.5 PEA Contents

This PEA is divided into five sections and was prepared in accordance with the November 24, 2008 *WORKING DRAFT Proponent's Environmental Assessment (PEA) Checklist for Transmission Line and Substation Projects* issued by the CPUC. This chapter discusses the contents and conclusions of the PEA and describes SCE's ongoing and past coordination efforts.

Chapter 2, Project Purpose and Need and Objectives outlines the Proposed Project's objectives.

A detailed description of the Proposed Project is provided in Chapter 3, Project Description. This discussion includes specifics regarding the Proposed Project location, existing system, the Proposed Project components, permanent and temporary land/ROW requirements, construction methods, construction schedule, anticipated Operation and Maintenance (O&M) activities, and federal and local permits that would be obtained for the Proposed Project.

Chapter 4, Environmental Impact Assessment Summary includes an environmental impact assessment summary and a discussion of the existing conditions and potential anticipated impacts of the Proposed Project for each of the resources areas identified by the CEQA Guidelines. The CPUC's PEA Checklist indicates that the environmental setting section can be provided separately or combined with the impacts and applicant-proposed measures (APMs). SCE has elected to combine the environmental setting, impacts, and APMs for each resource area in Chapter 4, Environmental Impact Assessment Summary.

Chapter 5, Detailed Discussion of Significant Impacts identifies the potentially significant impacts resulting from the Proposed Project, evaluates alternatives to the Proposed Project, describes the justification for the preferred alternative, and discusses the Proposed Project's potential to induce growth in the area.

Chapter 6, Other Process-Related Data Needs includes a list of all parcels within 300 feet of the Proposed Project.

Throughout this PEA, SCE has addressed all items in the CPUC's PEA Checklist. To facilitate confirmation of the checklist and review of the PEA, Table 1-1: PEA Checklist Key identifies the section in which each checklist item is addressed and is included at the end of this section.

1.6 PEA Conclusions

This PEA analyzes the potential environmental impacts associated with construction and O&M of the Proposed Project. The following 13 resource areas would not be impacted by the Proposed Project or would experience less-than-significant impacts:

- Aesthetics
- Agriculture and forestry resources
- Geology and soils
- Greenhouse gas emissions
- Hazards and hazardous materials

- Hydrology and water quality
- Land use and planning
- Mineral resources
- Population and housing
- Public services
- Recreation
- Transportation and traffic
- Utilities and service systems

The Proposed Project would result in potentially significant impacts to four resource areas—air quality, biological resources, cultural resources, and noise. Impacts to these resource areas would be reduced with the implementation of APMs, which are discussed in detail in the relevant sections. The impacts that would be reduced to less-than-significant levels are summarized as follows:

- Air quality – Uncontrolled emissions from construction of the Proposed Project would exceed the Mojave Desert Air Quality Management District (MDAQMD) annual emission thresholds for particulate matter (PM) less than 10 microns in diameter. The Proposed Project would be below the applicable MDAQMD annual emission thresholds for nitrogen oxides, carbon monoxide, and PM less than 2.5 microns in diameter. With the implementation of APMs, the Proposed Project would be below the applicable MDAQMD and United States Environmental Protection Agency annual emission thresholds for all emissions and impacts would be less than significant.

- Biological resources – Construction of the Proposed Project would result in permanent and temporary impacts to special-status plant and wildlife species. In addition, construction of the Proposed Project would result in impacts to desert tortoise critical habitat and ecologically important features recognized by the Clark County Multiple Species Habitat Conservation Plan. Construction of the Proposed Project would also result in permanent and temporary impacts to aquatic resources under the jurisdiction of the United States Army Corps of Engineers, the Regional Water Quality Control Boards, the Nevada Department of Environmental Protection, and the California Department of Fish and Wildlife. With the implementation of APMs, the Proposed Project's impacts to biological resources would be reduced to less-than-significant levels.

- Cultural resources – Although known historical, archaeological, and burial features would be avoided to the extent feasible, cultural, tribal, and paleontological resources could potentially be encountered during ground-disturbing construction activities. Ground-disturbing activities could disturb human remains, including those interred outside of formal cemeteries. With implementation of APMs, which would include conducting surveys and developing cultural and paleontological resource management plans, the Proposed Project would avoid or minimize impacts to cultural, tribal, and paleontological resources.

- Noise – Construction of the Proposed Project would temporarily increase ambient noise levels in the Proposed Project area on an intermittent basis. The use of helicopters and their associated landing zones would result in noise levels in excess of the applied 75 A-

weighted-decibel threshold in some nearby residential areas. With implementation of APMs, the Proposed Project would avoid or minimize impacts associated with noise.

The APMs that would be implemented to reduce impacts to a less-than-significant level are discussed in detail in their relevant sections in Chapter 4, Environmental Impact Assessment Summary.

1.7 Public Outreach

Public outreach and communications are critical elements of SCE's planning process. SCE identified and reached out to key stakeholders in the Proposed Project area to solicit input and provide information about this Proposed Project.

SCE's outreach efforts focus on educating stakeholders about the Proposed Project need and identifying/responding to their concerns about the Proposed Project through written notification, social media advertising, the Proposed Project website (on.sce.com/eldorado), a phone call with the Project Manager, in-person visits to nearby stakeholders, or an accessible Proposed Project team member.

In 2016, SCE conducted initial briefings with jurisdictions within the Proposed Project area. Summaries of these discussions are presented in Section 1.4, Agency Coordination. No major concerns have been reported by jurisdictions. In October 2016, SCE mailed a Proposed Project information letter to property owners and occupants located within approximately 2,000 feet of the Proposed Project. Additionally, Proposed Project fact sheets were sent to nearby property owners in November 2016. Copies of mailings sent to the public are provided in Appendix D: Public Involvement.

In November 2016, SCE also conducted briefings with key stakeholders, including the Lucerne Valley Economic Development Agency. Residents appreciated the information, but were concerned about the Proposed Project promoting large solar developments in their community and had aesthetic concerns about the location of the Barstow Fiber Optic Repeater.

SCE plans to provide periodic updates to local jurisdictions at key milestones throughout the life of the Proposed Project, such as prior to filing an application for a Permit to Construct, immediately after a final decision, and prior to the start of construction (assuming the Proposed Project is approved).

SCE regularly reevaluates public outreach strategies based on the needs of individual communities, input from key stakeholders and the public, and the needs of the Proposed Project. SCE would continue to maintain a Proposed Project website throughout the life of the Proposed Project in order to provide the public with timely information and to offer resources for answering questions and addressing concerns related to the Proposed Project.

1.7.1 Controversy and/or Major Issues

Based on input from key stakeholders, there are general concerns about the Proposed Project attracting large solar developments in the Lucerne Valley and aesthetic concerns about where the Barstow Fiber Optic Repeater would be constructed.

Table 1-1: PEA Checklist Key

Location in CPUC PEA Checklist	Checklist Item	Location in PEA and Associated Notes
Chapter 1: PEA Summary		
	Include major conclusions of the PEA	Section 1.6, PEA Conclusions
	List any areas of controversy	Section 1.4, Agency Coordination; Subsection 1.7.1, Controversy and/or Major Issues
	Include a description of public outreach efforts, if any	Section 1.7, Public Outreach
	Include a description of inter-agency coordination, if any	Section 1.4, Agency Coordination
	Identify any major issues that must be resolved, including the choice among reasonably feasible alternatives and mitigation measures, if any	Section 1.3, Project Needs and Alternatives; Section 1.6, PEA Conclusions; Subsection 1.7.1, Controversy and/or Major Issues
Chapter 2: Project Purpose and Need		
2.1 Overview	Include an analysis of Project objectives and purpose and need that is sufficiently detailed so that the Commission can independently evaluate the Project need and benefits in order to accurately consider them in light of the potential environmental impacts	Section 2.1, Project Overview; Section 2.2, Project Objectives
	Explain the objective(s) and/or purpose and need for implementing the Project	Section 2.2, Project Objectives
2.2 Project Objectives	Include an analysis of the reason why attainment of these objectives is necessary or desirable. Such analysis must be sufficiently detailed to inform the Commission in its independent formulation of Proposed Project objectives which will aid any appropriate CEQA alternatives screening process	Section 2.2, Project Objectives

Location in CPUC PEA Checklist	Checklist Item	Location in PEA and Associated Notes
Chapter 3: Project Description		
3.1 Project Location	Identify geographical location: county, city (provide Proposed Project location map[s])	Section 3.1, Project Location; Figure 3-1: Proposed Components Overview Map
	Provide a general description of land uses within the Proposed Project site (e.g., residential, commercial, agricultural, recreation, vineyards, farms, open space, number of stream crossings, etc.)	Section 3.1, Project Location; Subsection 4.10.1.1, Existing Land Uses
	Describe if the Proposed Project is located within an existing property owned by the applicant, traverses existing ROW, or requires new ROW. Provide the approximate area of the property or the length of the Proposed Project that is in an existing ROW or which requires new ROWs	Section 3.1, Project Location; Section 3.6, Right-of-Way Requirements
3.2 Existing System	Describe the local system to which the Proposed Project relates. Include all relevant information about substations, transmission lines, and distribution circuits	Section 3.2, Existing System
	Provide a schematic diagram and map of the existing system	Figure 3-2: Existing and Proposed System Map; Figure 3-3: Existing and Proposed System Schematic
	Provide a schematic diagram that illustrates the system as it would be configured with the implementation of the Proposed Project	Figure 3-3: Existing and Proposed System Schematic
3.3 Project Objectives	Can refer to Chapter 2 Project Purpose and Need, if already described there	Section 2.2, Project Objectives and Section 3.3, Project Objectives

Location in CPUC PEA Checklist	Checklist Item	Location in PEA and Associated Notes
3.4 Proposed Project	Describe the whole of the Proposed Project. Is it an upgrade, a new line, new substations, etc.?	Section 3.4, Proposed Project
	Describe how the Proposed Project fits into the regional system. Does it create a loop for reliability, etc.?	Subsection 3.4.1, Project Capacity
	Describe all reasonably foreseeable future phases or other reasonably foreseeable consequences of the Proposed Project	Section 3.4, Proposed Project
	Provide the capacity increase in megawatts (MW). If the Proposed Project does not increase capacity, state that	Subsection 3.4.1, Project Capacity
	Provide geographic information system (GIS) (or equivalent) data layers for the Proposed Project preliminary engineering, including estimated locations of all physical components of the Proposed Project, as well as those related to construction	GIS for the Proposed Project will be provided under separate cover
3.5 Project Components 3.5.1 Transmission Line	Describe what type of line exists and what type of line is proposed (e.g., single-circuit, double-circuit, upgrade 69 kV to 115 kV)	Section 3.5, Project Components
	Identify the length of the upgraded alignment, the new alignment, etc.	Section 3.5, Project Components
	Describe whether construction would require one-for-one pole replacement, new poles, steel poles, etc.?	Section 3.5, Project Components
	Describe what would occur to other lines and utilities that may be collocated on the poles to be replaced (e.g., distribution, communication, etc.)	Section 3.5, Project Components
3.5.2 Poles/Towers	Provide information for each pole/tower that would be installed and for each pole/tower that would be removed	Subsection 3.5.2, Poles/Towers; Figure 3-4: Typical Single-Circuit 500 kV Dead-End Tower through Figure 3-7: Typical Subtransmission Structure

Location in CPUC PEA Checklist	Checklist Item	Location in PEA and Associated Notes
3.5.2 Poles/Towers (cont.)	Provide a unique identification number to match GIS database information	GIS for the Proposed Project will be provided under separate cover
	Provide a structural diagram and, if available, photos of existing structure. Preliminary diagram or "typical" drawings and, if possible, photos of proposed structure. Also provide a written description of the most common types of structures and their use (e.g., tangent poles would be used when the run of poles continues in a straight line, etc.). Describe if the pole/tower design meets raptor safety requirements	Subsection 3.5.2 Poles/Towers; Figure 3-4: Typical Single-Circuit 500 kV Dead-End Tower through Figure 3-7: Typical Subtransmission Structure
	Provide the type of pole (e.g., wood, steel, etc.) or tower (e.g., self-supporting, lattice, etc.)	Subsection 3.5.2, Poles/Towers
	Provide "typical" drawings of poles with approximate diameter at the base and the tip; for towers, estimate the width at base and top	Subsection 3.5.2. Poles/Towers; Figure 3-6: Typical Single-Circuit 500 kV Dead-End Tower through Figure 3-8: Typical Tubular Steel Pole
	Identify typical total pole lengths, the approximate length to be embedded, and the approximate length that would be above ground surface; for towers, identify the approximate height above ground surface and approximate base footprint area	Subsection 3.5.2, Poles/Towers
	Describe any specialty poles or towers; note where they would be used (e.g., angle structures, heavy angle lattice towers, stub guys, etc.); make sure to note if any guying would likely be required across a road	Subsection 3.5.2, Poles/Towers
	If the Proposed Project includes pole-for-pole replacement, describe the approximate location of where the new poles would be installed relative to the existing alignment	Subsection 3.5.2, Poles/Towers; Attachment 3-A: Detailed Route Map

Location in CPUC PEA Checklist	Checklist Item	Location in PEA and Associated Notes
3.5.2 Poles/Towers (cont.)	Describe any special pole types (e.g., poles that require foundations, transition towers, switch towers, microwave towers, etc.) and any special features	Subsection 3.5.2, Poles/Towers
3.5.3 Conductor/Cable 3.5.3.1 Above-Ground Installation	Describe the type of line to be installed on the poles/tower (e.g. single-circuit with distribution, double circuit, etc.)	Subsection 3.5.3.1, Above-Ground Installation
	Describe the number of conductors required to be installed on the poles or tower and the number on each side, including applicable engineering design standards	Subsection 3.5.3.1, Above-Ground Installation
	Provide the size and type of conductor (e.g., aluminum conductor, steel reinforced, non-specular, etc.) and insulator configuration	Subsection 3.5.3.1, Above-Ground Installation
	Provide the approximate distance from the ground to the lowest conductor and the approximate distance between the conductors (i.e., both horizontally and vertically). Provide specific information at highways, rivers, or special crossings	Subsection 3.5.3.1, Above-Ground Installation
	Provide the approximate span lengths between poles or towers, note where different if distribution is present or not if relevant	Subsection 3.5.3.1, Above-Ground Installation
	Determine whether other infrastructure would likely be collocated with the conductor (e.g., fiber optics, etc.); if so, provide conduit diameter of other infrastructure	Subsection 3.5.3.1, Above-Ground Installation
3.5.3.2 Below Ground Installation	Describe the type of line to be installed (e.g., single circuit crosslinked polyethylene-insulated solid-dielectric, copper-conductor cables)	Subsection 3.5.3.2, Below Ground Installation
	Describe the type of casing the cable would be installed in (e.g., concrete-encased duct bank system); provide the dimensions of the casing	Subsection 3.5.3.2, Below Ground Installation

Location in CPUC PEA Checklist	Checklist Item	Location in PEA and Associated Notes
3.5.3.2 Below Ground Installation (cont.)	Provide an engineering "typical" drawing of the duct bank and describe what types of infrastructure would likely be installed within the duct bank (e.g., transmission, fiber optics, etc.)	Figure 3-8: Typical Telecommunications Duct Bank
3.5.4 Substation	Provide "typical" plan and profile views of the proposed substation and the existing substation if applicable	Figure 3-10: Proposed Mid-Line Series Capacitor Layout through Figure 3-12: Proposed Ludlow Series Capacitor Profile
	Describe the types of equipment that would be temporarily or permanently installed and provide details as to what the function/use of said equipment would be. Include information such as, but not limited to mobile substations, transformers, capacitors, and new lighting	Subsection 3.5.4, Mid-Line Series Capacitors; Subsection 3.5.5 Modification to Existing Substations
	Provide the approximate or "typical" dimensions (width and height) of new structures including engineering and design standards that apply	Subsection 3.5.4, Mid-Line Series Capacitors
	Describe the extent of the Proposed Project. Would it occur within the existing fence line, existing property line or would either need to be expanded?	Subsection 3.5.4, Mid-Line Series Capacitors
	Describe the electrical need area served by the distribution substation	N/A
3.6 Right-of-Way Requirements	Describe the ROW location, ownership, and width. Would the existing ROW be used or would new ROW be required?	Section 3.6, Right-of-Way Requirements
	If a new ROW is required, describe how it would be acquired and approximately how much land would be required (length and width)	Section 3.6, Right-of-Way Requirements
	List the properties likely to require acquisition	Section 3.6, Right-of-Way Requirements

Location in CPUC PEA Checklist	Checklist Item	Location in PEA and Associated Notes
3.7 Construction 3.7.1 For All Projects 3.7.1.1 Staging Areas	Where would the main staging area(s) likely be located?	Subsection 3.7.1.1, Staging Areas; Attachment 3-A: Detailed Route Map
	Approximately how large would the main staging area(s) be?	Subsection 3.7.1.1, Staging Areas; Table 3-6: Potential Staging Yard Locations
	Describe any site preparation required, if known, or generally describe what might be required (i.e., vegetation removal, new access road, installation of rock base, etc.)	Subsection 3.7.1.1, Staging Areas
	Describe what the staging area would be used for (e.g., material and equipment storage, field office, reporting location for workers, parking area for vehicles and equipment, etc.)	Subsection 3.7.1.1, Staging Areas
	Describe how the staging area would be secured; would a fence be installed? If so, describe the type and extent of the fencing	Subsection 3.7.1.1, Staging Areas
	Describe how power to the site would be provided if required (e.g., tap into existing distribution, use of diesel generators, etc.)	Subsection 3.7.1.1, Staging Areas
	Describe any grading activities and/or slope stabilization issues	Subsection 3.7.1.1, Staging Areas
3.7.1.2 Work Areas	Describe known work areas that may be required for specific construction activities (i.e., pole assembly, hill side construction, etc.)	Subsection 3.7.1.2, Work Areas
	For each known work area, provide the area required (include length and width) and describe the types of activities that would be performed	Subsection 3.7.1.2, Work Areas
	Identify the approximate location of known work areas in the GIS database	GIS for the Proposed Project will be provided under separate cover

Location in CPUC PEA Checklist	Checklist Item	Location in PEA and Associated Notes
3.7.1.2 Work Areas (cont.)	Describe how the work areas would likely be accessed (e.g., construction vehicles, walk-in, helicopter, etc.)	Subsection 3.7.1.2, Work Areas
	If any site preparation is likely required, generally describe what and how it would be accomplished	Subsection 3.7.1.2, Work Areas
	Describe any grading activities and/or slope stabilization issues	Subsection 3.7.1.2, Work Areas
	Based on the information provided, describe how the site would be restored	Subsection 3.7.1.2, Work Areas
3.7.1.3 Access Roads and/or Spur Roads	Describe the types of roads that would be used and/or would need to be created to implement the Proposed Project. Road types may include, but are not limited to: new permanent road; new temporary road; existing road that would have permanent improvements; existing road that would have temporary improvements; existing paved road; existing dirt/gravel road; and overland access	Subsection 3.7.1.3, Access Roads and/or Spur Roads
	For road types that require preparation, describe the methods and equipment that would be used	Subsection 3.7.1.3, Access Roads and/or Spur Roads
	Identify approximate location of all access roads (by type) in the GIS database	GIS for the Proposed Project will be provided under separate cover
	Describe any grading activities and/or slope stabilization issues.	Subsection 3.7.1.3, Access Roads and/or Spur Roads
3.7.1.4 Helicopter Access	Identify which proposed poles/towers would be removed and/or installed using a helicopter	Subsection 3.7.1.4, Helicopter Access
	If different types of helicopters are to be used, describe each type (e.g., light, heavy, or sky crane) and what activities they would be used for	Subsection 3.7.1.4, Helicopter Access

Location in CPUC PEA Checklist	Checklist Item	Location in PEA and Associated Notes
3.7.1.4 Helicopter Access (cont.)	Provide information as to where the helicopters would be staged, where they would refuel, and where they would land within the Proposed Project site	Subsection 3.7.1.4, Helicopter Access
	Describe any Best Management Practices (BMPs) that would be employed to avoid impacts caused by use of helicopters, for example: air quality and noise considerations	Subsection 3.7.1.4, Helicopter Access
	Describe flight paths, payloads, hours of operations for known locations, and work types	Subsection 3.7.1.4, Helicopter Access
3.7.1.5 Vegetation Clearance	Describe the types of vegetation clearing that may be required (e.g., tree removal, brush removal, flammable fuels removal) and why (e.g., to provide access, etc.)	Subsection 3.7.1.5, Vegetation Clearance
	Identify the preliminary location and provide an approximate area of disturbance in the GIS database for each type of vegetation removal	Subsection 3.7.1.5, Vegetation Clearance
	Describe how each type of vegetation removal would be accomplished	Subsection 3.7.1.5, Vegetation Clearance
	For removal of trees, distinguish between tree trimming as required under G.O. 95 and tree removal	Subsection 3.7.1.5, Vegetation Clearance
	Describe the types and approximate number and size of trees that may need to be removed	Subsection 3.7.1.5, Vegetation Clearance
	Describe the type of equipment typically used	Subsection 3.7.8.1, Equipment Description; Table 3-14: Construction Equipment Description; Attachment 3-D: Construction Equipment and Workforce Estimates

Location in CPUC PEA Checklist	Checklist Item	Location in PEA and Associated Notes
3.7.1.6 Erosion and Sediment Control and Pollution Prevention during Construction	Describe the areas of soil disturbance including estimated total areas and associated terrain type and slope. List all known permits required. For project sites of less than one acre, outline the BMPs that would be implemented to manage surface runoff. Things to consider include, but are not limited to: Erosion and sedimentation BMPs, vegetation removal and restoration, and/or hazardous waste, and spill prevention plans	Subsection 3.7.1.6, Erosion and Sediment Control and Pollution Prevention during Construction
	Describe any grading activities and/or slope stabilization issues	Subsection 3.7.4.1, Site Preparation and Grading; Subsection 3.7.5.1, Site Preparation and Grading
	Describe how construction waste (i.e., refuse, spoils, trash, oil, fuels, poles, pole structures, etc.) would be disposed	Subsection 3.7.1.6, Erosion and Sediment Control and Pollution Prevention during Construction
3.7.1.7 Cleanup and Post-Construction Restoration	Describe how cleanup and post-construction restoration would be performed (i.e., personnel, equipment, and methods). Things to consider, but are not limited to, restoration of natural drainage patterns, wetlands, vegetation, and other disturbed areas (i.e. staging areas, access roads, etc.)	Subsection 3.7.1.7, Cleanup and Post-Construction Restoration
3.7.2 Transmission Line Construction (Above Ground) 3.7.2.1 Pull and Tension Sites	Provide the general or average distance between pull and tension sites	Subsection 3.7.2.1, Pull and Tension Sites
	Provide the area of pull and tension sites including the estimated length and width	Subsection 3.7.2.1, Pull and Tension Sites
	According to the preliminary plan, identify the number of pull and tension sites that would be required, and their locations. Provide the location information in GIS	Subsection 3.7.2.1, Pull and Tension Sites; GIS for the Proposed Project will be provided under separate cover

Location in CPUC PEA Checklist	Checklist Item	Location in PEA and Associated Notes
3.7.2 Transmission Line Construction (Above Ground) 3.7.2.1 Pull and Tension Sites (cont.)	Describe the type of equipment that would be required at these sites	Subsection 3.7.2.1, Pull and Tension Sites; Attachment 3-D: Construction Equipment and Workforce Estimates
	If conductor is being replaced, describe how it would be removed	Subsection 3.7.2.1, Pull and Tension Sites
3.7.2.2 Pole Installation and Removal	Describe how the construction crews and their equipment would be transported to and from the pole site locations. Provide vehicle type, number of vehicles, estimated number of trips, and hours of operation	Subsection 3.7.2.2, Pole/Tower Installation and Removal; Attachment 3-D: Construction Equipment and Workforce Estimates; Section 4.16 Transportation and Traffic
	Describe the process of removing the poles and foundations	Subsection 3.7.2.2, Pole/Tower Installation and Removal
	Describe what happens to the holes that the poles were in (i.e., reused or backfilled)?	Subsection 3.7.2.2, Pole/Tower Installation and Removal
	If the holes are to be backfilled, what type of fill would be used and where would it come from?	Subsection 3.7.2.2, Pole/ Tower Installation and Removal
	Describe any surface restoration that would occur at the pole sites	Subsection 3.7.2.2, Pole/Tower Installation and Removal
	Describe how the poles would be removed from the sites	Subsection 3.7.2.2, Pole/Tower Installation and Removal
	If topping is required to remove a portion of an existing transmission pole that would now only carry distribution lines, describe the methodology to access and remove the tops of these poles. Describe any special methods that would be required to top poles that may be difficult to access, etc.	Subsection 3.7.2.2, Pole/Tower Installation and Removal

Location in CPUC PEA Checklist	Checklist Item	Location in PEA and Associated Notes
3.7.2.2 Pole Installation and Removal (cont.)	Describe the process of how the new poles/towers would be installed; specifically identify any special construction methods (e.g., helicopter installation) for specific locations or for different types of poles/towers	Subsection 3.7.2.2, Pole/Tower Installation and Removal
	Describe the types of equipment and their use as related to pole/tower installation	Subsection 3.7.2.2, Pole/Tower Installation and Removal; Attachment 3-D: Construction Equipment and Workforce Estimates
	Describe the actions taken to maintain a safe work environment during construction (e.g., covering of holes/excavation pits, etc.)	Subsection 3.9.2, Worker Environmental Awareness Training
	Describe what would be done with soil that is removed from a hole/foundation site	Subsection 3.7.2.2, Pole/Tower Installation and Removal
	For any foundations required, provide a description of the construction method(s), approximate average depth and diameter of excavation, approximate volume of soil to be excavated, approximate volume of concrete or other backfill required, etc.	Subsection 3.7.2.2, Pole/Tower Installation and Removal
	Describe briefly how poles/towers and associated hardware are assembled	Subsection 3.7.2.2, Pole/Tower Installation and Removal
	Describe how the poles/towers and associated hardware would be delivered to the site; would they be assembled off site and brought in or assembled on site?	Subsection 3.7.2.2, Pole/Tower Installation and Removal

Location in CPUC PEA Checklist	Checklist Item	Location in PEA and Associated Notes
3.7.2.2 Pole Installation and Removal (cont.)	Provide the following information about pole/tower installation and associated disturbance area estimates: pole diameter for each pole type (e.g., wood, self-supporting steel, lattice, etc.), base dimensions for each pole type, auger hole depth for each pole type, permanent footprint per pole/tower, number of poles/towers by pole type, average work area around poles/towers by pole type (e.g., for old pole removal and new pole installation), and total permanent footprint for poles/towers	Subsection 3.5.2, Poles/Towers; Table 3-8: Transmission, Subtransmission, and Distribution Approximate Land Disturbance; Table 3-13: Proposed Project Estimated Land Disturbance
3.7.2.3 Conductor/Cable Installation	Provide a process-based description of how new conductor/cable would be installed and how old conductor/cable would be removed, if applicable	Subsection 3.7.2.3, Conductor/Cable Installation
	Generally describe the conductor/cable splicing process	Subsection 3.7.2.3, Conductor/Cable Installation
	If vaults are required, provide their dimensions and approximate location/spacing along the alignment	Subsection 3.5.3.2, Below-Ground Installation
	Describe in what areas conductor/cable stringing/installation activities would occur	Subsection 3.7.2.1, Pull and Tension Sites
	Describe any safety precautions or areas where special methodology would be required (e.g., crossing roadways, stream crossing, etc.)	Subsection 3.7.2.3, Conductor/Cable Installation
3.7.3 Transmission Line Construction (Below Ground)	Describe the approximate dimensions of the trench (e.g., depth, width)	Subsection 3.7.3.1, Trenching
	Describe the methodology of making the trench (e.g., saw cutter to cut the pavement, backhoe to remove, etc.)	Subsection 3.7.3.1, Trenching
3.7.3.1 Trenching	Provide the total approximate cubic yardage of material to be removed from the trench, the amount to be used as backfill and the amount to subsequently be removed/disposed of off-site	Subsection 3.7.3.1, Trenching
	Provide off-site disposal location, if known, or describe possible option(s)	Subsection 3.7.3.1, Trenching

Location in CPUC PEA Checklist	Checklist Item	Location in PEA and Associated Notes
3.7.3.1 Trenching (cont.)	If engineered fill would be used as backfill, provide information as to the type of engineered backfill and the amount that would be typically used (e.g., top two feet would be filled with thermal-select backfill)	Subsection 3.7.3.1, Trenching
	Describe if dewatering would be anticipated and, if so, how the trench would be dewatered, what the anticipated flows of the water are, whether there would be treatment, and how the water would be disposed of	Subsection 3.7.3.1, Trenching
	Describe the process for testing excavated soil or groundwater for the presence of pre-existing environmental contaminants that could be exposed as a result of trenching operations	Subsection 3.7.3.1, Trenching
	If pre-existing hazardous waste was encountered, describe the process of removal and disposal	Subsection 3.7.3.1, Trenching
	Describe any standard BMPs that would be implemented	Subsection 3.7.3.1, Trenching
3.7.3.2 Trenchless Techniques: Microtunnel, Bore and Jack, Horizontal Directional Drilling	Provide the approximate location of the sending and receiving pits	Subsection 3.7.3.2, Trenchless Techniques: Microtunnel, Bore, Horizontal Directional Drilling
	Provide the length, width and depth of the sending and receiving pits	Subsection 3.7.3.2, Trenchless Techniques: Microtunnel, Bore, Horizontal Directional Drilling
	Describe the methodology of excavating and shoring the pits	Subsection 3.7.3.2, Trenchless Techniques: Microtunnel, Bore, Horizontal Directional Drilling
	Describe the methodology of the trenchless technique	Subsection 3.7.3.2, Trenchless Techniques: Microtunnel, Bore, Horizontal Directional Drilling

Location in CPUC PEA Checklist	Checklist Item	Location in PEA and Associated Notes
3.7.3.2 Trenchless Techniques: Microtunnel, Bore and Jack, Horizontal Directional Drilling (cont.)	Provide the total cubic yardage of material to be removed from the pits, the amount to be used as backfill and the amount to subsequently be removed/disposed of off-site	Subsection 3.7.3.2, Trenchless Techniques: Microtunnel, Bore, Horizontal Directional Drilling
	Describe the process for safe handling of drilling mud and bore lubricants	Subsection 3.7.3.2, Trenchless Techniques: Microtunnel, Bore, Horizontal Directional Drilling
	Describe the process for detecting and avoiding “fracturing-out” during horizontal directional drilling operations	Subsection 3.7.3.2, Trenchless Techniques: Microtunnel, Bore, Horizontal Directional Drilling
	Describe the process for avoiding contact between drilling mud/lubricants and streambeds	Subsection 3.7.3.2, Trenchless Techniques: Microtunnel, Bore, Horizontal Directional Drilling
	If engineered fill would be used as backfill, provide information as to the type of engineered backfill and the amount that would be typically used (e.g., top two feet would be filled with thermal-select backfill)	Subsection 3.7.3.2, Trenchless Techniques: Microtunnel, Bore, Horizontal Directional Drilling
	If dewatering is anticipated, describe how the pit would be dewatered, what the anticipated flows of the water are, whether there would be treatment, and how the water would be disposed of	Subsection 3.7.3.2, Trenchless Techniques: Microtunnel, Bore, Horizontal Directional Drilling
	Describe the process for testing excavated soil or groundwater for the presence of pre-existing environmental contaminants	Subsection 3.7.3.2, Trenchless Techniques: Microtunnel, Bore, Horizontal Directional Drilling
	If a pre-existing hazardous waste was encountered, describe the process of removal and disposal	Subsection 3.7.3.2, Trenchless Techniques: Microtunnel, Bore, Horizontal Directional Drilling

Location in CPUC PEA Checklist	Checklist Item	Location in PEA and Associated Notes
3.7.3.2 Trenchless Techniques: Microtunnel, Bore and Jack, Horizontal Directional Drilling (cont.)	Describe any grading activities and/or slope stabilization issues	Subsection 3.7.3.2, Trenchless Techniques: Microtunnel, Bore, Horizontal Directional Drilling
	Describe any standard BMPs that would be implemented	Subsection 3.7.3.2, Trenchless Techniques: Microtunnel, Bore, Horizontal Directional Drilling
3.7.4 Substation Construction	Describe any earth-moving activities that would be required; what type of activity and, if applicable, estimate cubic yards of materials to be reused and/or removed from the site for both site grading and foundation excavation	Subsection 3.7.4.1, Site Preparation and Grading; Table 3-5: Mid-Line Series Capacitor Cut and Fill Grading Summary; Table 3-9: Mid-Line Series Capacitor Ground Surface Improvement Materials
	Provide a conceptual landscape plan in consultation with the municipality in which the substation is located	Subsection 3.7.4.7, Landscaping; Subsection 3.7.5.5, Landscaping
	Describe any grading activities and/or slope stabilization issues	Subsection 3.7.4.1, Site Preparation and Grading
	Describe possible relocation of commercial or residential property, if any	Subsection 3.6, Right-of-Way Requirements
3.7.5 Construction Workforce and Equipment	Provide the estimated number of construction crew members	Subsection 3.7.8, Construction Workforce and Equipment
	Describe the crew deployment, whether crews would work concurrently (i.e., multiple crews at different sites), if they would be phased, etc.	Subsection 3.7.8, Construction Workforce and Equipment

Location in CPUC PEA Checklist	Checklist Item	Location in PEA and Associated Notes
3.7.5 Construction Workforce and Equipment (cont.)	Describe the different types of activities to be undertaken during construction, the number of crew members for each activity (i.e., trenching, grading, etc.), and the number and types of equipment expected to be used for said activity. Include a written description of the activity	Subsection 3.7.8, Construction Workforce and Equipment; Attachment 3-D: Construction Equipment and Workforce Estimates
	Provide a list of the types of equipment expected to be used during construction of the Proposed Project as well as a brief description of the use of the equipment	Subsection 3.7.8, Construction Workforce and Equipment; Table 3-14: Construction Equipment Description; Attachment 3-D: Construction Equipment and Workforce Estimates
3.7.6 Construction Schedule	Provide a preliminary project construction schedule; include contingencies for weather, wildlife closure periods, etc.	Subsection 3.7.9, Construction Schedule; Table 3-15: Proposed Construction Schedule
3.8 Operation and Maintenance	Describe the general system monitoring and control (i.e., use of standard monitoring and protection equipment, use of circuit breakers and other line relay protection equipment, etc.)	Section 3.8, Operation and Maintenance
	Describe the general maintenance program of the Proposed Project including timing of inspections (i.e., monthly, every July, as needed), type of inspection (i.e., aerial inspection, ground inspection), and a description of how the inspection would be implemented. Things to consider: who/how many crew members, how would they access the site (i.e., walk to site, vehicle, all terrain vehicle), would new access be required, would restoration be required, etc.)	Section 3.8, Operation and Maintenance

Location in CPUC PEA Checklist	Checklist Item	Location in PEA and Associated Notes
3.8 Operation and Maintenance (cont.)	If additional full time staff would be required for operation and/or maintenance, provide the number of workers and for what purpose they are required	Section 3.8, Operation and Maintenance
3.9 Applicant-Proposed Measures	If there are measures that the Applicant would propose to be part of the Proposed Project, include those measures and reference plans or implementation descriptions	Section 3.9, Applicant-Proposed Measures
Chapter 4: Environmental Setting		
	For each resource area discussion within the PEA, include a description of the physical environment in the vicinity of the Proposed Project (e.g., topography, land use patterns, biological environment, etc.), including the local environment (site-specific) and regional environment	Combined with Chapter 4 – Environmental Impact Assessment Summary
	For each resource area discussion within the PEA, include a description of the regulatory environment/context (federal, State, and local)	Combined with Chapter 4 – Environmental Impact Assessment Summary
	Limit detailed descriptions to those resource areas which may be subject to a potentially significant impact	Combined with Chapter 4 – Environmental Impact Assessment Summary
Chapter 5: Environmental Impact Assessment Summary		
5.1 Aesthetics	Provide visual simulations of prominent public view locations, including scenic highways, to demonstrate the views before and after project implementation. Additional simulations are highly recommended	Attachment 4.1-C: Visual Simulations
5.2 Agriculture Resources	Identify the types of agricultural resources affected	Section 4.2, Agriculture and Forestry Resources
5.3 Air Quality	Provide supporting calculations/ spreadsheets/technical reports that support emission estimates in the PEA	Appendix F: Air Quality Calculations

Location in CPUC PEA Checklist	Checklist Item	Location in PEA and Associated Notes
5.3 Air Quality (cont.)	Provide documentation of the location and types of sensitive receptors that could be impacted by the Project (e.g., schools, hospitals, houses, etc.). Critical distances to receptors are dependent on type of construction activity	Section 4.3, Air Quality
	Identify Proposed Project GHG emissions	Section 4.7, Greenhouse Gas Emissions
	Quantify GHG emissions from a business as usual snapshot. That is, what the GHG emissions will be from the Proposed Project if no mitigations were used	Section 4.7, Greenhouse Gas Emissions
	Quantify GHG emission reductions from every APM that is implemented. The quantifications will be itemized and placed in tabular format	N/A
	Identify the net emissions of the Proposed Project after mitigation have been applied	N/A
	Calculate and quantify GHG emissions (CO_2 equivalent) for the Proposed Project, including construction and operation	Section 4.7, Greenhouse Gas Emissions
	Calculate and quantify the GHG reduction based on reduction measures proposed for the Proposed Project	N/A
	Propose APMs to implement and follow to maximize GHG reductions. If sufficient, CPUC will accept them without adding further mitigation measures	N/A
	Discuss programs already in place to reduce GHG emissions on a system-wide level. This includes the Applicant's voluntary compliance with the U.S. Environmental Protection Agency (EPA) SF6 reduction program, reductions from energy efficiency, demand response, long-term procurement plan, etc.	Section 4.7, Greenhouse Gas Emissions

Location in CPUC PEA Checklist	Checklist Item	Location in PEA and Associated Notes
5.3 Air Quality (cont.)	Ensure that the assessment of air quality impacts is consistent with PEA Section 3.7.5, as well as with the PEA's analysis of impacts during construction, including traffic and all other emissions	Section 4.3, Air Quality
5.4 Biological Resources	Provide a copy of the Wetland Delineation and supporting documentation (i.e., data sheets). If verified, provide supporting documentation. Additionally, GIS data of the wetland features should be provided as well	Appendix G: Biological Resources Technical Report; GIS for the Proposed Project will be provided under separate cover
	Provide a copy of special-status surveys for wildlife, botanical and aquatic species, as applicable. Any GIS data documenting locations of special-status species should be provided	Appendix G: Biological Resources Technical Report; GIS for the Proposed Project will be provided under separate cover
5.5 Cultural Resources	Cultural Resources Report documenting a cultural resources investigation of the Proposed Project. This report should include a literature search, pedestrian survey, and Native American consultation	Appendix H: Cultural Resources Reports – Confidential, which will be provided once survey approval is granted by the BLM and surveys are complete
	Provide a copy of the records found in the literature search	Appendix G: Cultural Resources Reports – Confidential, which will be provided once approved for release by the BLM
	Provide a copy of all letters and documentation of Native American consultation	Letters and documentation of Native American consultation will be provided under separate cover when available

Location in CPUC PEA Checklist	Checklist Item	Location in PEA and Associated Notes
5.6 Geology, Soils, and Seismic Potential	Provide a copy of the geotechnical investigation if completed, including known and potential geologic hazards such as ground shaking, subsidence, liquefaction, etc.	A geotechnical report for the Proposed Project will be provided under separate cover when available
5.7 Hazards and Hazardous Materials	Include an Environmental Data Resources report	Appendix I: Hazardous Materials Records Search Results
	Include a Hazardous Substance Control and Emergency Response Plan, if required	N/A
	Include a Health and Safety Plan, if required	N/A
	Describe the Worker Environmental Awareness Program	Subsection 3.9.2, Worker Environmental Awareness Training
	Describe which chemicals would be used during construction and operation of the Proposed Project. For example, fuels for construction, naphthalene to treat wood poles before installation, etc.	Section 4.8, Hazards and Hazardous Materials; Table 4.8-2: Hazardous Materials Typically Used for Construction
5.8 Hydrology and Water	Describe impacts to groundwater quality including increased runoff due to construction of impermeable surfaces, etc.	Section 4.9, Hydrology and Water Quality
	Describe impacts to surface water quality including the potential for accelerated soil erosion, downstream sedimentation, and reduced surface water quality	Section 4.9, Hydrology and Water Quality
5.9 Land Use and Planning	Provide GIS data of all parcels within 300 feet of the Proposed Project with the following data: APN number, mailing address, and parcel's physical address	GIS for the Proposed Project will be provided under separate cover

Location in CPUC PEA Checklist	Checklist Item	Location in PEA and Associated Notes
5.10 Mineral Resources	Data needs already specified under Chapter 3 would generally meet the data needs for this resource area	Section 4.11, Mineral Resources
5.11 Noise	Provide long-term noise estimates for operational noise (e.g., corona discharge noise, and station sources such as substations, etc.)	Section 4.12, Noise
5.12 Population and Housing	Data needs already specified under Chapter 3 would generally meet the data needs for this resource area	Section 4.13, Population and Housing
5.13 Public Services	Data needs already specified under Chapter 3 would generally meet the data needs for this resource area	Section 4.14, Public Services
5.14 Recreation	Data needs already specified under Chapter 3 would generally meet the data needs for this resource area	Section 4.15, Recreation
5.15 Transportation and Traffic	Discuss traffic impacts resulting from construction of the Proposed Project including ongoing maintenance operations	Section 4.16, Transportation and Traffic
	Provide a preliminary description of the traffic management plan that would be implemented during construction of the Proposed Project	Section 4.16, Transportation and Traffic
5.16 Utilities and Services Systems	Describe how treated wood poles would be disposed of after removal, if applicable	Section 4.8, Hazards and Hazardous Materials; Section 4.17, Utilities and Services
5.17 Cumulative Analysis	Provide a list of projects (i.e., past, present, and reasonably foreseeable future projects) within the Proposed Project area that the applicant is involved in	Section 4.18, Cumulative Analysis
	Provide a list of projects that have the potential to be proximate in space and time to the Proposed Project. Agencies to be contacted include, but are not limited to, the local planning agency, Caltrans, etc.	Section 4.18, Cumulative Analysis

Location in CPUC PEA Checklist	Checklist Item	Location in PEA and Associated Notes
5.18 Growth-Inducing Impacts, If Significant	Provide information on the Proposed Project's growth- inducing impacts, if any	Section 4.19, Growth-Inducing Impacts; Section 5.3, Growth-Inducing Impacts
	Provide information on any economic or population growth in the surrounding environment that will, directly or indirectly, result from the Proposed Project	Section 4.19, Growth-Inducing Impacts; Section 5.3, Growth-Inducing Impacts
	Provide information on any increase in population that could further tax existing community service facilities (e.g., schools, hospitals, fire, police, etc.), that will directly or indirectly result from the Proposed Project	Section 4.14, Public Services; Section 4.19, Growth-Inducing Impacts; Section 5.3, Growth-Inducing Impacts
	Provide information on any obstacles to population growth that the Proposed Project would remove	Section 4.19, Growth-Inducing Impacts; Section 5.3, Growth-Inducing Impacts
	Describe any other activities, directly or indirectly encouraged or facilitated by the Proposed Project, that would cause population growth that could significantly affect the environment, either individually or cumulatively	Section 4.13, Population and Housing; Section 4.19, Growth-Inducing Impacts; Section 5.3, Growth-Inducing Impacts
Chapter 6: Detailed Discussion of Significant Impacts		
6.1 Mitigation Measures Proposed to Minimize Significant Effects	Discuss each mitigation measure and the basis for selecting a particular mitigation measure should be stated	Section 5.1, Applicant-Proposed Measures to Minimize Significant Effects

Location in CPUC PEA Checklist	Checklist Item	Location in PEA and Associated Notes
6.2 Description of Project Alternatives and Impact Analysis	Provide a summary of the alternatives considered that would meet most of the objectives of the Proposed Project and an explanation as to why they were not chosen as the Proposed Project	Section 5.2, Description of Project Alternatives and Impact Analysis
	Alternatives considered and described by the Applicant should include, as appropriate, system or facility alternatives, route alternatives, route variations, and alternative locations	Section 5.2, Description of Project Alternatives and Impact Analysis
	A description of a "No Project Alternative" should be included	Section 5.2, Description of Project Alternatives and Impact Analysis
	If significant environmental effects are assessed, the discussion of alternatives shall include alternatives capable of substantially reducing or eliminating any said significant environmental effects, even if the alternative(s) substantially impede the attainment of the Proposed Project objectives and are more costly	Section 5.2, Description of Project Alternatives and Impact Analysis
6.3 Growth-Inducing Impacts	Discuss if the Proposed Project would foster economic or population growth, either directly or indirectly, in the surrounding environment	Section 4.13, Population and Housing; Section 5.3, Growth-Inducing Impacts
	Discuss if the Proposed Project would cause an increase in population that could further tax existing community services (e.g., schools, hospitals, fire, police, etc.)	Section 4.14, Public Services; Section 5.3, Growth-Inducing Impacts
	Discuss if the Proposed Project would remove obstacles to population growth	Section 5.3, Growth-Inducing Impacts
	Discuss if the Proposed Project would encourage and facilitate other activities that would cause population growth that could significantly affect the environment, either individually or cumulatively	Section 5.,3 Growth-Inducing Impacts

Location in CPUC PEA Checklist	Checklist Item	Location in PEA and Associated Notes
6.4 Suggested Applicant-Proposed Measures to address GHG Emissions	Include a menu of suggested APMs that applicants can consider to address GHG emissions. Suggested APMs include, but are not limited to:	Section 5.4, Suggested Applicant-Proposed Measures to Address GHG Emissions; Section 4.7, Greenhouse Gas Emissions
	1. If suitable park-and-ride facilities are available in the Project vicinity, construction workers will be encouraged to carpool to the job site to the extent feasible. The ability to develop an effective carpool program for the Proposed Project would depend upon the proximity of carpool facilities to the job site, the geographical commute departure points of construction workers, and the extent to which carpooling would not adversely affect worker show-up time and the Project's construction schedule	Section 4.7, Greenhouse Gas Emissions (if applicable)
	2. To the extent feasible, unnecessary construction vehicle and idling time will be minimized. The ability to limit construction vehicle idling time is dependent upon the sequence of construction activities and when and where vehicles are needed or staged. Certain vehicles, such as large diesel powered vehicles, have extended warm-up times following start-up that limit their availability for use following startup. Where such diesel powered vehicles are required for repetitive construction tasks, these vehicles may require more idling time. The Proposed Project will apply a "common sense" approach to vehicle use; if a vehicle is not required for use immediately or continuously for construction activities, its engine will be shut off. Construction foremen will include briefings to crews on vehicle use as part of pre-construction conferences. Those briefings will include discussion of a "common sense" approach to vehicle use	Section 4.7, Greenhouse Gas Emissions (if applicable)

Location in CPUC PEA Checklist	Checklist Item	Location in PEA and Associated Notes
6.4 Suggested Applicant-Proposed Measures to address GHG Emissions (cont.)	3. Use low-emission construction equipment. Maintain construction equipment per manufacturing specifications and use low emission equipment described here. All off road construction diesel engines not registered under the California Air Resources Board (CARB) Statewide Portable Equipment Registration Program shall meet at a minimum the Tier 2 California Emission Standards for Off-Road Compression-Ignition Engines as specified in California Code of Regulations, Title 13, Sec. 2423(b)(1)	Section 4.7, Greenhouse Gas Emissions (if applicable)
	4. Diesel Anti-Idling: In July 2004, the CARB adopted a measure to limit diesel-fueled commercial motor vehicle idling	Section 4.7, Greenhouse Gas Emissions (if applicable)
	5. Alternative Fuels: CARB would develop regulations to require the use of one to four percent biodiesel displacement of California diesel fuel	Section 4.7, Greenhouse Gas Emissions (if applicable)
	6. Alternative Fuels: Ethanol, increased use of ethanol fuel	Section 4.7, Greenhouse Gas Emissions (if applicable)
	7. Green Buildings Initiative	Section 4.7, Greenhouse Gas Emissions (if applicable)
	8. Facility wide energy efficiency audit	Section 4.7, Greenhouse Gas Emissions (if applicable)
	9. Complete GHG emissions audit. The audit will include a review of the GHG emitted from those facilities (substations), including carbon dioxide, methane, CFC, and HFC compounds (SF_6)	Section 4.7, Greenhouse Gas Emissions (if applicable)
	10. There is an EPA approved SF_6 emissions protocol (http://www.epa.gov/electricpowersf6/resources/ index.html#three)	Section 4.7, Greenhouse Gas Emissions (if applicable)
	11. SF_6 program wide inventory. For substations, keep inventory of leakage rates	Section 4.7, Greenhouse Gas Emissions (if applicable)

Location in CPUC PEA Checklist	Checklist Item	Location in PEA and Associated Notes
6.4 Suggested Applicant-Proposed Measures to address GHG Emissions (cont.)	12. Increase replacement of breakers once leakage rates exceed one percent within 30 days of detection	Section 4.7, Greenhouse Gas Emissions (if applicable)
	13. Increased investment in current programs that can be verified as being in addition to what the utility is already doing	Section 4.7, Greenhouse Gas Emissions (if applicable)
	14. The SF_6 Emission Reduction Partnership for the Electric Power Systems was launched in 1999 and currently includes 57 electric utilities and local governments across the U.S.	Section 4.7, Greenhouse Gas Emissions (if applicable)
	15. SF_6 is used by this industry in a variety of applications, including that of dielectric insulating material in electrical transmission and distribution equipment, such as circuit breakers. Electric power systems that join the Partnership must, within 18 months, establish an emission reduction goal reflecting technically and economically feasible opportunities within their company. They also agree to, within the constraints of economic and technical feasibility, estimate their emissions of SF_6, establish a strategy for replacing older, leakier pieces of equipment, implement SF_6 recycling, establish and apply proper handling techniques, and report annual emissions to the EPA. The EPA works as a clearinghouse for technical information, works to obtain commitments from all electric power system operators and will be sponsoring an international conference in 2000 on SF_6 emission reductions	Section 4.7, Greenhouse Gas Emissions (if applicable)
	16. Quantify what comes into the system and track programmatically SF_6	Section 4.7, Greenhouse Gas Emissions (if applicable)
	17. Applicant can propose other GHG reducing mitigations	Section 4.7, Greenhouse Gas Emissions (if applicable)

Location in CPUC PEA Checklist	Checklist Item	Location in PEA and Associated Notes
Chapter 7: Other Process-Related Data Needs		
Noticing	Include an excel spreadsheet that identifies all parcels within 300 feet of any Proposed Project component with the following data: APN number, owner mailing address, and parcels physical address	Chapter 6, Other Process-Related Data Needs

Notes: "N/A" = not applicable

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Chapter 2
Project Purpose and Need and Objectives

This chapter defines the purpose, need, and objectives for Southern California Edison Company's (SCE's) proposed Eldorado-Lugo-Mohave Series Capacitor Project (Proposed Project), as required by the California Public Utilities Commission's (CPUC's) Proponent's Environmental Assessment (PEA) Guidelines (CPUC Information and Criteria List, Appendix B, Section V) and the California Environmental Quality Act (CEQA) Guidelines (§15000 et seq.). Additional information regarding the Proposed Project's purpose and need is provided in SCE's application to the CPUC in accordance with CPUC General Order (G.O.) 131-D.

2.1 Overview

SCE is a public utility that provides electric service to a population of approximately 15 million people within an approximately 50,000-square-mile service area that encompasses 180 cities throughout Southern California. SCE's Proposed Project was approved by the California Independent System Operator (CAISO) following recommendations for approval as a policy-driven upgrade through the CAISO's Transmission Planning Process. As a policy-driven upgrade, the purpose of the Proposed Project is to integrate renewable generation and relieve area deliverability constraints.[1]

The capability of the existing infrastructure is limited by the existing series capacitors and terminal equipment, and needs to be upgraded to meet the Proposed Project objectives by increasing the import capability of the existing transmission lines. These upgrades have been approved as CAISO policy-driven upgrades in the 2012-2013 and 2013-2014 Transmission Plans. Figure 1-1: Proposed Project Location in Chapter 1, PEA Summary shows the location of the Proposed Project in relation to the larger regional area.

Additionally, the Proposed Project would reduce Megawatt (MW) flow into the neighboring Los Angeles Department of Water and Power's (LADWP's) transmission system.

The Proposed Project is planned to be operational by June 2020, and would include the following major components:

- Construction of two new 500 kilovolt (kV) mid-line series capacitors—the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor—under the Eldorado-

[1] The deliverability constraint that affects this area is referred to as the Desert Area Constraint in the CAISO Transmission Plan. The Desert Area Constraint has been identified in previous CAISO Transmission Planning Process studies and Generation Interconnection Planning (GIP) studies to include a group of deliverability constraints that impact the desert area. The Desert Area Constraint limits deliverability in a wide electrical area that covers several renewable zones. Generators interconnecting within these renewable zones contribute to the constraint. The need for transmission upgrades to relieve the Desert Area Constraint is analyzed for other renewables portfolios by comparing the generation behind the deliverability constraint. The CAISO analyzes this constraint as part of its annual transmission planning process.

Lugo and Lugo-Mohave 500 kV Transmission Lines, respectively, near Pisgah Substation in unincorporated San Bernardino County, California

- Correction of 16 overhead clearance discrepancies[2] caused by the increase in MW capacity associated with the Proposed Project, which would require the relocation, replacement, or modification of existing transmission, subtransmission, and distribution facilities, including minor grading along the Eldorado-Lugo, Eldorado-Mohave, and Lugo-Mohave 500 kV Transmission Lines within San Bernardino County, California, and Clark County, Nevada

- Installation of distribution facilities in the vicinity of the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor sites to provide station light and power in unincorporated San Bernardino County, California

- Installation of distribution facilities to provide station light and power to three proposed fiber optic repeater sites in unincorporated San Bernardino County, California

- Installation of telecommunications facilities to connect the Proposed Project to SCE's existing telecommunications system, including the following:

  – Installation of overhead and underground fiber optic cable would be installed to connect the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor, including installation of three fiber optic repeater sites adjacent to the Lugo-Mohave 500 kV Transmission Line right-of-way, within unincorporated San Bernardino County, California

  – Removal of an existing overhead ground wire, modification of existing towers to support optical ground wire (OPGW), and the installation of approximately 235 miles of overhead OPGW (173 miles on the Lugo-Mohave 500 kV Transmission Line, approximately 59 miles on the Eldorado-Mohave 500 kV Transmission Line, and approximately 3 miles of underground telecommunications facilities in the vicinity of Mohave Substation)

  – Installation of fiber optic cable within the existing Eldorado, Lugo, and Mohave Substations

- Modifications within the existing Eldorado, Lugo, and Mohave Substations within San Bernardino County, California; Clark County, Nevada; and the City of Boulder City, Nevada, including the following:

  – Upgrade of the existing series capacitor banks at Eldorado and Lugo Substations

[2] SCE has defined "discrepancies" as potential clearance problems between an energized conductor and its surroundings, such as the structure, another energized conductor on the same structure, a different line, or the ground. SCE has identified approximately 16 discrepancies along the Eldorado-Lugo, Eldorado-Mohave, and Lugo-Mohave 500 kV Transmission Lines where minor grading or relocation, replacement, or modification of transmission, subtransmission, or distribution facilities are needed to address CPUC G.O. 95 and National Electrical Safety Code (NESC) overhead clearance requirements.

- Installation of new terminal equipment at Eldorado, Lugo, and Mohave Substations
- Replacement of the existing series capacitor bank at Mohave Substation
- Removal of two existing tubular steel poles (TSPs) and installation of two new TSPs at Lugo Substation

2.2 Project Objectives

The Proposed Project is being proposed to meet the following fundamental objectives:

- Meet the planned in-service date of June 2020 in an effort to meet the requirements as outlined and required by the California Renewables Portfolio Standard (RPS) for SCE to serve at least 33 percent of its retail load with renewable energy by 2020[3]
- Ensure compliance with CPUC G.O. 95 and the NESC
- Continue to provide safe and reliable electrical service
- Maintain system reliability within the Los Angeles Basin, which is defined as the Electrical Needs Area (ENA)
- Increase power flow through the existing Eldorado-Lugo, Eldorado-Mohave, and Lugo-Mohave 500 kV Transmission Lines for the purpose of increasing the amount of power delivered from California's Ivanpah Valley, Nevada, and Arizona to the ENA through the SCE system in an effort to meet requirements associated with the California RPS
- Reduce SCE's power flow into the LADWP transmission system for the purpose of mitigating power flow overloads under normal and abnormal system conditions[4]
- Ensure compliance with all applicable reliability planning criteria required by the North American Electric Reliability Corporation (NERC), Western Electricity Coordinating Council (WECC), and CAISO
- Integrate planned generation resources in order for those facilities to become fully deliverable[5]

[3] The California RPS requires investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 33 percent of total procurement by 2020. The CPUC implements and administers RPS compliance rules for California's retail sellers of electricity. SCE's current renewable procurement status percentages can be found on the CPUC's website (http://www.cpuc.ca.gov/RPS_Homepage/).

[4] "Normal conditions" refers to system conditions where all electrical facilities are in service and operating as designed. "Abnormal conditions" refers to system conditions whereby one or more electrical system components (e.g., generator, substation transformer, line, or other major component) is out of service or not operating as designed due to planned or unplanned outages.

[5] A generating facility is referred to as being "fully deliverable" once it has achieved Full Capacity Deliverability Status (FCDS), as defined in Appendix A of the CAISO's Fifth Replacement Electronic Tariff: https://www.caiso.com/Documents/AppendixA_Definitions_asof_Jan1_2017.pdf.

- Meet the requirements of existing Interconnection Agreements (IAs) that require the Proposed Project to achieve FCDS for generation facilities
- Meet Proposed Project needs while minimizing environmental impacts
- Design and construct the Proposed Project in conformance with SCE's approved engineering, design, and construction standards for substation, transmission, subtransmission, and distribution system projects

The Proposed Project components, location, preliminary configuration, and the existing and proposed components are presented in Chapter 3, Project Description. Each of the Proposed Project objectives is more thoroughly described in the following subsections.

Meet the planned in-service date of June 2020 in an effort to meet the requirements as outlined and required by the California RPS for SCE to serve at least 33 percent of its retail load with renewable energy by 2020

The RPS was established in 2002 under Senate Bill (SB) 1078, accelerated in 2006 under SB 107, and expanded in 2011 under SB 2. The RPS program requires investor-owned utilities (e.g., SCE), electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources for sale to retail end-use customers to 33 percent by 2020. Any delay and/or cancellation of the Proposed Project could prevent SCE from meeting its RPS obligation of 33 percent by 2020. The Proposed Project would provide for an additional 2,900 MW[6] of deliverability[7] that can be integrated into the grid. Information related SCE's renewable procurement status can be found on the RPS homepage[8] on the CPUC website.

As a result of the requirements of the California RPS, the CAISO has identified and recommended projects, including the Proposed Project, for approval as policy-driven transmission solutions.[9] As policy-driven transmission solutions, each of the projects were evaluated by the CAISO to determine if such projects are needed to meet federal, state, county, or municipal policy requirements. The upgrade of the series capacitors for the Eldorado-Lugo and Lugo-Mohave 500 kV Transmission Lines were approved as policy-driven transmission solutions and recommended for approval as part of the CAISO transmission planning cycles. Subsequently, the upgrades were included in the CAISO 2012-2013 and 2013-2014 Transmission Plans.

Ensure compliance with CPUC G.O. 95 and the NESC

The purpose of the rules contained within G.O. 95 is to "formulate, for the State of California, requirements for overhead line design, construction, and maintenance, the application of which will ensure adequate service and secure safety to persons engaged in the construction,

[6] MW refers to the power delivered by the transmission system.
[7] Several previously approved deliverability upgrades identified through the CAISO Transmission Planning Process and generation interconnection procedures may be necessary to completely utilize the incremental deliverability provided by the mid-line series capacitor upgrades.
[8] http://www.cpuc.ca.gov/renewables/
[9] Please refer to the following link for further information: www.caiso.com/Documents/Section24_ComprehensiveTransmissionPlanningProcess_asof_Mar28_2016.pdf.

maintenance, operation or use of overhead lines and to the public in general." A component of the Proposed Project is to remediate the identified discrepancies—caused by the increase in MW power flow associated with the Proposed Project—along the Eldorado-Lugo, Eldorado-Mohave, and Lugo-Mohave 500 kV Transmission Lines in order to ensure compliance with CPUC G.O. 95 in California and the NESC in Nevada.

Continue to provide safe and reliable electrical service

Under the Federal Energy Regulatory Commission (FERC), NERC, WECC, and CPUC rules, guidelines, and regulations, SCE has the responsibility to ensure that electrical transmission, subtransmission, and distribution systems have sufficient capacity to maintain safe, reliable, and adequate service to customers.

The safety and reliability of the systems must be maintained under normal conditions when all facilities are in service. They must also maintained under abnormal conditions when facilities are out of service due to equipment or line failures, maintenance outages, or outages that cannot be predicted or controlled and that are caused by weather, earthquakes, traffic accidents, and other unforeseeable events.

Maintain system reliability within the Los Angeles Basin, which is defined as the ENA

Within the existing substations, upgrade of the existing mid-line series capacitors, as well as associated equipment (e.g., circuit breakers, disconnect switches, and conductors) for each of the respective line positions is required to accommodate approved and planned generation projects in California's Ivanpah Valley and imports from renewable resources outside of California. The upgrades are required to accommodate an increase of power flow across each of these transmission lines.

Integration of the mid-line series capacitors is required to increase the compensation[10] across both the Eldorado-Lugo and Lugo-Mohave 500 kV Transmission Lines in order to increase the MW power flow transfer capability.

Without the upgrades, the existing capacity ratings (under both normal and abnormal system conditions) for each of the transmission lines would not be adequate to accommodate an increase of power flow. The increased capacity for each of the series-compensated lines would provide for increased system reliability under both planned and unplanned line outages. SCE's GIP studies are performed to ensure that there is adequate capacity to provide power through the transmission network during peak and off-peak electrical demand periods under normal and abnormal system conditions. This involves determining whether an initiating fault (short-circuit condition) and subsequent loss of electric facilities (e.g., as transmission lines, generators, transformers, bus sections, and circuit breakers) violate system performance requirements specified by the NERC Reliability Standards. Power flow studies of a network of transmission

[10] Compensation" is used to refer to the method by which the MW power flow transfer capability of a transmission line is increased. Compensation is achieved by inserting capacitors (i.e., inserting *capacitive* reactance) in series with a transmission line which counteracts the *inductive* reactance that is inherent to overhead transmission lines. The use of series capacitors results in reducing the overall impedance of a transmission line thereby increasing its MW power flow transfer capability

lines evaluate the specific power flow values that occur on the lines within the network and the power flow values that result are dictated by the electrical demand values of the substations served by the transmission lines, generation sources connected to the network, and the characteristics of the power lines themselves (i.e., impedance of the lines). When studies determine there is insufficient capacity to provide service and prevent overloads from occurring, a project is identified to address the projected overload and stay within specified operating limits under the NERC Reliability Standards. As discussed in Section 2.2, Project Objectives, the Proposed Project was identified as reducing flow that contributed to normal and abnormal system condition overloads in the LADWP transmission system, which was identified during the GIP studies and as part of the CAISO 2012-2013 and 2013-2014 transmission planning cycles.

Increase power flow through the existing Eldorado-Lugo, Eldorado-Mohave, and Lugo-Mohave and 500 kV Transmission Lines for the purpose of increasing the amount of power delivered from California's Ivanpah Valley, Nevada, and Arizona to the ENA through the SCE system in an effort to meet requirements associated with the California RPS

The Proposed Project would provide greater import capability by increasing the capacity of the existing Eldorado-Lugo and Lugo-Mohave 500 kV Transmission Lines, both of which are used to interconnect southern Nevada and Arizona to Southern California. Both of these transmission lines, along with the Eldorado-Mohave 500 kV Transmission Line, are part of a group of transmission lines that are collectively referred to as Path 46 or West of Colorado River. Increasing the series compensation on both the Eldorado-Lugo and Lugo-Mohave 500 kV Transmission Lines would allow for additional power to flow through each line, which is not currently possible without exceeding the existing capacity ratings of each transmission line. To accommodate the additional import capability, an increase of the existing capacity ratings for each transmission line is required.

Reduce SCE's power flow into the LADWP transmission system for the purpose of mitigating power flow overloads under normal and abnormal system conditions

As identified in the CAISO's 2012-2013 and 2013-2014 Transmission Plans, an increase in the compensation levels on both the Eldorado-Lugo and Lugo-Mohave 500 kV Transmission Lines were identified to reduce the amount of MW loop flow into the LADWP transmission system. The Proposed Project would mitigate against previously identified normal and abnormal overloads that were identified on the LADWP transmission system as a result of the renewable generators within the desert area.

Ensure compliance with all applicable reliability planning criteria required by the NERC, WECC, and CAISO

The Proposed Project would comply with applicable criteria required by the NERC, CAISO, and/or WECC. Transmission lines must be planned and constructed in accordance with reliability planning criteria developed by the NERC, WECC, CAISO, and the individual utility. These criteria require that potential outages of transmission lines (both proposed and existing) must be analyzed, and the transmission system must be designed to continue to function if an outage occurs.

The Proposed Project would satisfy applicable reliability planning criteria required by the NERC, WECC, and CAISO by alleviating loading on neighboring utilities under normal and abnormal conditions.

Integrate planned generation resources in order for those facilities to become fully deliverable

The Proposed Project would allow SCE to increase the power transfer capability of the Eldorado-Lugo and Lugo-Mohave 500 kV transmission facilities to enable generation resources located within California's Ivanpah Valley, Southern Nevada, and Northern Arizona that have requested to interconnect to SCE's electrical transmission grid to achieve FCDS. Under orders issued pursuant to Sections 210 and 212 of the Federal Power Act (Title 16 United States Code §§ 824i and 824k) and IAs executed pursuant to the CAISO Fifth Replacement Electronic Tariff, SCE is obligated to interconnect and integrate power generation facilities into its electric system and provide for the level of interconnection service requested.

When an electric generating facility makes an interconnection request, the CAISO evaluates whether transmission line upgrades are needed to safely and reliably satisfy the request. If the CAISO analysis indicates that transmission upgrades are needed, then the necessary upgrades are incorporated into an IA that is entered into by the applicable interconnection customer(s), the utility (e.g., SCE), and the CAISO.

To manage multiple generator interconnection requests that are made for generation resources proposed to be located in the same geographic area, the CAISO and SCE have developed procedures for evaluating "clusters" of generation facilities in a single study based on the Interconnection Queue (i.e., the queue of generators that have requested interconnection within the CAISO controlled system). The CAISO and SCE can, therefore, evaluate a cluster of queued facilities in a single study instead of assessing each facility in a separate study. The CAISO's and SCE's cluster studies are referred to herein as Queue Cluster (QC) Interconnection Studies.[11]

As part of the SCE East of Pisgah (EOP[12]) QC 3 and QC 4 Interconnection Studies (completed together and referred to as the QC3/QC4 Phase II Interconnection Study Report), SCE in conjunction with the CAISO identified the need to increase the compensation on both the Eldorado-Lugo and Lugo-Mohave 500 kV Transmission Lines as part of a Delivery Network Upgrade[13] in order to maintain the reliability of the SCE transmission system, prevent adverse effects on the transmission system of a neighboring utility, and to provide deliverability for the

[11] As directed by the FERC, the CAISO has developed standardized interconnection procedures that govern the process by which generation interconnections are studied and ultimately connected to that portion of SCE's transmission system that is under the operational control of the CAISO. The currently effective, FERC-approved CAISO generator interconnection procedures can be found at: https://www.caiso.com/Documents/AppendixY_GeneratorInterconnectionProceduresForInterconnectionRequests_asof_Mar8_2016.pdf.

[12] EOP refers to the area consisting of the transmission system between the Eldorado and Pisgah Substations and resides within the East of Lugo Area, as defined by the CAISO.

[13] As defined in Appendix A of the CAISO's Fifth Replacement Electronic Tariff: https://www.caiso.com/Documents/AppendixA_Definitions_asof_Jan1_2017.pdf.

projects requesting to interconnect as part of these clusters. The upgrades were identified as needing to be completed in order for projects to achieve FCDS.

Following the completion of the release of the QC 3 and QC 4 Phase II Interconnection Report, which was issued in November 2012, the CAISO completed and issued the CAISO 2012-2013 Transmission Plan. As part of the transmission planning process, the CAISO identifies potential system limitations as well as opportunities for system additions and upgrades to the transmission infrastructure that makes up the CAISO controlled grid based on three main categories: reliability, public policy, and economic. In response to the California RPS, the CAISO amended its tariff to address needed changes, and the FERC approved the CAISO tariff amendments on December 16, 2010. The amended tariff provided changes to the CAISO's transmission planning process, including the introduction of policy-driven transmission solutions for new transmission projects. Policy-driven transmission solutions are those that could be needed to achieve state, municipal, county or federal policy requirements or directives. The tariff changes were initially applied to the CAISO 2012-2013 Transmission Plan followed by the 2013-2014 Transmission Plan. The CPUC and California Energy Commission subsequently sent a letter on March 12, 2012 formally recommending the renewable portfolios for use in the CAISO 2012-2013 transmission planning process and on February 7, 2013 for use in the CAISO 2013-2014 transmission planning process.[14] As a result, the CAISO's transmission planning process considered a range of possible generation scenarios and identified transmission elements needed to meet the State's RPS goals.

As part of the changes to the CAISO's planning process, in the interest of meeting the State's RPS goals, upgrades required to serve renewable resources that either had or were expected to have signed IAs, including the upgrades identified in this Chapter for increased compensation on the Eldorado-Lugo and Lugo-Mohave 500 kV Transmission Lines, were considered as part of the CAISO analysis methodology. Subsequently, the 2012-2013and 2013-2014 Transmission Plans identified and recommended for approval the Eldorado-Lugo and Lugo-Mohave Series Capacitor Upgrades, respectively, as policy-driven transmission solutions since they were identified as being needed by a large quantity of generation projects spread across a large geographic area. Both projects also relieve previously identified deliverability constraints and were recommended for approval as policy-driven upgrades.

Meet the requirements of existing IAs that require the Proposed Project to achieve FCDS for generation facilities

The Proposed Project would allow SCE to meet the requirements of the executed IAs that require the Proposed Project to achieve FCDS. The Proposed Project is also required for generation projects that have applied to interconnect for either FCDS or Partial Capacity Deliverability Status (PCDS) in the SCE East of Lugo and Eastern Areas,[15] beginning with QC 3, that have not yet signed an IA. The CAISO transmission planning process demonstrates that the existing

[14] Please refer to the following link for further information: www.caiso.com/Documents/2013-2014RenewablePortfoliosTransmittalLetter.pdf.

[15] East of Lugo consists of 500 kV, 230 kV, and 115 kV transmission systems from Lugo Substation to Eldorado Substation. The eastern area includes 500 kV, 230 kV, and 115 kV transmission systems from Devers Substation to Palo Verde Substation in Arizona; a 230 kV transmission system from Devers Substation to Julian Hinds Substation; and a 161 kV transmission system from Eagle Mountain Substation to Blythe Substation.

Eldorado-Lugo and Lugo-Mohave 500 kV Transmission Lines are inadequate to meet the level of service needed to integrate existing and proposed generation interconnection requests identified in Table 2-1: Interconnection Requests that Require Completion of the Proposed Project. As such, the CAISO 2012-2013 and 2013-2014 Transmission Plans identify the Proposed Project as needed to safely and reliably accommodate the FCDS of the projects listed in Table 2-1: Interconnection Requests that Require Completion of the Proposed Project.

Meet Proposed Project needs while minimizing environmental impacts

CEQA and the CEQA Guidelines (Title 14 California Code of Regulations § 15000 et seq.) require that an environmental impact report must describe a reasonable range of alternatives to a proposed project, or the location of the proposed project that would feasibly attain most of the basic objectives of the project, but would avoid or substantially lessen any of the significant effects of the project. CEQA Guidelines Section 15126.6(d) requires that sufficient information about each alternative must be included to allow meaningful evaluation and analysis.

Although several alternative mid-line series capacitor locations were considered, in addition to two electrical system alternatives, the Proposed Project described in this PEA was ultimately selected because it is technically feasible and would result in the fewest potential environmental impacts, while still meeting the majority of the Proposed Project objectives. The alternatives are described further in Chapter 5, Detailed Discussion of Significant Impacts.

Design and construct the Proposed Project in conformance with SCE's approved engineering, design, and construction standards for substation, transmission, subtransmission, and distribution system projects

SCE strives to construct mid-line series capacitors and telecommunications infrastructure in a consistent manner, meaning that the designs and operating requirements for each type of facility are consistent and familiar to the field personnel that are required to operate and maintain the facilities. These standards are developed and revised as necessary based on experience to ensure that SCE constructs safe, reliable, and operable facilities on a consistent basis. In addition, the consistent design ensures that upgrades to existing facilities are completed in a manner that provides the lowest total cost of ownership. SCE's standards provide a structure to evaluate the merits of proposed changes based on safety, reliability, construction, operations, maintenance, and cost. As compared to the two system alternatives considered by SCE, the Proposed Project would be the most cost-effective solution that can both meet SCE's standards and achieve Proposed Project objectives. The alternatives are described further in Chapter 5, Detailed Discussion of Significant Impacts.

Table 2-1: Interconnection Requests that Require Completion of the Proposed Project

CAISO Queue Position	CAISO Study	Technology	Project Size (MW)[16]	Project Status
643AE	QC 3	Photovoltaic	150	IA – Executed In Service Date: 9/1/2021
855	QC 4	Photovoltaic	92	IA – Executed Commenced Commercial Operation: 12/2/2016
993/994	QC 6	Photovoltaic	100	IA-Executed In-Service Date: 1/1/2020
1064	QC 7	Energy Storage	44	IA – Executed In-Service Date: 7/30/2019
1192	QC 8	Hybrid	350	Parked
1196	QC 8	Photovoltaic	400	IA-Executed In Service Date: 12/1/2020
1198	QC 8	Photovoltaic	150	Parked
1200	QC 8	Photovoltaic	200	Parked
1218	QC 8	Photovoltaic	400	Parked
1295	QC 9	Energy Storage	400	Phase II Study Complete
1302	QC 9	Hybrid	213.5	Phase II Study Complete
Q1335	QC9	Photovoltaic	105.2	Phase II Study Complete
WDAT 1384	QC9	Photovoltaic	50	Phase II Study Complete
1339	QC 9	Photovoltaic	300	IA-Under Development
1347	QC 9	Wind	300	IA-Under Development
1400	QC 10	Photovoltaic	266.5	Phase II Study in Progress
1401	QC 10	Photovoltaic	69.26	Phase II Study in Progress
1402	QC 10	Hybrid	3200	Phase II Study in Progress
1403	QC 10	Hybrid	450	Phase II Study in Progress
1404	QC 10	Hybrid	150	Phase II Study in Progress

[16] The project sizes are measured at the point of interconnection.

CAISO Queue Position	CAISO Study	Technology	Project Size (MW)[16]	Project Status
1405	QC 10	Hybrid	450	Phase II Study in Progress
1406	QC 10	Hybrid	675	Phase II Study in Progress
1417	QC 10	Photovoltaic	100	Phase II Study in Progress
WDAT 1490	QC 10	Photovoltaic	56	Phase II Study in Progress

Source: CAISO (2018)

2.3 References

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Chapter 3
Project Description

This chapter provides a detailed description of Southern California Edison Company's (SCE's) Eldorado-Lugo-Mohave Series Capacitor Project (Proposed Project).

3.1 Project Location

The Proposed Project is located in California and Nevada, within the Mojave Basin and Range. The Proposed Project would extend northeast from Lugo Substation (located in San Bernardino County, California) to Eldorado Substation (located in the City of Boulder City, Nevada) and Mohave Substation (located in Clark County, Nevada), and from Mohave Substation northwest to Eldorado Substation, as depicted in Figure 3-1: Proposed Project Overview Map. Portions of the Proposed Project would also cross the City of Hesperia, California, the unincorporated community of Lucerne Valley in California, as well as the unincorporated communities of Searchlight and Laughlin in Nevada. The Proposed Project would also cross lands under the jurisdiction of the Bureau of Land Management (BLM), the National Park Service (NPS), the Bureau of Reclamation, and the Department of Defense, as well as land managed by the California State Lands Commission and the Nevada State Parks. The associated components of the Proposed Project would be located in the following locations:

- Construction of two new 500 kilovolt (kV) mid-line series capacitors—the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor—under the Eldorado-Lugo and Lugo-Mohave 500 kV Transmission Lines, respectively, near Pisgah Substation in unincorporated San Bernardino County, California

- Correction of 16 overhead clearance discrepancies[1] caused by the increase in megawatt (MW) capacity associated with the Proposed Project, which would require the relocation, replacement, or modification of existing transmission, subtransmission, and distribution facilities, including minor grading along the Eldorado-Lugo, Eldorado-Mohave, and Lugo-Mohave 500 kV Transmission Lines within San Bernardino County, California, and Clark County, Nevada

- Installation of distribution facilities in the vicinity of the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor sites to provide station light and power in unincorporated San Bernardino County, California

[1] SCE has defined "discrepancies" as potential clearance problems between an energized conductor and its surroundings, such as the structure, another energized conductor on the same structure, a different line, or the ground. SCE has identified approximately 16 discrepancies along the Eldorado-Lugo, Eldorado-Mohave, and Lugo-Mohave 500 kV Transmission Lines where minor grading or relocation, replacement, or modification of transmission, subtransmission, or distribution facilities are needed to address California Public Utilities Commission (CPUC) General Order (G.O.) 95 and National Electrical Safety Code (NESC) overhead clearance requirements. Discrepancy locations are shown in Appendix E: Detailed Route Map.

- Installation of distribution facilities to provide station light and power to three proposed fiber optic repeater sites in unincorporated San Bernardino County, California

- Installation of telecommunications facilities to connect the Proposed Project to SCE's existing telecommunications system, including the following:

  - Installation of overhead and underground fiber optic cable to connect the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor, including installation of three fiber optic repeater sites within to the Lugo-Mohave 500 kV Transmission Line right-of-way (ROW), within unincorporated San Bernardino County, California

  - Removal of an existing overhead ground wire (OHGW), modification of existing towers to support optical ground wire (OPGW), and installation of approximately 235 miles of overhead OPGW, which includes approximately 3 miles of underground fiber optic on SCE's existing Eldorado-Mohave and Lugo-Mohave 500 kV Transmission Lines

  - Installation of fiber optic cable within the existing Lugo, Mohave, and Eldorado Substations

- Modifications within the existing Lugo, Mohave, and Eldorado Substations, within San Bernardino County, California; Clark County, Nevada; and the City of Boulder City, Nevada, including the following:

  - Upgrade of the existing series capacitor banks at Eldorado and Lugo Substations
  - Installation of new terminal equipment at Eldorado, Lugo, and Mohave Substations
  - Replacement of the existing series capacitor bank at Mohave Substation
  - Removal of two existing tubular steel poles (TSPs) and installation of two new TSPs at Lugo Substation

Geographical Location: Proposed Project activities would be located in San Bernardino County, California and Clark County, Nevada. A detailed description of the geographical location of the associated components is provided in the following paragraphs.

Construction of the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor would be located in unincorporated San Bernardino County, California. The Newberry Springs Series Capacitor site would be located south of the BNSF Railway and approximately 1,200 feet northeast of Pisgah Substation, within the Eldorado-Lugo 500 kV Transmission Line ROW. The Ludlow Series Capacitor site would be located approximately 1.4 miles east of Pisgah Substation, within the existing Lugo-Mohave 500 kV Transmission Line ROW, and north of Interstate 40 and United States (U.S.) Route 66.

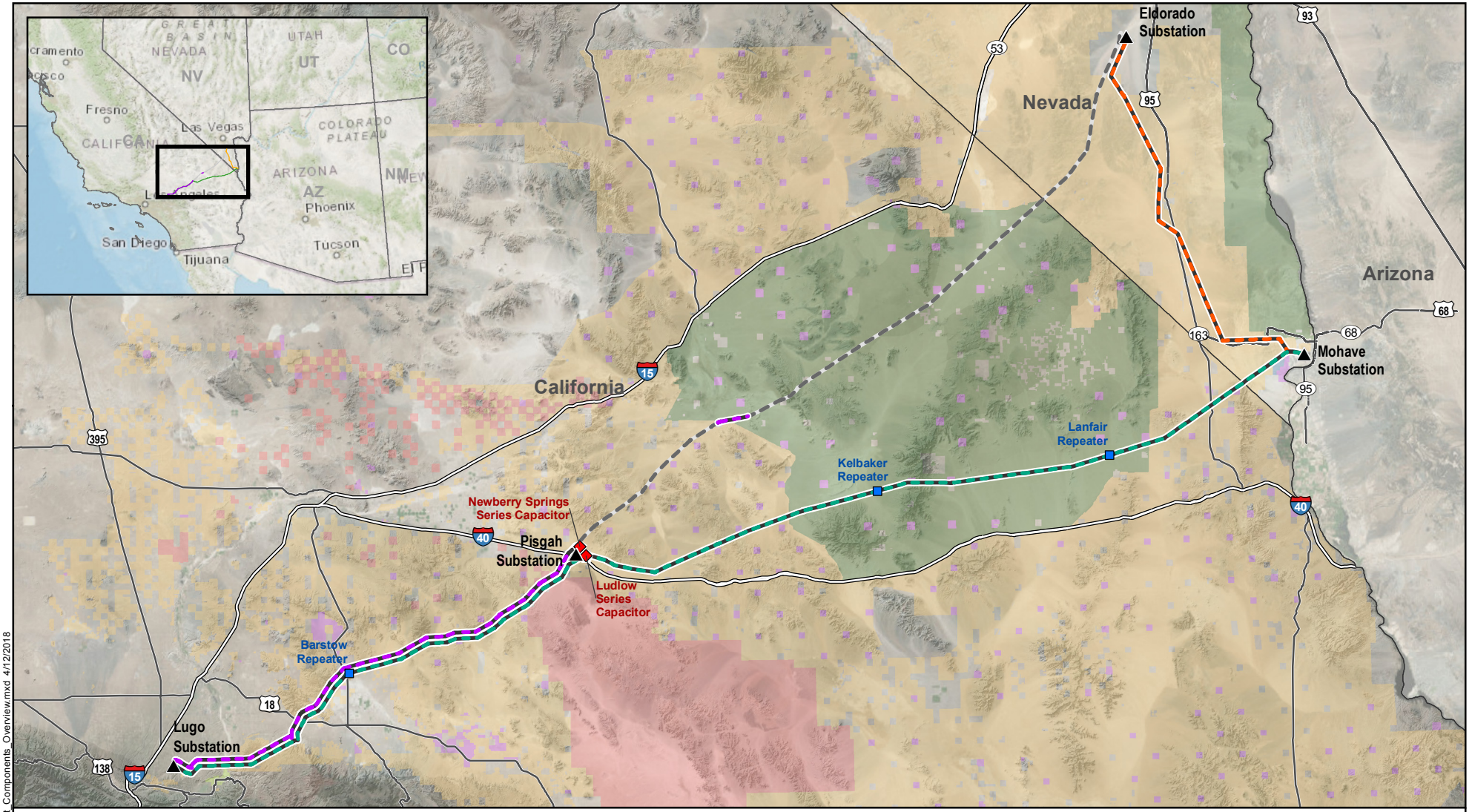

Figure 3-1: Proposed Project Overview Map

Eldorado-Lugo-Mohave Series Capacitor Project

- Existing Substation
- Proposed Mid-Line Capacitor Location
- Proposed Fiber Optic Repeater Location
- Eldorado - Lugo, Proposed Work
- Eldorado - Mohave 500 kV Transmission Line
- Lugo - Mohave 500 kV Transmission Line
- Trasmission Outside Project

Land Administration

- County Park
- Bureau of Reclamation
- Bureau of Land Management
- Military
- National Park Service
- Other State Park
- Interstate
- State Highway/US Highway

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At approximately 12 locations along the Eldorado-Lugo, Eldorado-Mohave, and Lugo-Mohave 500 kV Transmission Lines, transmission, subtransmission, and/or distribution facilities would be relocated, replaced, or modified to address 14 potential overhead clearance discrepancies. At the two remaining locations, minor grading would correct two overhead clearance discrepancies. Appendix E: Detailed Route Map shows the location of each potential discrepancy work area and Attachment 3-A: Discrepancy Work Areas provides detailed descriptions of the proposed work. In the vicinity of the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor sites, distribution facilities would be installed to provide station light and power to the mid-line series capacitors in unincorporated San Bernardino County, California. In addition, distribution facilities would be installed to provide station light and power to three proposed fiber optic repeater sites in unincorporated San Bernardino County. OPGW would be installed on SCE's existing Eldorado-Mohave and Lugo-Mohave 500 kV Transmission Lines. From Lugo Substation (located in San Bernardino County, California) to Mohave Substation (located in Clark County, Nevada), approximately 173 miles of OPGW would be installed on the Lugo-Mohave 500 kV Transmission Line, and approximately 3 miles of underground fiber optic cable would be installed within existing SCE ROWs and public ROW where SCE is in franchise. OPGW would be installed on approximately 59 miles of the Eldorado-Mohave 500 kV Transmission Line, in existing ROW from Mohave Substation to Eldorado Substation, including approximately 700 feet of underground fiber optic cable within the substation (located in the City of Boulder City, Nevada).

Installation of telecommunications facilities to connect the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor to SCE's existing system would include installation of three fiber optic repeater sites in the Lugo-Mohave 500 kV Transmission Line ROW, which is located within unincorporated San Bernardino County, California. In addition, the Proposed Project would include the installation of telecommunications lines within the existing Lugo, Mohave, and Eldorado Substations.

The Proposed Project would require minor internal modifications at three existing SCE substations—Lugo Substation (located in unincorporated San Bernardino County, California), Mohave Substation (located in Clark County, Nevada), and Eldorado Substation (located in the City of Boulder City, Nevada).

General Land Use: Federal lands constitute a majority of the land area in the vicinity of the Proposed Project, including lands under the jurisdiction of the BLM, NPS, the Bureau of Reclamation, and Department of Defense. The Proposed Project area is generally characterized by undeveloped and open lands, utilities and infrastructure, and some low-density residential land uses in San Bernardino and Clark Counties.

The unincorporated area of San Bernardino County in the vicinity of the Proposed Project is largely managed by the BLM and NPS. The area surrounding the existing Lugo Substation to the north is mostly residential development. The remaining portions of San Bernardino County (i.e., in the vicinity of the Eldorado-Lugo and Lugo-Mohave 500 kV Transmission Lines) are mostly undeveloped and open lands, with some low-density residential and agricultural uses.

Portions of the Proposed Project are located within the City of Hesperia, California, which is bordered to the west by unincorporated areas of San Bernardino County, to the north by the City

of Victorville, to the east by the Town of Apple Valley, and to the south by unincorporated areas of San Bernardino County and San Bernardino National Forest. The City of Hesperia contains a mix of residential, agricultural, industrial, and commercial uses. The area surrounding the Lugo-Mohave 500 kV Transmission Line is mostly undeveloped, with residential uses and public facilities to the north.

The eastern portion of the Proposed Project is located in undeveloped, open lands in southern Clark County, Nevada. The Eldorado-Mohave and Lugo-Mohave 500 kV Transmission Lines traverse Clark County in mostly BLM-managed land and the unincorporated communities of Searchlight and Laughlin. Clark County is bordered to the north by Lincoln County, Nevada; to the south and east by Mohave County, Arizona; and to the west by San Bernardino County, California.

The City of Boulder City is surrounded by unincorporated Clark County and the City of Henderson, Nevada to the northwest. The Eldorado-Mohave 500 kV Transmission Line and Eldorado Substation are located in the southern half of the City of Boulder City in the Eldorado Valley area. Land uses in this portion of the Proposed Project are dedicated to energy resources and open space. The northern portion of the City of Boulder City is composed of residential, commercial, and open space land uses.

Property Description: The majority of the Proposed Project would be constructed within existing SCE ROWs, or public ROWs where SCE has existing franchise agreements. However, upon final engineering and Proposed Project approval, acquisition of new land rights would be required for the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor and/or fiber optic repeater sites, where necessary. A more detailed discussion of ROW requirements is provided in Section 3.6, Right-of-Way Requirements.

3.2 Existing System

The Proposed Project would serve the Electrical Needs Area (ENA) of the entire Los Angeles Basin. The Los Angeles Basin, in the context of transmission facilities, consists of SCE-owned 500 kV and 220 kV facilities that serve major metropolitan areas in Orange, Riverside, San Bernardino, Los Angeles, Ventura, and Santa Barbara Counties. The boundary of the Los Angeles Basin is marked by the Vincent, Lugo, and Valley 500 kV Substations and the San Onofre 220 kV Substation, as depicted in Figure 1-1: Electrical Needs Area in Chapter 1, PEA Summary.[2] The existing and proposed system configurations are depicted in Figure 3-2: Existing and Proposed System Map. A schematic diagram of the existing and proposed system configurations is shown in Figure 3-3: Existing and Proposed System Schematic.

[2] The San Onofre Nuclear Generating Station, which had an installed capacity of 2,246 MW, was retired in 2013.

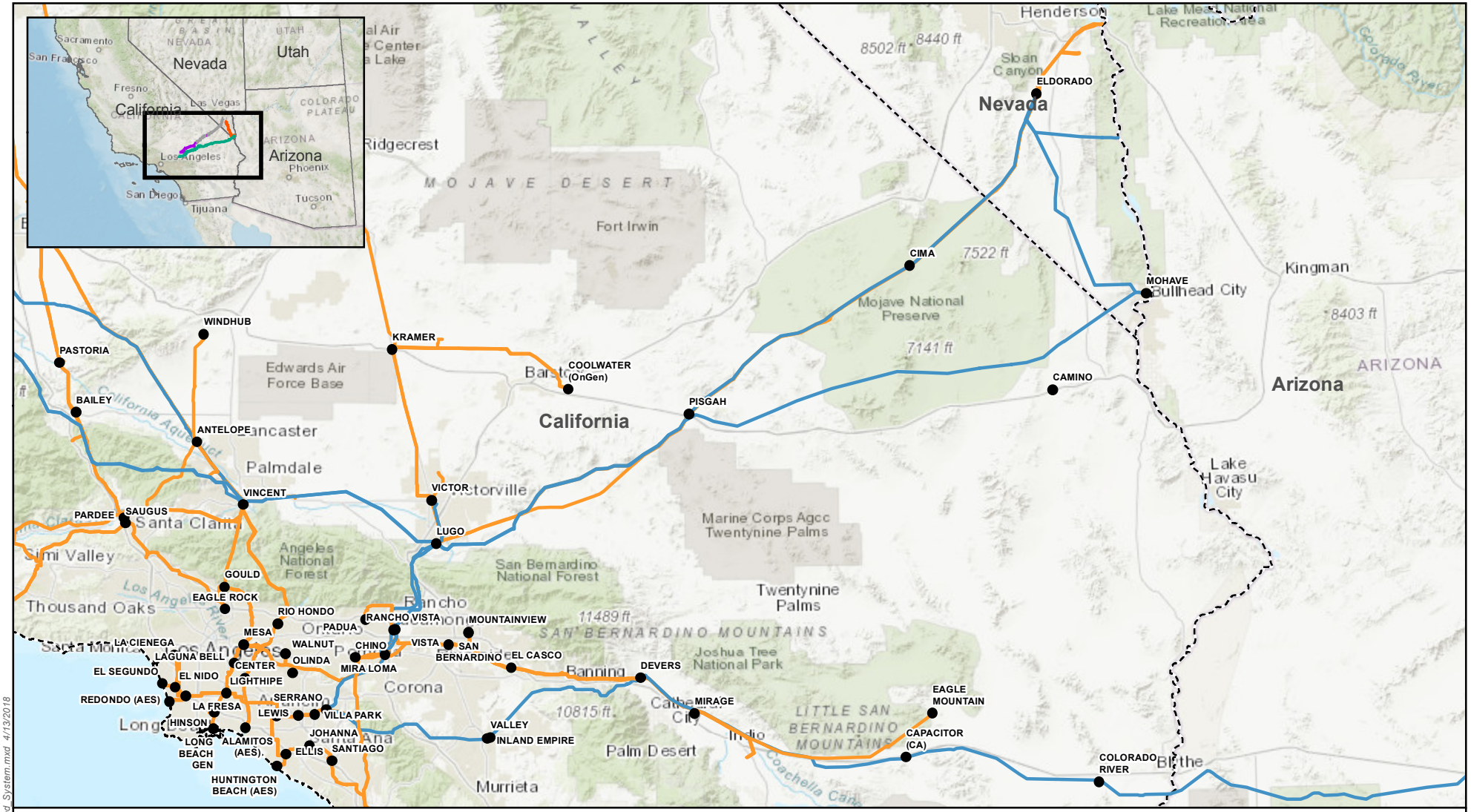

Figure 3-2: Existing and Proposed System Map — **Eldorado-Lugo-Mohave Series Capacitor Project**

- Existing Substation
- State Boundary

Existing Major Transmission

- 220 kV
- 500 kV

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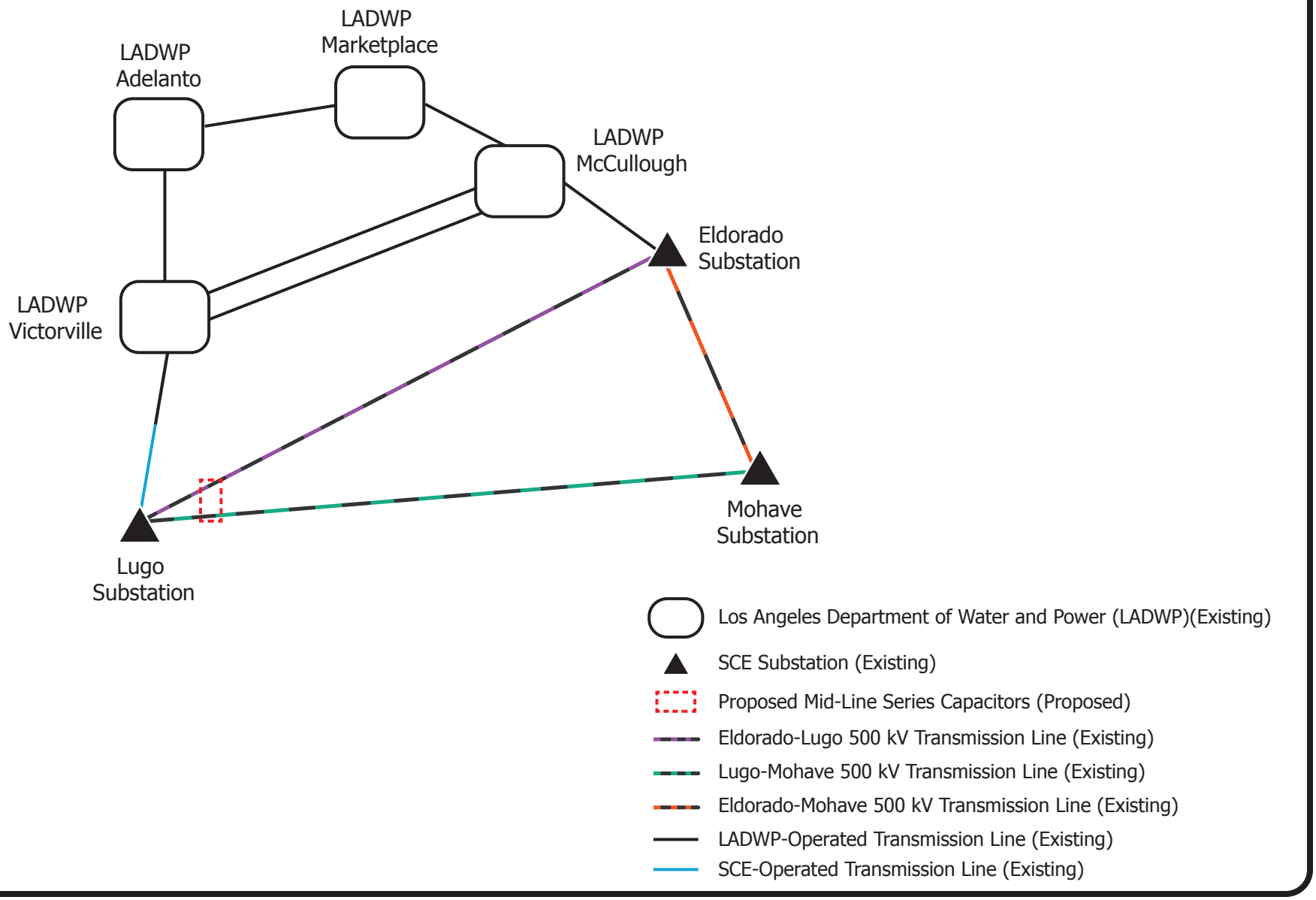

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Figure 3-3: Existing and Proposed System Schematic

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3.3 Project Objectives

As described further in Chapter 2, Project Purpose and Need and Objectives, the Proposed Project is being proposed to meet the following objectives:

- Meet the planned in-service date of June 2020 in an effort to meet the requirements as outlined and required by the California Renewables Portfolio Standard (RPS) for SCE to serve at least 33 percent of its retail load with renewable energy by 2020[3]
- Ensure compliance with CPUC G.O. 95 and the NESC
- Continue to provide safe and reliable electrical service
- Maintain system reliability within the Los Angeles Basin, which is defined as the ENA
- Increase power flow through the existing Eldorado-Lugo, Eldorado-Mohave, and Lugo-Mohave 500 kV Transmission Lines for the purpose of increasing the amount of power delivered from California's Ivanpah Valley, Nevada, and Arizona to the ENA through the SCE system in an effort to meet requirements associated with the California RPS
- Reduce SCE's power flow into the Los Angeles Department of Water and Power transmission system for the purpose of mitigating power flow overloads under normal and abnormal system conditions
- Ensure compliance with all applicable reliability planning criteria required by the North American Electric Reliability Corporation, Western Electricity Coordinating Council, and California Independent System Operator (CAISO)
- Integrate planned generation resources in order for those facilities to become fully deliverable[4]
- Meet the requirements of existing Interconnection Agreements that require the Proposed Project to achieve FCDS for generation facilities
- Meet Proposed Project needs while minimizing environmental impacts
- Design and construct the Proposed Project in conformance with SCE's approved engineering, design, and construction standards for substation, transmission, subtransmission, and distribution system projects

[3] The California RPS requires investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 33 percent of total procurement by 2020. The CPUC implements and administers RPS compliance rules for California's retail sellers of electricity. SCE's current renewable procurement status percentages can be found on the CPUC's website (http://www.cpuc.ca.gov/RPS_Homepage/).

[4] A generating facility is referred to as being "fully deliverable" once it has achieved Full Capacity Deliverability Status (FCDS).

3.4 Proposed Project

The main activity needed to meet the Proposed Project objectives is the construction of two new 500 kV mid-line series capacitors—the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor. The proposed mid-line series capacitors would each be located on an approximately 1.8-acre site within the Eldorado-Lugo and Lugo-Mohave 500 kV Transmission Line ROWs. Additional Proposed Project components are discussed in the subsections that follow.

SCE currently operates various 500 kV transmission lines, 220 kV transmission lines, 115 kV subtransmission lines, 12 kV distribution lines, telecommunications lines, and a substation in the vicinity of the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor. As part of the Proposed Project, SCE would connect the proposed mid-line series capacitors to SCE's existing system by installing transmission interface, distribution facilities, and telecommunications facilities. In addition, the Proposed Project involves the correction of 16 overhead clearance discrepancies, which would require the relocation, replacement, or modification of existing transmission, subtransmission, and distribution facilities—as well as minor grading—along the Eldorado-Lugo, Eldorado-Mohave, and Lugo-Mohave 500 kV Transmission Lines. The Proposed Project would also include the installation of approximately 235 miles of OPGW, including approximately 3 miles of underground fiber optic on the Eldorado-Mohave and Lugo-Mohave 500 kV Transmission Lines. Lastly, the Proposed Project would include modifications within the existing Lugo, Mohave, and Eldorado Substations.

The Proposed Project components are shown on Appendix E: Detailed Route Map, which includes the following elements:

- Construct two new 500 kV mid-line series capacitors (i.e., the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor) and associated equipment
- Relocate, replace, or modify existing transmission, subtransmission, and distribution facilities at approximately 12 locations along the Eldorado-Lugo, Eldorado-Mohave, and Lugo-Mohave 500 kV Transmission Lines to address 14 potential overhead clearance discrepancies
- Perform minor grading at two discrepancy locations along the Lugo-Mohave 500 kV Transmission Line
- Extend or reroute approximately 2 miles of overhead and approximately 700 feet of underground 12 kV distribution circuits to provide station light and power to the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor (the distribution poles are supporting the overhead telecommunication facilities on the same route)
- Install distribution facilities to provide station light and power to three proposed fiber optic repeater sites

- Install approximately 235 miles of OPGW (approximately 59 miles on the Eldorado-Mohave 500 kV Transmission Line, approximately 173 miles on the Lugo-Mohave 500 kV Transmission Line, including approximately 3 miles of underground telecommunications facilities in the vicinity of Mohave Substation)

- Modify the ground wire peak of existing suspension towers used as splice locations for the OPGW work; some of these towers would also require minor modifications to the steel in the tower body

- Install approximately 2 miles of overhead and approximately 500 feet of underground telecommunications facilities to connect the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor to SCE's existing system as one communication path (the telecommunications facilities would share the same poles with overhead distribution)

- Install approximately 2 miles of underground telecommunications facilities to connect the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor to SCE's existing system as a second communication path

- Install underground telecommunications facilities from existing transmission structures to three fiber optic repeater sites—Barstow, Kelbaker, and Lanfair—within the Lugo-Mohave 500 kV Transmission Line ROW

- Install approximately 2,000 feet of underground telecommunications facilities within the existing Lugo, Mohave, and Eldorado Substations

- Perform modifications within the existing Lugo Substation on the existing series capacitors and install new terminating equipment; remove two existing TSPs within the substation and install two new TSPs within the substation on the Eldorado and Mohave 500 kV Transmission Lines

- Perform modifications within the existing Eldorado Substation on the existing series capacitors and upgrade the terminal equipment on the Lugo 500 kV Transmission Line

- Replace existing series capacitors on the Lugo 500 kV Transmission Line, and install new terminal equipment on the Eldorado and Lugo 500 kV Transmission Lines at the existing Mohave Substation

This project description is based on planning-level assumptions. Exact details would be determined following completion of final engineering; identification of field conditions; availability of labor, material, and equipment; and compliance with applicable environmental and permitting requirements.

Additionally, as it relates to each of the Proposed Project components, this chapter utilizes conservative ground disturbance assumptions based on preliminary engineering to estimate surface area disturbance. This expanded surface area disturbance is located within existing SCE fee-owned properties, ROWs, franchise areas, and/or properties to be acquired within the Proposed Project area provided to ensure that the environmental analysis included in this

Proponent's Environmental Assessment sufficiently analyzes the potential environmental impacts of conservative ground disturbance assumptions. The actual surface area disturbance is expected to be reduced following completion of final engineering.

3.4.1 Project Capacity

The Proposed Project would increase operating capacity in the Desert Area on the Eldorado-Lugo, Eldorado-Mohave, and Lugo-Mohave 500 kV Transmission Lines, allowing for additional power flow into the Los Angeles Basin area (also defined as the ENA). The Proposed Project would provide for a capacity increase from 1,610 megavolt-ampere (MVA)[5] to 2,598 MVA on the Eldorado-Lugo 500 kV Transmission Line, 2,078 MVA to 2,598 MVA on the Lugo-Mohave 500 kV Transmission Line, and 1,580 MVA to 2,598 MVA on the Eldorado-Mohave 500 kV Transmission Line. The Proposed Project would not increase the nominal voltage of the Eldorado-Lugo, Lugo-Mohave, or Eldorado-Mohave 500 kV Transmission Lines. The Proposed Project would relieve existing constraints, and would serve the existing and forecasted transmission power to the ENA.

The California RPS was established in 2002 under Senate Bill (SB) 1078, accelerated in 2006 under SB 107, and expanded in 2011 under SB 2. The RPS program requires investor-owned utilities (e.g., SCE), electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources for sale to retail end-use customers to 33 percent by 2020.

3.5 Project Components

The components of the Proposed Project are described in more detail in the following subsections.

3.5.1 Transmission Line

The following subsections provide a description of the transmission line, subtransmission line, telecommunications line, and distribution line work associated with the Proposed Project.

3.5.1.1 500 kV Transmission Line Description

The Proposed Project would involve modifications and/or upgrades to the following existing 500 kV transmission lines:

- Eldorado-Lugo 500 kV Transmission Line
- Eldorado-Mohave 500 kV Transmission Line
- Lugo-Mohave 500 kV Transmission Line

[5] MVA is a unit of measurement that refers to the rated capacity of electrical equipment such as transmission lines, transformers, etc., to carry or transport alternating current (AC). MW refers to the power delivered by the transmission system.

In order to address 16 overhead clearance discrepancies at approximately 14 locations on the Eldorado-Lugo, Eldorado-Mohave, and Lugo-Mohave 500 kV Transmission Lines, the following is proposed:

- Raise Tower M14-T4 on the Eldorado-Lugo 500 kV Transmission Line a minimum of 18.5 feet to address two discrepancies on either side of the tower
- Reframe and lower the structure on the Cottonwood-Savage 115 kV Subtransmission Line and lower the 12 kV distribution line between Towers M20-T2 and M20-T3 to address one discrepancy on the Eldorado-Lugo 500 kV Transmission Line and to address another discrepancy between Towers M20-T3 and M20-T4 on the Lugo-Mohave 500 kV Transmission Line by a minimum of 5 feet
- Raise Tower M33-T1 on the Eldorado-Lugo 500 kV Transmission Line by a minimum of 5 feet
- Modify conductor between Towers M58-T1 and M58-T2 on the Eldorado-Lugo 500 kV Transmission Line
- Raise Tower M63-T3 on the Eldorado-Lugo 500 kV Transmission Line by a minimum of 13.5 feet
- Raise Tower M64-T2 on the Eldorado-Lugo 500 kV Transmission Line by a minimum of 5 feet
- Raise Towers M97-T1 and M97-T2 on the Eldorado-Lugo 500 kV Transmission Line by a minimum of 18.5 feet
- Remove a minimum of 3.5 feet of concrete below conductor between Towers M4-T2 and M4-T3 on the Lugo-Mohave 500 kV Transmission Line
- Reframe and lower the distribution line between Towers M8-T1 and M8-T2 on the Lugo-Mohave 500 kV Transmission Line by a minimum of 5 feet
- Raise Tower M22-T4 on the Lugo-Mohave 500 kV Transmission Line by a minimum of 13.5 feet
- Grade/remove a minimum of 2 feet of berm between Towers M29-T3 and M30-T1 on the Lugo-Mohave 500 kV Transmission Line
- Raise Tower M68-T1 on the Lugo-Mohave 500 kV Transmission Line by a minimum of 8.5 feet
- Modify conductor between Towers M89-T1 and M89-T2 on the Lugo-Mohave 500 kV Transmission Line
- Raise Tower M4-T1 on the Eldorado-Mohave 500 kV Transmission Line by a minimum of 18.5 feet and add lattice steel tower (LST) and foundation modifications as required

In addition, the Proposed Project would include the installation of OPGW on approximately 232 miles of the Eldorado-Mohave and Lugo-Mohave 500 kV Transmission Lines, which would require modification to approximately 59 LSTs, as listed in Attachment 3-B: Tower Modifications Associated with Optical Ground Wire Installation.

A description of this work is provided in Section 3.5.2.1, 500 kV Transmission Poles/Towers and Section 3.5.3.1, Above Ground Installation.

3.5.1.2 115 kV Subtransmission Line Description

The Proposed Project would modify the existing Cottonwood-Savage 115 kV Subtransmission Line.[6] A description of this work is provided in Section 3.5.2.2, Subtransmission Poles/Towers and Section 3.5.3.1, Above Ground Installation.

3.5.1.3 Telecommunications Description

Telecommunications infrastructure would be added to connect the Proposed Project to SCE's telecommunications system and would support Supervisory Control and Data Acquisition, protective relaying, and data transmission, and provide telephone services for the Proposed Project and associated facilities. The Proposed Project would include the following telecommunications line elements:

- Install approximately 2 miles of overhead and approximately 500 feet of underground fiber optic cable to connect the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor (the telecommunication facilities would share the same poles with overhead distribution)
- Install approximately 2 miles of underground telecommunications facilities to connect the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor to SCE's existing system
- Install fiber optic cable within the existing Lugo, Mohave, and Eldorado Substations
- Install approximately 3 miles of underground fiber optic cable from Mohave Substation to existing tower M173-T2 on the Lugo-Mohave 500 kV Transmission Line
- Install approximately 1,400 feet of fiber optic cable on the Eldorado-Mohave 500 kV Transmission Line
- Install underground telecommunications facilities at three fiber optic repeater sites in the Lugo-Mohave 500 kV Transmission Line ROW
- Install two fiber optic repeater facilities within chain-link-fenced areas measuring approximately 70 feet by 35 feet, and one fiber optic repeater facility within a fenced area

[6] This component is included in the list of discrepancies in Section 3.5.1.1, 500 kV Transmission Line Description.

measuring approximately 101 feet by 57 feet within the existing Lugo-Mohave 500 kV Transmission Line ROW, consisting of the following:

- Pre-fabricated building
- Communication manhole
- Distribution manhole
- Emergency generator
- Aboveground propane fuel tank (surrounded by block wall)

A typical site plan for the fiber optic repeater facility is shown in Figure 3-4: Typical Site Plan for the Fiber Optic Repeater Sites; and a typical elevation is shown in Figure 3-5: Typical Elevation for the Fiber Optic Repeater Sites.

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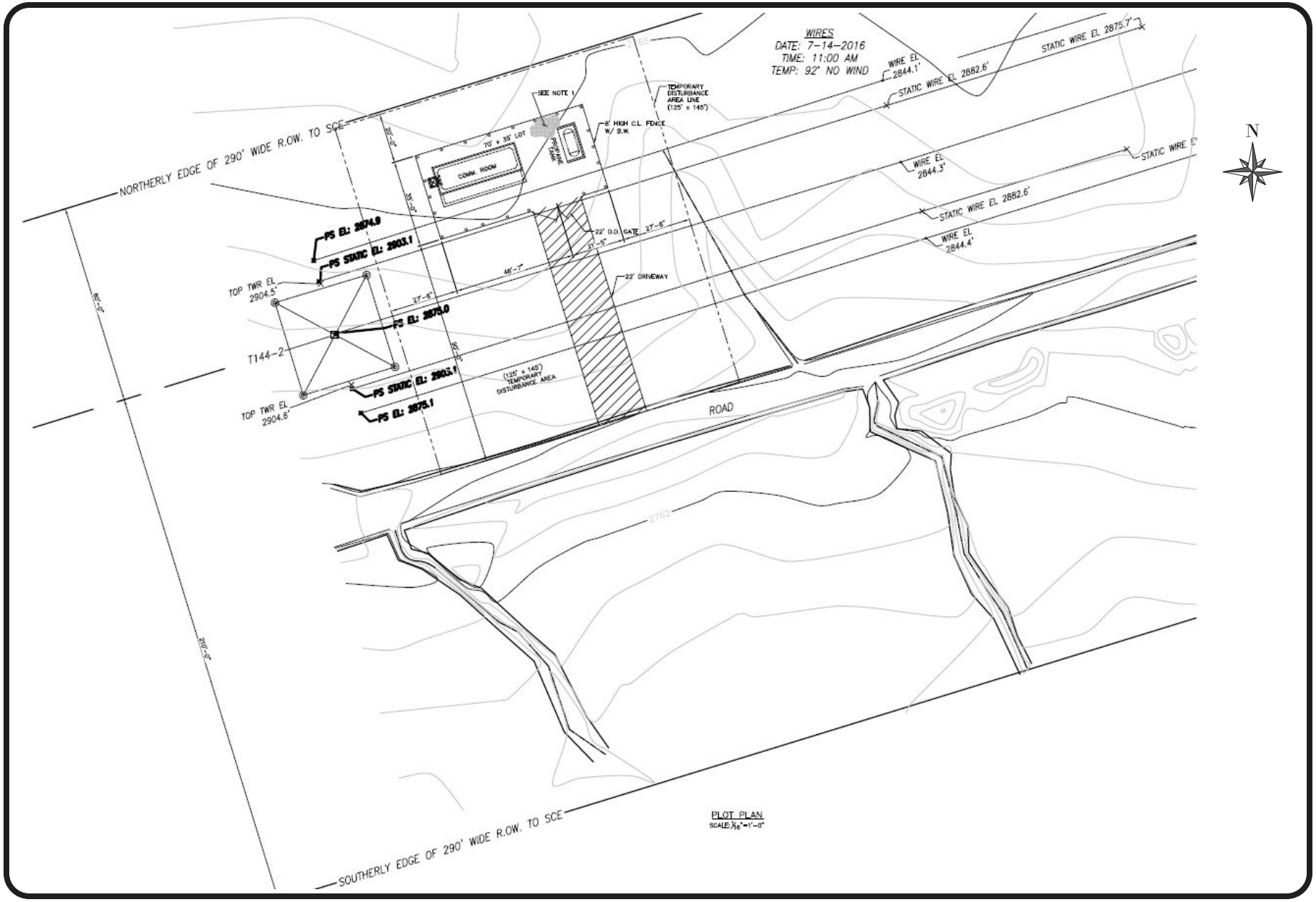

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Figure 3-4: Typical Site Plan for the Fiber Optic Repeater Sites

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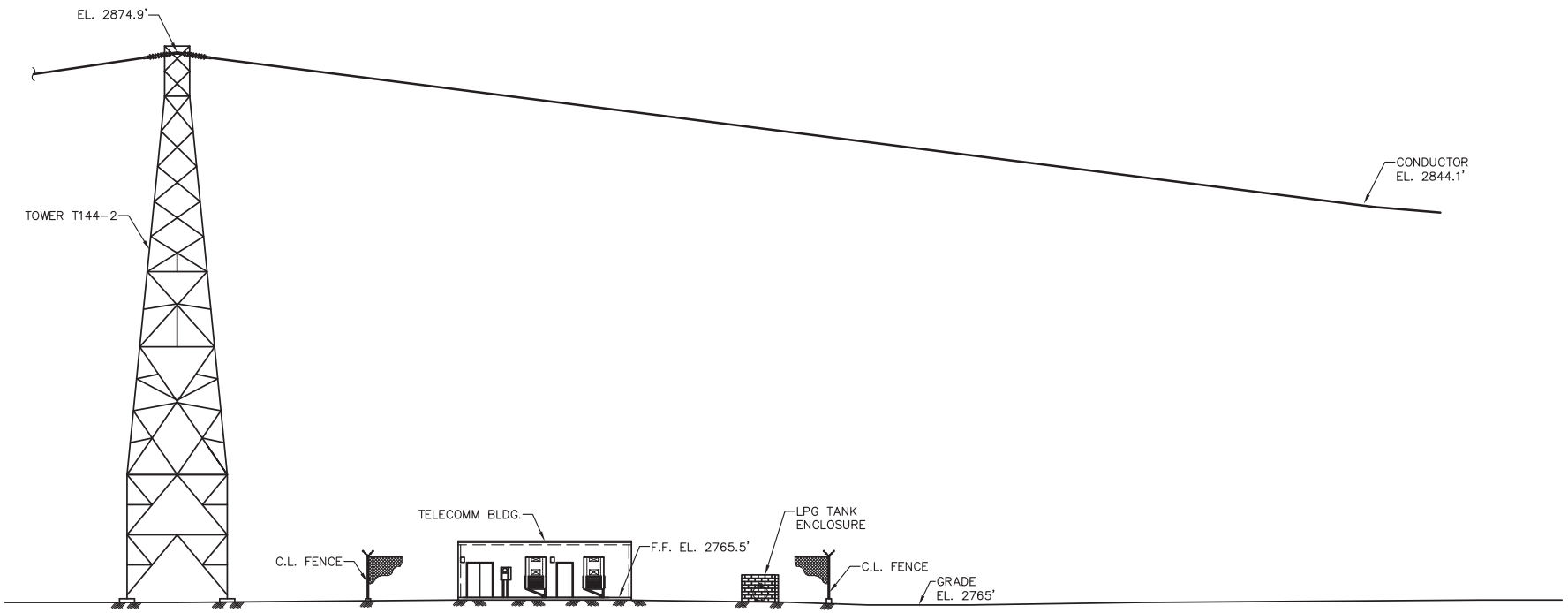

ELEVATION LOOKING NORTH

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Figure 3-5: Typical Elevation for the Fiber Optic Repeater Sites

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3.5.1.4 Distribution Description

The Proposed Project would include the following distribution line elements:

- Extend or reroute approximately 2 miles of overhead and approximately 700 feet of underground 12 kV distribution circuits to provide electrical power to the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor
- Extend approximately 0.5 mile of overhead and 320 feet of underground 12 kV distribution circuits to provide electrical power to the proposed fiber optic repeater sites
- Lower the cross arm by approximately 5 feet on an existing 12 kV distribution pole to address the clearance discrepancy between Towers M8-T1 and M8-T2 on the Lugo-Mohave 500 kV Transmission Line[7]

3.5.2 Poles/Towers

3.5.2.1 500 kV Transmission Poles/Towers

The Proposed Project includes raising nine existing 500 kV towers along the Eldorado-Lugo, Lugo-Mohave, and Eldorado-Mohave 500 kV Transmission Lines to address potential overhead clearance discrepancies. Approximately 59 existing 500 kV towers along the Eldorado-Mohave and Lugo-Mohave 500 kV Transmission Lines would be modified to facilitate the installation of OPGW. Approximately two TSPs would be removed and two TSPs would be installed at Lugo Substation.

The approximate dimensions of the proposed structure types are shown in Figure 3-6: Typical Single-Circuit 500 kV Dead-End Tower, Figure 3-7: Typical Single-Circuit 500 kV Suspension Tower, and Figure 3-8: Typical Tubular Steel Pole; and are summarized in Table 3-1: Typical Transmission Structure Dimensions.

[7] This component is included in the list of discrepancies in Section 3.5.1.1, 500 kV Transmission Line Description.

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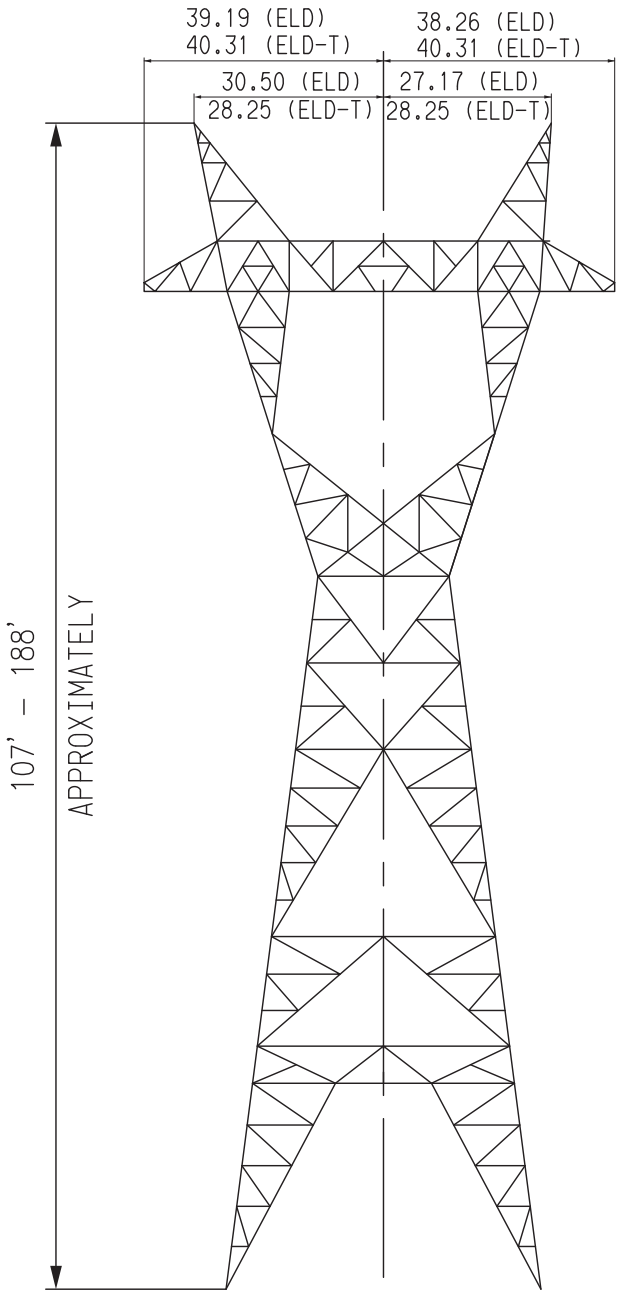

Figure 3-6: Typical Single-Circuit 500 kV Dead-End Tower

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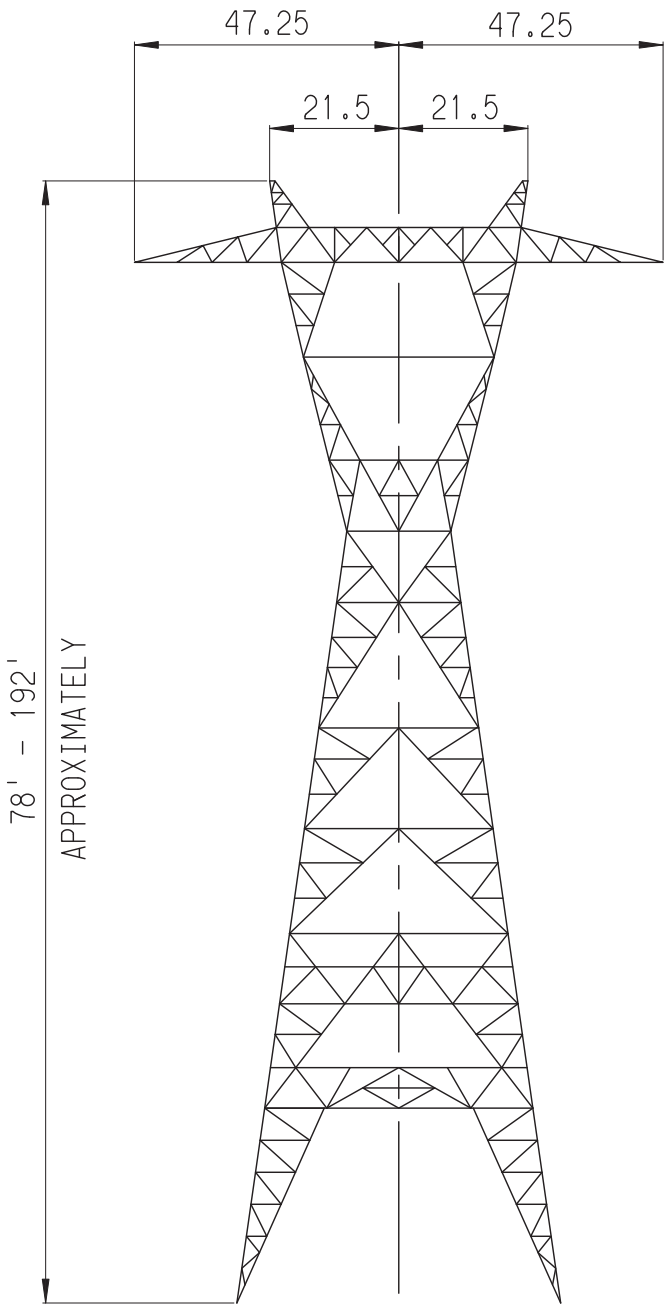

Figure 3-7: Typical Single-Circuit 500 kV Suspension Tower

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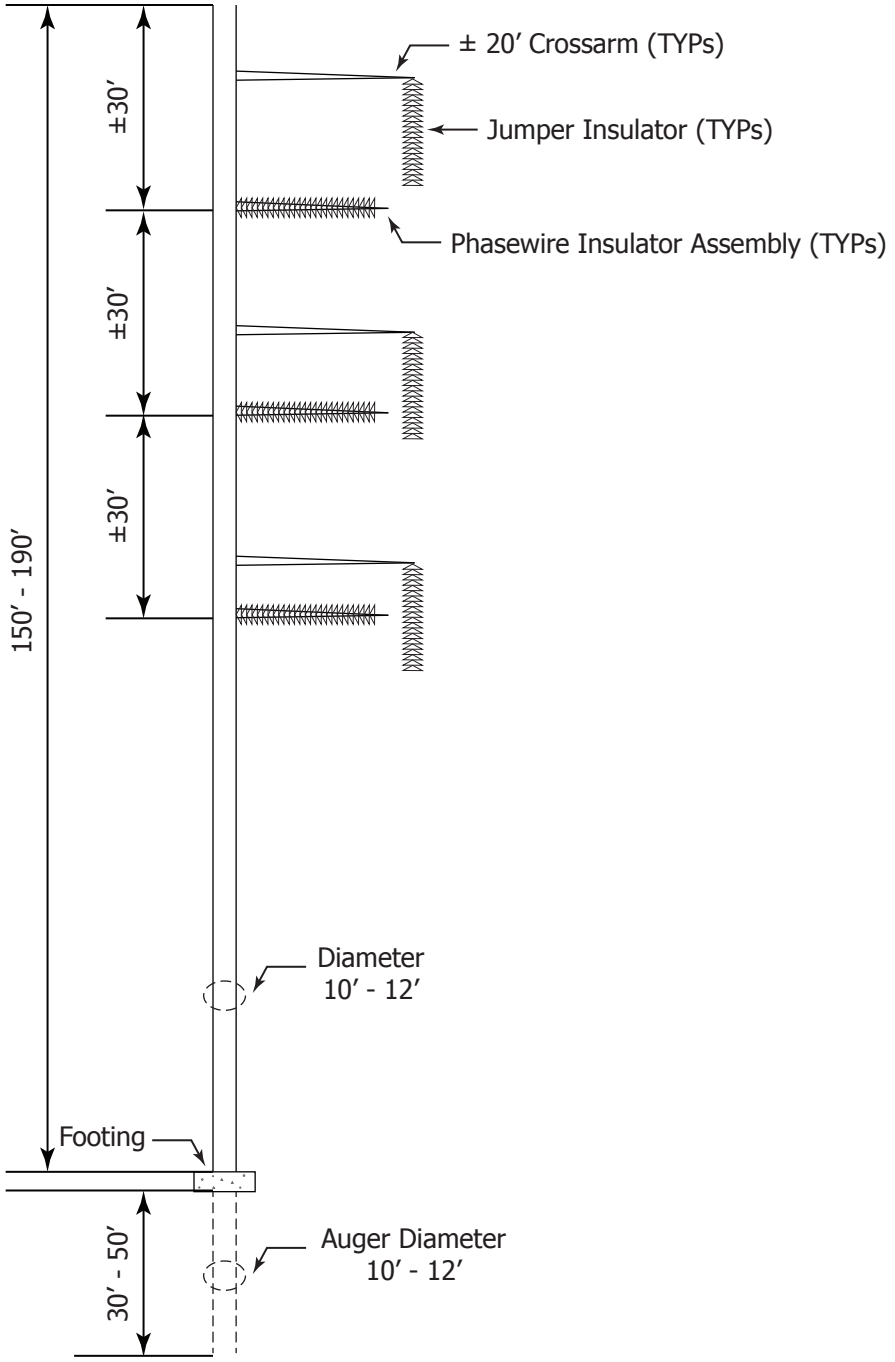

NOT DRAWN TO SCALE

Note:
Dimensions shown are subject to change pending final engineering

Figure 3-8: Typical Tubluar Steel Pole

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Table 3-1: Typical Transmission Structure Dimensions

Type of Structure	Proposed Number of Structures	Height Above Ground (Feet)	Foundation or Pole Diameter (Feet)	Auger Hole Depth (Feet)	Auger Diameter (Feet)
500 kV LST (Raised)	9	110 to 160	N/A	N/A	N/A
500 kV LST (Tower body and peak modifications)	59	N/A	N/A	N/A	N/A
500 kV TSP (New)	2	150 to 190	10 to 12	30 to 50	12 to 15

Note: "N/A" = Not Applicable.

Transmission and distribution facilities would be designed consistent with the *Suggested Practices for Avian Protection on Power Lines: the State of the Art in 2006* (Avian Power Line Interaction Committee [APLIC], 2006) where feasible. Transmission and distribution facilities would also be evaluated for potential collision reduction devices in accordance with *Reducing Avian Collisions with Power Lines: The State of Art in 2012* (APLIC, 2012).

Approximately nine existing LSTs would be modified for the Proposed Project. The LSTs would have a 30-foot by 30-foot to 60-foot by 60-foot disturbance area and extend 110 feet to 160 feet above ground. Each LST requiring foundation modifications would include three 5.5-inch-diameter micropiles on each of the four existing concrete piers that would extend underground approximately 20 feet (depending on a geotechnical analysis), with a 5-foot-diameter, 4-foot-deep concrete cap that would encapsulate the three new micropiles and the existing pier foundation. The LSTs would be all-steel structures with a dulled galvanized finish.

Approximately two TSPs would be used for the Proposed Project. The TSPs would be 10 feet to 12 feet in diameter at the base and extend 150 feet to 190 feet above ground. The TSPs would be attached to concrete foundations that would be 10 to 12 feet in diameter and would extend underground 30 feet to 50 feet with up to approximately 3 feet of concrete visible above ground. Each TSP would use 125 to 325 cubic yards of concrete. The TSPs would be all-steel structures and would have a dulled galvanized finish.

OPGW fiber optic cable would be installed on approximately 855 existing LSTs on the Eldorado-Mohave and Lugo-Mohave 500 kV Transmission Lines. The existing structures range in height from 80 to 250 feet.

SCE would file Federal Aviation Administration (FAA) notifications for Proposed Project structures, as required. SCE would consult with the FAA and implement recommendations, as required. Typical recommendations include, but are not limited to, installation of marker balls on

spans (i.e., catenaries) between structures, and/or installation of lighting on structures. Generally, marking or lighting is recommended by the FAA for those spans or structures that exceed 200 feet above ground level (AGL); however, marking or lighting may be recommended for spans and structures that are less than 200 feet AGL, but located within close proximity to an airport or other high-density aviation environment. The specific requirements for the installation of marker balls or lights are specified in FAA Advisory Circular AC 70/7460-1K; when marker balls are installed, SCE complies with FAA installation recommendations, as follows:

Marker Ball Specifications

- **Size and Color:** The diameter of the markers used on extensive catenary wires across canyons, lakes, rivers, etc., should be not less than 36 inches. Smaller 20-inch spheres are permitted on less extensive power lines or on power lines below 50 feet above the ground and within 1,500 feet of an airport runway end. Each marker should be a solid color, such as aviation orange, white, or yellow.

- **Spacing:** Markers should be spaced equally along the wire at intervals of approximately 200 feet or a fraction thereof. Intervals between markers should be less in critical areas near runway ends (i.e., 30 to 50 feet). They should be displayed on the highest wire or by another means at the same height as the highest wire. Where there is more than one wire at the highest point, the markers may be installed alternately along each wire if the distance between adjacent markers meets the spacing standard. This method allows the weight and wind loading factors to be distributed.

- **Pattern:** An alternating color scheme provides the most conspicuity against all backgrounds. Mark overhead wires by alternating solid colored markers of aviation orange, white, and yellow. Normally, an orange sphere is placed at each end of a line and the spacing is adjusted (not to exceed 200 feet) to accommodate the rest of the markers.

When lighting is installed, SCE complies with FAA installation requirements, as follows:

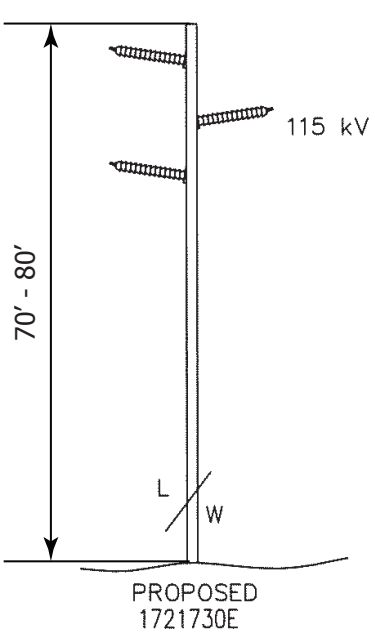
Lighting Specifications

- **Structures 150 feet or less:** Structures 150 feet or less have two steady burning red lights on the top of the structure. The lights are illuminated only during darkness.

- **Structures over 150 feet:** Taller structures that exceed 150 feet have a flashing red beacon on the top of the structure, and two steady burning red lights at mid-height. They are illuminated only during darkness.

3.5.2.2 Subtransmission Poles/Towers

The subtransmission segment of the Proposed Project would reframe two existing subtransmission poles. The approximate dimensions of the existing structures are shown in Figure 3-9: Typical Subtransmission Structures and summarized in Table 3-2: Typical Subtransmission Structure Dimensions.



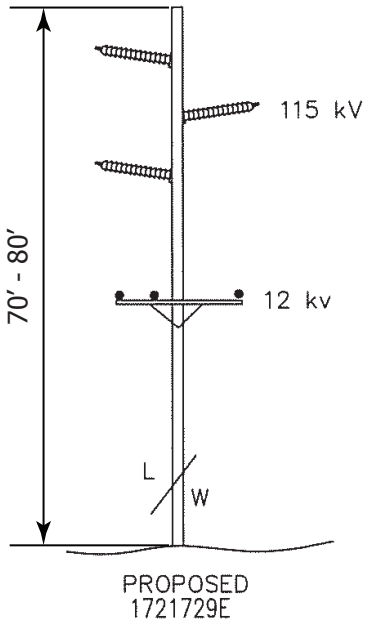


Figure 3-9: Typical Subtransmission Structures

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Table 3-2: Typical Subtransmission Structure Dimensions

Pole Type	Proposed Number of Existing Structures to be Modified	Approximate Height Above Ground (Feet)	Approximate Pole Base Diameter (Feet)	Approximate Auger Hole Depth (Feet)	Approximate Auger Diameter (Feet)
Wood Pole (Modified)	2	70 to 80	2 to 3	N/A	N/A

Approximately two existing wood poles would be modified for the Proposed Project. The wood poles extend 70 to 80 feet above the ground. The diameter of the wood poles are 2 to 3 feet at ground level and taper to the top of the pole.

3.5.2.3 Telecommunications Poles/Towers

The Proposed Project does not include any telecommunications poles or towers.

3.5.2.4 Distribution Poles

The distribution route would utilize a combination of existing wood poles and new wood poles. As shown in Table 3-3: Typical Distribution Structure Dimensions, the wood poles would be 10 to 14 inches in diameter at the base and would extend 40 to 55 feet above the ground. As part of the Proposed Project, down guys would also be required for certain structures, based on final engineering. The acreage of permanent ground disturbance would be provided at that time.

Table 3-3: Typical Distribution Structure Dimensions

Type of Structure	Approximate Number of Structures[8]	Approximate Height Above Ground (Feet)	Approximate Pole Diameter (Inches)	Approximate Auger Hole Depth (Feet)	Approximate Auger Diameter (Feet)
Wood Pole (New)	100	40	10 to 14	5 to 10	1.5 to 2
Wood Pole (Existing/ Modified)	3	40 to 55	10 to 14	N/A	N/A
Wood Pole (Removed)	1	40 to 55	10 to 14	N/A	N/A

[8] The locations of distribution poles are subject to further design, and are therefore not shown in the geographic information system (GIS) data submitted with this Proponent's Environmental Assessment (PEA).

3.5.3 Conductor/Cable

The following subsections describe the above ground and below ground installation of the transmission, subtransmission, telecommunications, and distribution lines.

3.5.3.1 Above Ground Installation

Transmission

The Proposed Project involves existing 500 kV transmission lines located on LSTs. The existing 500 kV transmission lines support a non-specular two-bundled 2,156 kcmil[9] 84/19 stranded "BLUEBIRD" aluminum conductor steel-reinforced (ACSR) conductor. Modification of the existing conductor would occur at one location on the Eldorado-Lugo 500 kV Transmission Line and two locations on the Lugo-Mohave 500 kV Transmission Line to correct potential clearance discrepancies. The existing conductor would be permanently transferred from the span with the clearance discrepancy to an adjacent span.

The proposed insulators would be polymer type, and conductor type would be the same as existing conductors. The approximate required distance from the ground to the lowest conductor would be 33 feet (non-pedestrian) and 28 feet (pedestrian only/not accessible to regular vehicles). The approximate required horizontal separation/distance between conductors would be 30 feet. The Proposed Project includes replacement of the existing OHGW with OPGW, which would be installed on existing structures on the Eldorado-Mohave and Lugo-Mohave 500 kV Transmission Lines to provide protection and to support telecommunications. The approximately 0.75-inch-diameter OPGW would be installed at the top of these structures, which range in height from 80 to 250 feet. The average span length between overhead structures is 350 to 1,850 feet. The OPGW would be installed above the conductor, with a radial clearance of at least 12.5 feet, as required by CPUC G.O. 95. To support OPGW installation, tower modifications would be required.

Subtransmission

To address clearance discrepancies, the Proposed Project would include lowering one existing 115 kV subtransmission line by reconfiguring the cross arms on two existing wood poles to reduce the height of the conductor. This subtransmission line supports a non-specular 336.4 kcmil ACSR conductor. The lowest conductor would be 48 to 54 feet above the ground. The Proposed Project would utilize the existing conductors, and would be designed to meet the CPUC G.O. 95 minimum ground-to-conductor clearance requirements**.**

Telecommunications

Fiber optic cables would be installed overhead and underground. The overhead cable height would be between 20 and 25 feet above the ground and would be 0.579-diameter all-dielectric self-supporting (ADSS) fiber optic cable. The average span length between overhead structures would be 150 feet to 200 feet.

[9] kcmil (1,000 circular mils [cmils]) is a quantity of measure for the size of a conductor; kcmil wire size is the equivalent cross-sectional area in thousands of cmils. A cmil is the area of a circle with a diameter of 0.001 inch.

Distribution

The distribution lines would be installed on existing and new wood poles. Conductor would be approximately 1,000 of underground 1/0 cross-linked polyethylene insulation cable and 1.9 miles of 1/0 ACSR. The lowest cable would be 34 to 47 feet above the ground. The average span length between overhead structures would be 150 feet to 200 feet.

3.5.3.2 Below Ground Installation

Transmission

The Proposed Project does not propose below ground transmission facilities.

Subtransmission

The Proposed Project does not propose below ground subtransmission facilities.

Telecommunications

The Proposed Project includes the installation of approximately 4.3 miles of underground telecommunications cable in new underground duct banks. The newly installed duct banks would measure approximately 2 feet wide and 3 feet deep; and would typically consist of two 5-inch conduits, conduit spacers, and concrete, with a minimum of 30 inches of cover. A 1.25-inch inner-duct would be placed inside the underground structures, and would be followed by the actual placement of the fiber within the inner-duct. In addition, approximately 0.7 mile of existing underground conduit would be utilized. The Proposed Project would utilize new and existing vaults measuring approximately 5 feet wide by 5 feet long by 6 feet deep. The dimensions of the duct banks and distribution vaults are provided in Table 3-4: Underground Structure Dimensions and are depicted in Figure 3-10: Typical Telecommunications Duct Bank. Figure 3-11: Typical Manhole shows a typical manhole utilized for access to underground telecommunications facilities.

Table 3-4: Underground Structure Dimensions

Type of Structure	Approximate Number of Locations	Approximate Width (Feet)	Approximate Length (Feet)	Approximate Depth (Feet)
Telecommunications Vault (New Manholes)	41	5	5	6
Telecommunications Duct Bank	8	2	22,700	3
Distribution Duct Bank	5	2	1,000	4

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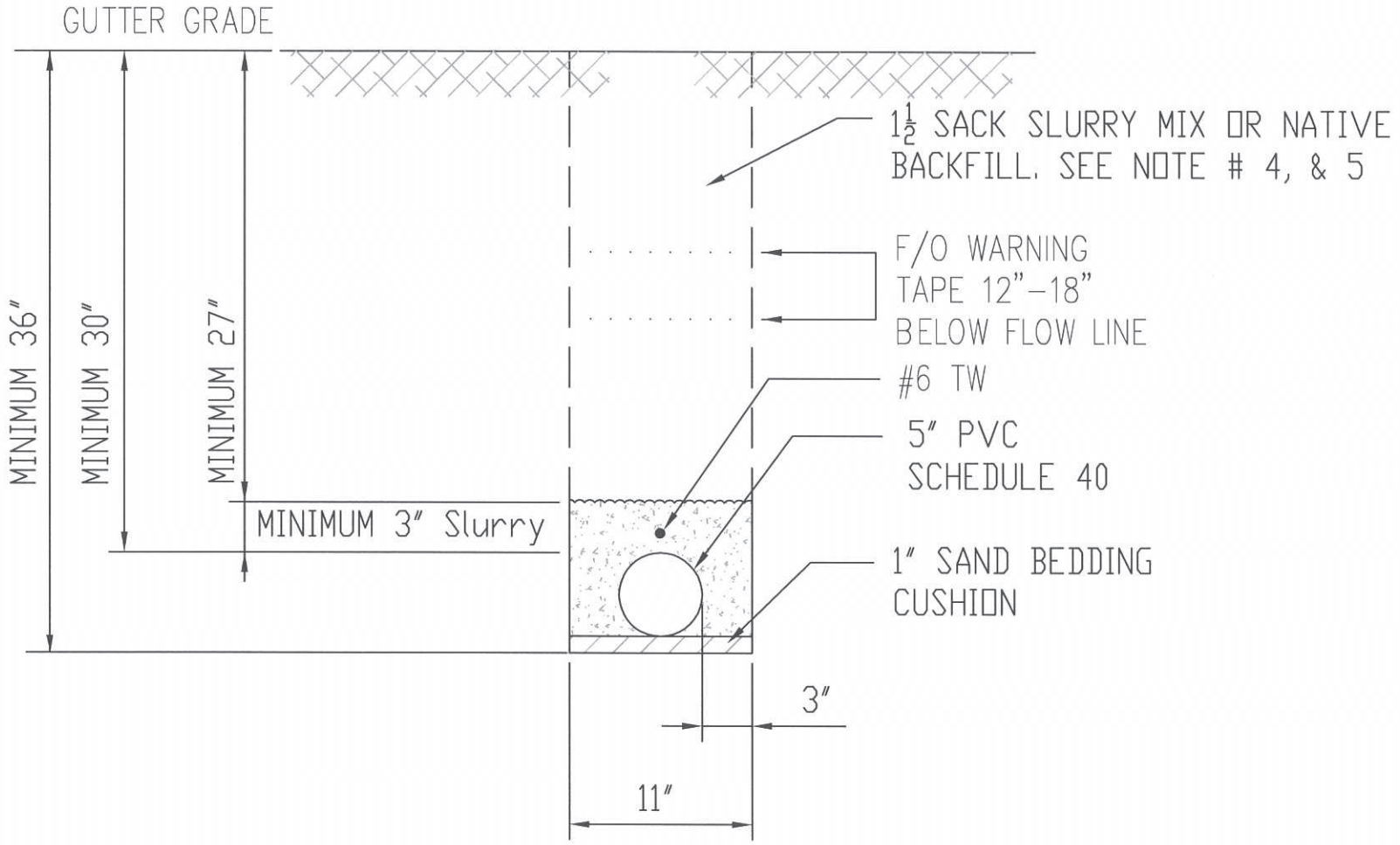

Figure 3-10: Typical Telecommunications Duct Bank

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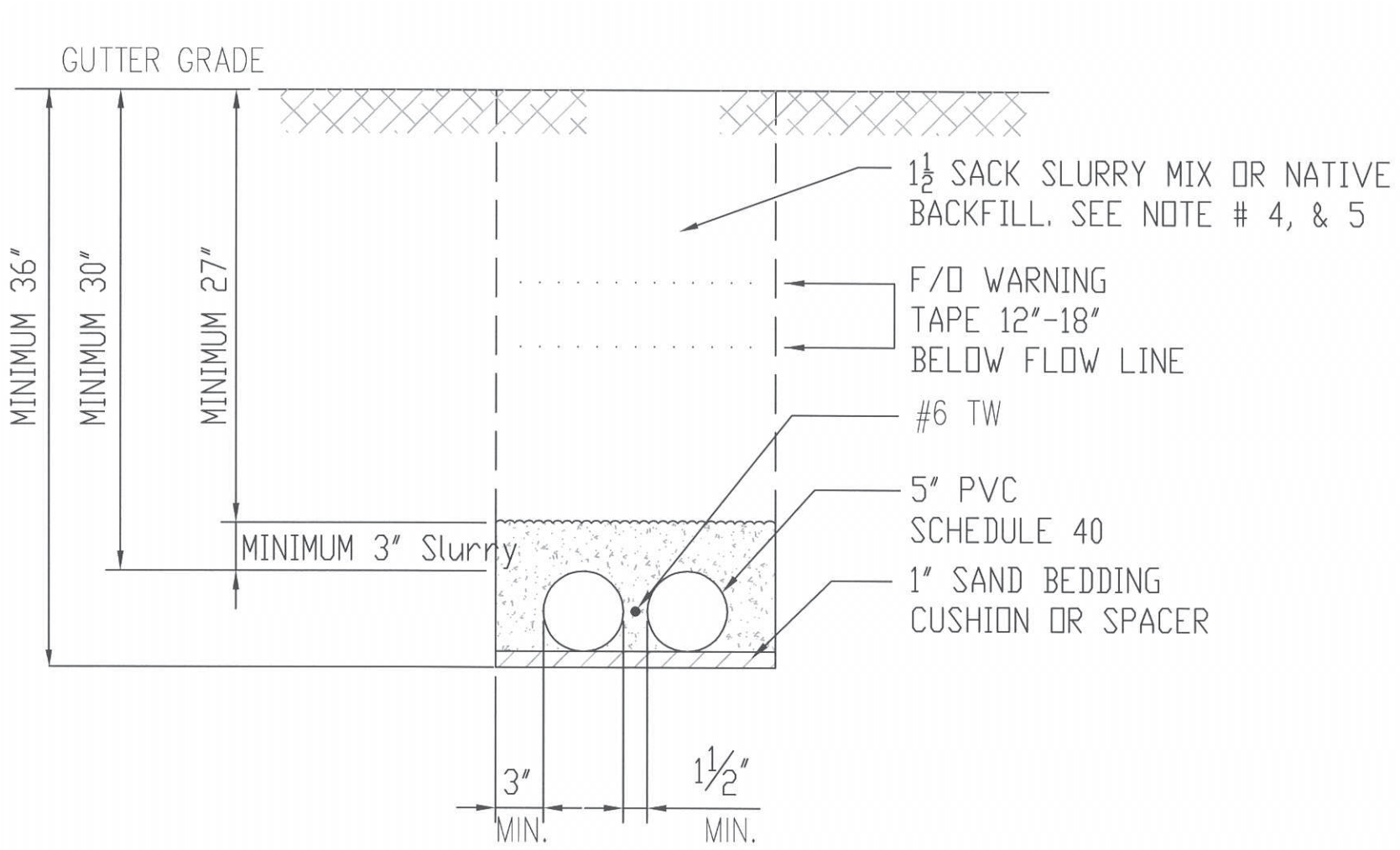

Figure 3-10: Typical Telecommunications Duct Bank

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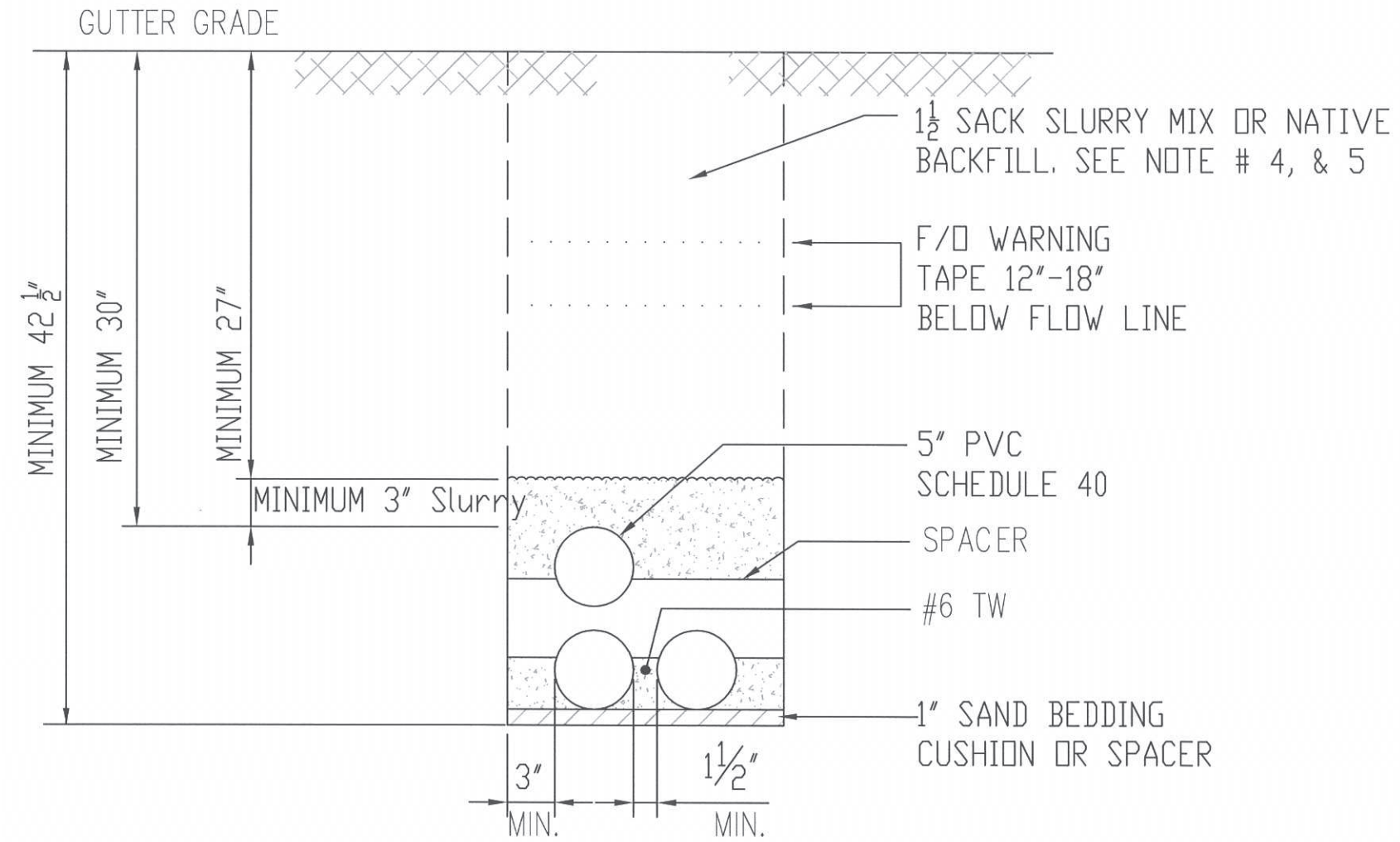

Figure 3-10: Typical Telecommunications Duct Bank

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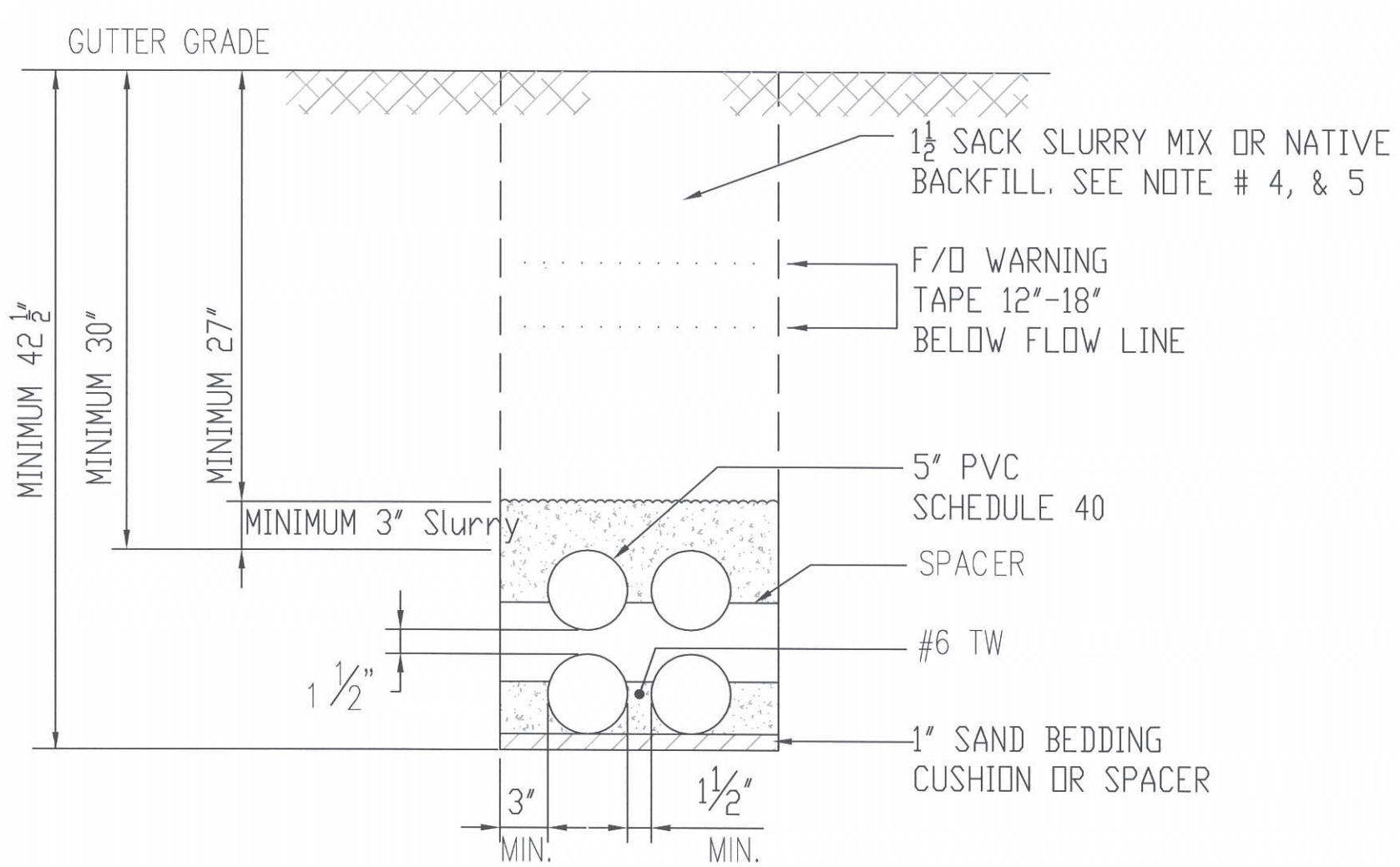

Figure 3-10: Typical Telecommunications Duct Bank

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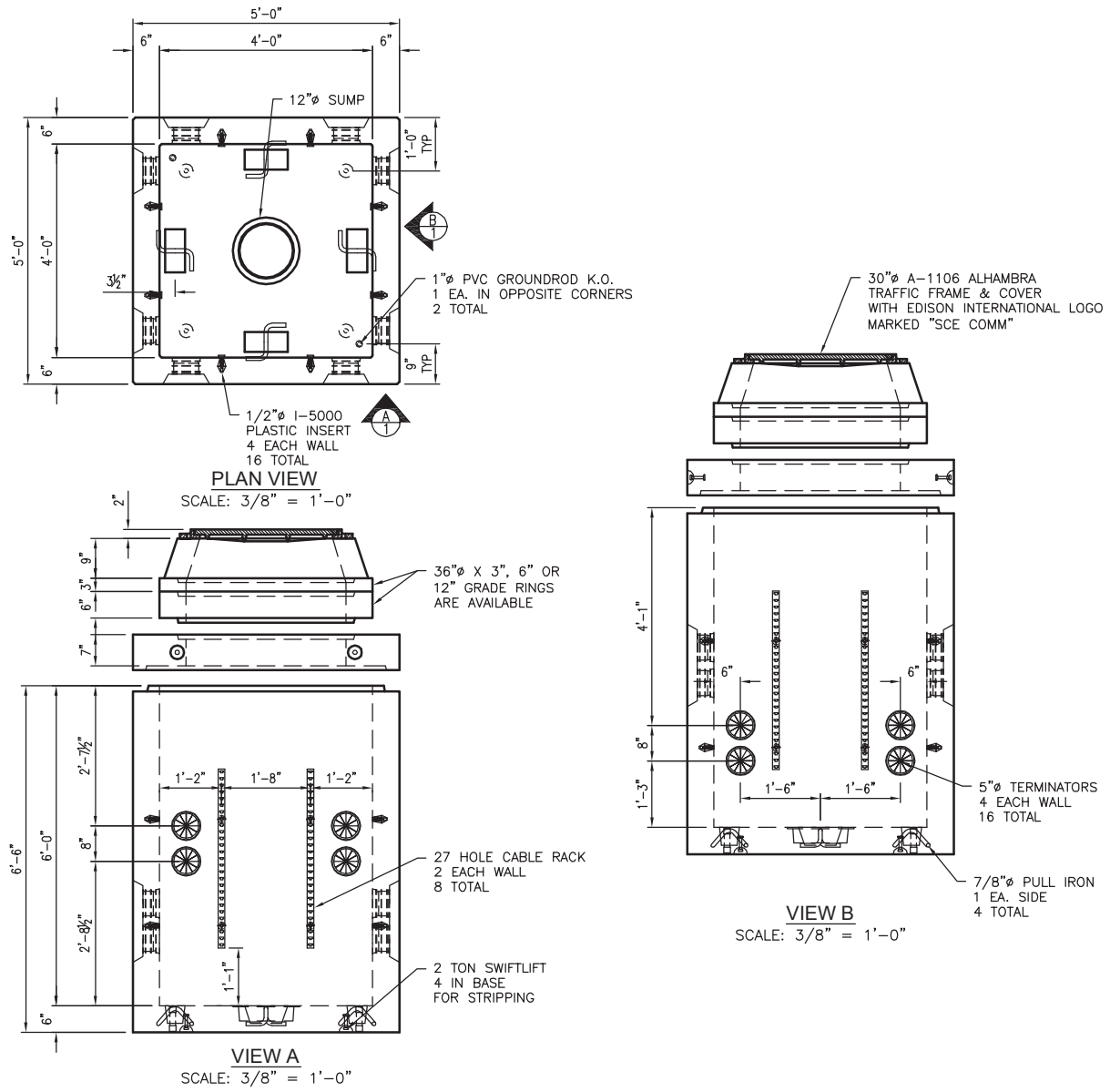

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Figure 3-11: Typical Manhole

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Distribution

The Proposed Project would include the installation of approximately 0.2 mile of underground distribution cables in new duct banks. At a minimum, the duct banks would measure approximately 2 feet wide by 4 feet deep, and would each consist of approximately two 3-inch conduits, conduit spacers, and concrete.

3.5.4 Mid-Line Series Capacitors

The Proposed Project includes the construction of two new 500 kV mid-line series capacitors—the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor—within the Eldorado-Lugo and Lugo-Mohave 500 kV Transmission Line ROWs, respectively. Each mid-line series capacitor pad would be approximately 225 feet wide by 324 feet long, and would occupy approximately 1.8 acres within an approximately 3.3-acre graded site (Newberry Springs Series Capacitor) or 3.2-acre graded site (Ludlow Series Capacitor). Each mid-line series capacitor would include the following components:

- 500 kV capacitor bank with required platforms, support insulators, foundations, conduits or trenches, cables, conductors, and bus and/or cable interconnections
- Mechanical Electrical Equipment Room (MEER) with alternating current/direct current (AC/DC) panels, Control & Protection panels, batteries, batteries chargers, telecommunications racks, security racks, heating, ventilating, and air conditioning (HVAC) equipment, communication room to house communication equipment, and emergency lighting
- Two transmission interface structures and bus supports[10]
- External site lighting system
- External bypass switch with required support insulators, foundations, conduits or trenches, conductors, conductors support insulators, and grounding connections
- Two motor-operated isolating disconnect switches with ground attachments, required support insulators, foundations, conduits or trenches, conductors, conductors support insulators, and grounding connections
- Up to two new internal bypass switches with required foundations, conduits or trenches, cables, conductors, bus-work, and grounding connections
- Security cameras with support structures and foundations
- Conductor between the two transmission interface structures inside the series capacitor facilities with two-bundled 2,156 kcmil 84/19 stranded “BLUEBIRD” ACSR per phase;

[10] SCE is evaluating the use of transmission interface structures.

insulator assemblies and mounting hardware (existing conductor may be used from existing towers to the new transmission interface structures)

- Insulator assemblies and mounting hardware on both sides of conductor spans
- Two overhead ground wires to connect existing and proposed towers at the proposed series capacitor facilities with 7 No. 6 Alumoweld wire
- Chain-link fence and gates around the series capacitor bank, and chain-link fence and gates with appropriate top guard (e.g., castle spikes, barbed wire, and/or razor wire) along the perimeter of the facility
- Propane emergency generator inside/outside MEER structure and a 499-gallon propane fuel tank surrounded by a block wall on at least three sides
- Ground grid system
- Portable, permanent restroom on site

The mid-line series capacitor components are described in the subsections that follow. Figure 3-12: Typical Mid-Line Series Capacitor Layout shows the dimensions of the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor, as well as the placement and orientation of the major components that would be included in the facilities. Figure 3-13: Typical Mid-Line Series Capacitor Profile provides a profile view of the proposed mid-line series capacitors.

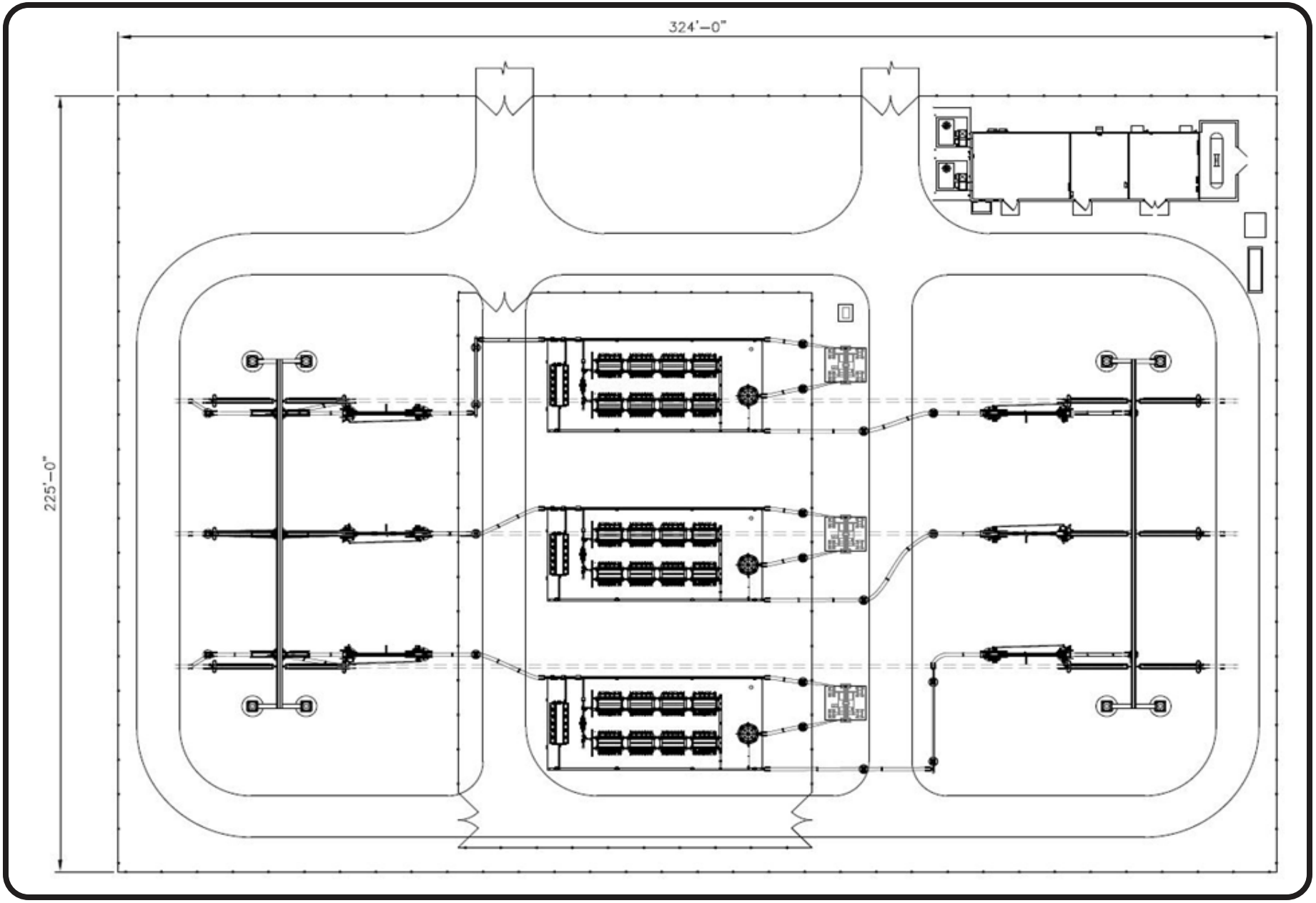

Figure 3-12: Typical Mid-Line Series Capacitor Layout

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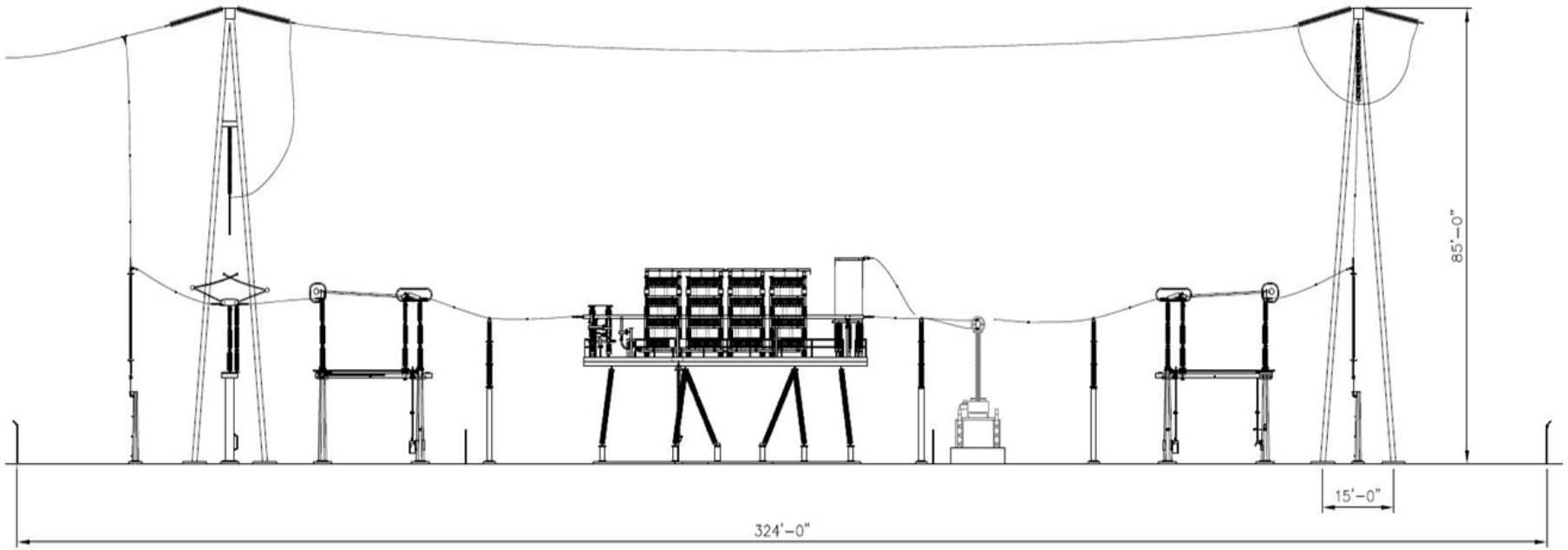

Figure 3-13: Typical Mid-Line Series Capacitor Profile

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3.5.4.1 Mechanical and Electrical Equipment Room

A MEER is a conventional structure that is typically constructed with metal framing, structural steel, or concrete masonry units, and concrete. SCE anticipates the MEER would have a dark-colored roof and earth-tone-colored sidewalls; and that the roofline, wall joints, and doorway would have a contrasting trim to conform to BLM requirements. Control cable trenches would be installed to connect the MEER to the 500 kV equipment's control cabinets in the yard. The MEER would be a one-story building.

3.5.4.2 Access

Two new, approximately 24-foot-wide,[11] 190-foot-long access roads would be constructed for the proposed Newberry Springs Series Capacitor. The existing access road at the Ludlow Series Capacitor site would be rerouted around the capacitor facility with approximately 650 feet of existing road removed and a new, approximately 24-foot-wide,[11] 840-foot-long access road installed. Two new, approximately 14-foot-wide crushed rock interior driveways would be constructed within the two proposed capacitor sites. An approximately 125-foot by 175-foot asphalt pad would be installed at each facility within the perimeter fencing.

3.5.4.3 Parking Area

There are no new, permanent parking spaces associated with the Proposed Project.

3.5.4.4 Grading and Drainage Description

At the beginning of construction, the proposed Newberry Springs and Ludlow Series Capacitor sites would be cleared of brush, vegetation, rocks, and other deleterious materials. Sites may be over-excavated to remove any unsuitable base materials for disposal off site. Where deemed suitable, over-excavated materials may be used to backfill the site. The proposed site would be graded and compacted to achieve the desired pad elevation to prepare for construction. Construction of the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor would require approximately 4.1 and 4.3 acres for site development, respectively. Mowers, excavators, front-end loaders, dump trucks, rock crushers, and/or bulldozers would be utilized to conduct clearing, grubbing, vegetation removal, and grading activities. A summary of the anticipated grading quantities for the proposed Newberry Springs and Ludlow Series Capacitors is provided in Table 3-5: Mid-Line Series Capacitor Cut and Fill Grading Summary.

[11] Access roads longer than 100 feet would have 24-inch shoulders.

Table 3-5: Mid-Line Series Capacitor Cut and Fill Grading Summary

Element	Material	Approximate Surface Area (Square Feet)	Approximate Volume (Cubic Yards)
Site Grading, Cut[12]	Dirt	113,700	14,800
Site Grading, Fill[12]	Dirt	132,700	17,600
Over-excavation[13]	Dirt	179,300	9,500
Site Grading, Net[12]	Dirt	246,300	-2,800
External Roads, Spoils, Net[14]	Dirt	11,300	0
Equipment Foundations, Spoils, Cut	Dirt	12,100	1,000
Cable Trench, Spoils, Cut	Dirt	N/A	N/A
Drainage Structure, Spoils, Cut	Dirt	N/A	N/A

A drainage channel would be constructed to divert storm water run-on away from the sites. Drainage devices would be required to convey storm water runoff to an approved discharge location. A retention/detention basin would be provided in order to mitigate increase in runoff as a result of this development. The permanent cut and fill slopes for the proposed Newberry Springs and Ludlow Series Capacitor sites and the permanent cut and fill for the access roads would be stabilized during construction by utilizing best management practices (BMPs) described in the Proposed Project's Storm Water Pollution Prevention Plans (SWPPPs).

3.5.4.5 Lighting

Lighting at the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor would consist of light-emitting diode lights located in areas of the yard where Operation and Maintenance (O&M) activities may take place during evening hours for emergency/scheduled work. Maintenance lights would be controlled by a manual switch and would normally be in the "off" position. The maintenance lights would be directed downward to reduce glare outside the facility.

3.5.4.6 Perimeter

The proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor would be enclosed on all sides by a chain-link fence. Barbed wire would be affixed to the top of the fence and desert tortoise (*Gopherus agassizii*) fencing would be affixed at the bottom. Chain-link gates would be provided for vehicle and pedestrian access.

[12] The approximate area and volume include material needed for the retention basin.
[13] The approximate area and volume include 12 inches of over-excavation in areas of cut.
[14] The approximate area and volume include material needed for the ditch and berm that would be constructed as part of the access roads.

3.5.5 Modification to Existing Substations

The Proposed Project would require modifications at three existing SCE substations (Lugo, Mohave, and Eldorado Substations), as described in the following subsections.

3.5.5.1 Lugo Substation

Modifications at the existing Lugo Substation include the following:

- Reconfigure two existing 500 kV positions:
  - Remove the Eldorado 500 kV Transmission Line from the dead-end connection at the switch rack; and retain all equipment for a breaker-and-a-half position
  - Remove the Mohave 500 kV Transmission Line from the dead-end connection at the switch rack; demolish the east circuit breaker and associated line disconnect switches; and configure switch rack for a double-bus, double-breaker position
- Relocate the Eldorado and Mohave 500 kV Transmission Lines to two new positions equipped for 4,000 amps with 4,000-amp circuit breakers and 4,000-amp vertical break disconnect switches
- Remove two existing 500 kV TSP structures and foundations to a depth of 3 feet and install two new 500 kV TSP structures to support the relocation of the Eldorado and Mohave 500 kV Transmission Lines to their new positions
- Extend the existing 500 kV switch rack by four positions
- Install four OHGWs to connect to the extended switch racks and TSPs with No. 6 Alumoweld wire
- Conductor the line positions with new two-bundled 2,156 kcmil 84/19 stranded “BLUEBIRD” ACSR per phase
- Install new foundations, steel structures, grounding, and conduits for the new equipment
- Remove power line carrier protection; install new protective relays with digital communication in the existing MEER for line and series capacitor protection
- Remove the obsolete equipment for the series capacitor
- Upgrade existing 500 kV Eldorado and Mohave series capacitor banks to 3,300-amp including required conductors, buses, and/or cable interconnections
- Update the substation database at the Regional Control Center Energy Management System
- Install a new Remote Terminal Unit (RTU) or add card to the existing RTU as required

- Install additional telecommunications equipment—including channel equipment, light wave equipment, and fiber tie cables between buildings and existing MEER where required—to provide two diverse communication paths

- Install communications and related equipment in the Administration Building and relocate the existing Human Machine Interface from the MEER to the Administration Building

- Route new fiber optic cable from the MEER to the Administration Building in existing underground conduit; install new underground conduit, if needed

3.5.5.2 Mohave Substation

Modifications at the existing Mohave Substation include the following:

- Equip two existing 500 kV positions:

  – One 4,000-amp Lugo 500 kV Transmission Line position equipment with 4,000-amp circuit breakers and 4,000-amp disconnect switches
  – One 3,000-amp Eldorado 500 kV Transmission Line position with 3,000-amp circuit breakers and 3,000-amp disconnect switches

- Reconductor the line position with new two-bundled 2,156 kcmil 84/19 stranded "BLUEBIRD" ACSR

- Remove and salvage the existing 500 kV operating bus disconnect switches at two line positions

- Remove power line carrier protection equipment for the existing Lugo 500 kV Transmission Line

- Install new protective relays with digital communication and series capacitor protection on the Lugo 500 kV Transmission Line

- Replace existing series capacitor yard lighting with LED lighting

- Install a new 3,300-amp series capacitor bank on the Lugo 500 kV Transmission Line with required platforms, support insulators, foundations, conduits or trenches, cables, conductors, and buses and/or cable interconnections

- Install new internal bypass switches

- Incorporate internal and external bypass switches, isolating disconnect switches, and ground switches into interlock logic, including conduits and terminating control and power wiring to terminal blocks in switches and Control & Protection panels in the series capacitor MEER

- Provide control and power, wiring, testing and commissioning to 500 kV external bypass switch and motor-operated isolating disconnect switches with ground attachments, including conduits from the Lugo series capacitors' MEERs to interface with SCE conduits for these switches located within the substation
- Install a new MEER for series capacitor with series capacitor Control & Protection panels, Human-Machine Interfaces, digital fault recorder, AC/DC panels, telecommunications racks, batteries, battery chargers, HVAC equipment, emergency lighting, and security panels
- Install conduits and trenches as required
- Modify fencing for series capacitors
- Install task lighting, tool outlets, and equipment power test outlet (100 amp) within the series capacitor's fenced area
- Install and/or modify grounding grid within the series capacitor fence, as well as equipment and personnel ground connections for all equipment
- Remove the existing foundation, platform, and equipment for the series capacitor
- Replace the conductor between dead-end structures in the area of the series capacitor bank with new two-bundled 2,156 kcmil 84/19 stranded "BLUEBIRD" ACSR
- Relocate isolating disconnect switches as needed to accommodate the new 500 kV series capacitor
- Install auxiliary switches for grounding attachments on the isolating disconnect switches
- Install new foundations, structures, and grounding for the new equipment
- Provide new conduits and home-run cables from the isolating disconnect switches to the new series capacitor MEER
- Install relays for local breaker failure backup for new circuit breakers
- Add motor-operating mechanisms to existing isolating disconnect switches
- Install additional telecommunications equipment—including channel equipment, light wave equipment, and fiber tie cables between buildings and existing MEER where required—to provide two diverse communication paths
- Place asphalt at series capacitor location for weed control

Modifications at Mohave Substation would require minor grading and cut and fill. Table 3-6: Mohave Substation Cut and Fill Grading Summary provides a summary of the ground surface improvements at Mohave Substation.

Table 3-6: Mohave Substation Cut and Fill Grading Summary

Element	Material	Approximate Surface Area (Square Feet)	Approximate Volume (Cubic Yards)
Site Grading, Cut[15]	Dirt	3,300	100
Site Grading, Fill[15]	Dirt	6,600	200
Over-excavation[16]	Dirt	0	0
Site Grading, Net[15]	Dirt	9,900	-200 (Imported Fill)
External Roads, Spoils, Net	Dirt	0	0
Equipment Foundations, Spoils, Cut	Dirt	3,700	300
Cable Trench, Spoils, Cut	Dirt	0	0
Drainage Structure, Spoils, Cut	Dirt	0	0

The permanent cut and fill slopes for the retention/detention basin would be stabilized during construction by utilizing BMPs described in the Proposed Project's SWPPPs.

3.5.5.3 Eldorado Substation

Modifications at the existing Eldorado Substation include the following:

- Upgrade the Lugo 500 kV Transmission Line position equipment to 4,000 amps:
  - Replace 3,000-amp circuit breakers with 4,000-amp circuit breakers
  - Replace 3,000-amp disconnect switches with 4,000-amp disconnect switches
- Remove the obsolete equipment for the series capacitor
- Upgrade existing 500 kV Lugo series capacitor bank to 3,300-amp including required conductors, buses, and/or cable interconnections
- Add motor-operating mechanisms to existing isolating disconnect switches
- Incorporate internal and external bypass switches, isolating disconnect switches, and ground switches into interlock logic, including conduits and terminating control and power wiring to terminal blocks in switches and Control & Protection panels in the series capacitor MEER

[15] The approximate area and volume include material needed for the retention basin.
[16] The approximate area and volume include 12 inches of over-excavation in areas of cut (pad).

- Provide control and power, wiring, testing and commissioning to 500 kV external bypass switch and motor-operated isolating disconnect switches with ground attachments, including conduits from the Lugo series capacitor's MEER to interface with SCE conduits for these switches located within the substation
- Reconductor the line positions with new two-bundled 2,156 kcmil 84/19 stranded "BLUEBIRD" ACSR
- Remove power line carrier protection
- Install new protective relays with digital communication for line and series capacitor protection
- Install transient recovery voltage capacitors
- Install new foundations, steel structures, grounding, and conduits for the new equipment
- Replace all home-run cables from switchyard equipment to the existing MEER
- Install additional telecommunications equipment—including channel equipment, light wave equipment, and fiber tie cables between buildings and existing MEER where required—to provide two diverse communication paths
- Place asphalt at series capacitor location for weed control

3.6 Right-of-Way Requirements

The Proposed Project would be built within existing SCE fee-owned ROW, easements, ROW grants, or public ROW where SCE has existing franchise agreements. However, upon final engineering and Proposed Project approval, acquisition of new land rights may be required for the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor and/or fiber optic repeater sites, where necessary. Easement widths are based on facility types, final design and type of right to be acquired. Upgrading easements may include adding land rights, adding width to existing easements, and improving or clarifying access or maintenance rights. Certain land rights may need to be acquired and/or amended as follows:

Substations and Mid-Line Series Capacitors: Substation access would continue to be provided directly from Escondido Avenue (Lugo Substation), Edison Way (Mohave Substation), and Eldorado Valley Drive (Eldorado Substation). The proposed design requires a minimum of 1.9 acres of additional property to be acquired from the BLM to construct the proposed Newberry Springs Series Capacitor, and a minimum of 1.6 acres of additional private property to be acquired to construct the proposed Ludlow Series Capacitor.

Access: Access to the Proposed Project components would be provided from existing public roads and/or existing access roads. New access roads would be constructed for the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor. Upon final engineering and project approval, new or amended access road rights for the proposed mid-line series capacitors

may be required. Section 3.7.1.3, Access Roads and/or Spur Roads provides more detail on access roads.

Transmission: SCE would install the proposed transmission facilities within existing SCE fee-owned ROW, easements, ROW grants, or public ROW where SCE has existing franchise agreements. However, upon final engineering and Proposed Project approval, acquisition of new land rights may be required for overhead facilities.

Distribution: SCE would install the proposed distribution facilities within existing SCE fee-owned ROW, easements, ROW grants, or public ROW where SCE has existing franchise agreements. However, new BLM ROW would be needed between the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor and from the existing distribution line to the Kelbaker and Lanfair Fiber Optic Repeaters. Distribution to the fiber optic repeaters would be added to the BLM/NPS Lugo-Mohave ROW grants. Upon final engineering and Proposed Project approval, acquisition of new land rights may be required for both overhead and/or underground facilities

Telecommunications: Along the proposed routes, telecommunications lines would be co-located on existing structures located overhead and underground within existing SCE ROWs, ROW grants, or public ROW where SCE has existing franchise agreements. However, new BLM ROW would be needed between the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor. Kelbaker and Lanfair Fiber Optic Repeaters and underground fiber optic would be included in the NPS Lugo-Mohave ROW grant. Upon final engineering, additional or amended land rights may be required.

Construction Support: Based on final engineering and construction requirements, temporary land rights (e.g., temporary construction easements, permits, leases, and licenses) may be required for access roads, laydown areas, pulling sites, helicopter staging yards, and staging and work areas for any approved Proposed Project component.

3.7 Construction

The following subsections describe the construction activities associated with the Proposed Project.

3.7.1 For All Projects

3.7.1.1 Staging Areas

Construction of the Proposed Project would require the establishment of temporary staging yards. Staging yards would be used as a reporting location for workers, vehicle and equipment parking, and material storage. The yard may also have construction trailers for supervisory and clerical personnel. Staging yards may be lit for staging and security. Normal maintenance and refueling of construction equipment would also be conducted at these yards. All refueling and storage of fuels would be in accordance with the SWPPPs.

SCE anticipates using one or more of the possible locations listed in Table 3-7: Potential Staging Yard Locations as the staging yard(s) for the Proposed Project. Typically, each yard would be

Table 3-7: Potential Staging Yard Locations

Yard Name	Location	Condition	Approximate Area (Acres)[17]	Proposed Project Component
East of Lugo	Hesperia	Undisturbed	7.1	Transmission
Arrowhead Lake Road	Hesperia	Previously Disturbed	5.3	Transmission
Bear Valley	Lucerne Valley	Partially Disturbed	4.2	Transmission
Barstow Road	Lucerne Valley	Undisturbed	10.1	Transmission
Coolwater	Daggett	Previously Disturbed	21.0	Transmission
Ludlow	Ludlow	Previously Disturbed	1.7	Transmission
Goffs Yard	San Bernardino County	Previously Disturbed	5.9	Transmission
Goffs Yard – Alt	San Bernardino County	Previously Disturbed	2.5	Transmission
Mohave Substation	Mohave Substation	Previously Disturbed	7.5	Transmission/ OPGW, Substation, Capacitor
Eldorado Substation	Eldorado Substation	Previously Disturbed	8.5	Transmission/ Substation
Eldorado Substation 2	Eldorado Substation	Previously Disturbed	5.5	Substation/ Capacitor
South Eldorado Substation	Eldorado Substation	Previously Disturbed	4.2	Substation/ Capacitor
Mohave Substation 2	Mohave Substation	Previously Disturbed	1.0	Substation
Lugo Substation II	Lugo Substation	Previously Disturbed	1.1	Capacitor
Lugo Substation III	Lugo Substation	Previously Disturbed	1.0	Substation
Newberry Springs Series Capacitor	Newberry Springs	Partially Disturbed	6.2	Capacitor
Ludlow Series Capacitor	Ludlow	Partially Disturbed	6.4	Capacitor

[17] Locations and acreages for staging yards within the existing SCE substation footprints are subject to change.

1 acre to 21 acres in size, depending on land availability and intended use. Preparation of the staging yard would include temporary perimeter fencing and, depending on existing ground conditions at the site, grubbing and/or grading may be required to provide a plane and dense surface for the application of gravel or crushed rock. Any land that may be disturbed at the staging yard would be returned to pre-construction conditions or left in its modified condition, if requested by the landowner following the completion of construction for the Proposed Project.

Temporary power would be determined based on the type of equipment/facilities being used at the staging yards. If existing distribution facilities are available, a temporary service and meter may be used for electrical power at one or more of the yards. If it is determined that temporary power is not needed or available at the staging yards full time, a portable generator may be used intermittently for electrical power at one or more of the yards.

Materials commonly stored at the substation construction staging area would include, but not be limited to, portable sanitation facilities; electrical equipment such as circuit breakers, disconnect switches, lightning arresters, transformers, and vacuum switches; steel beams; rebar; foundation cages; conduit; insulators; conductor and cable reels; pull boxes; and line hardware.

Materials commonly stored at the transmission, subtransmission, and/or telecommunications construction staging yards would include, but not be limited to, construction trailers; construction equipment; portable sanitation facilities; steel bundles; steel/wood poles; conductor reels; OHGW or overhead OPGW reels; hardware; insulators; cross arms; signage; consumables (e.g., fuel and filler compound); waste materials for salvaging, recycling, or disposal; and BMP materials (e.g., straw wattles, gravel, and silt fences).

A majority of materials associated with the construction efforts would be delivered by truck to designated staging yards, while some materials may be delivered directly to the temporary transmission and subtransmission construction areas described in Section 3.7.1.2, Work Areas.

3.7.1.2 Work Areas

Transmission, subtransmission, distribution, and telecommunications, construction work areas serve as temporary working areas for crews and where Proposed Project-related equipment and/or materials are placed at or near each structure location, within SCE ROW or franchise areas. Table 3-8: Typical Laydown/Work Area Dimensions identifies the approximate land disturbance for these construction area dimensions for the Proposed Project.

Table 3-8: Typical Laydown/Work Area Dimensions

Laydown/Work Area Feature	Preferred Size (L x W) (Feet)
Guard Structures	50 x 150
LSTs (New)	220 x 220
LSTs (Modify)	150 x 150
Wood Poles (Subtransmission)	150 x 75
Wood Poles (Distribution)	40 x 60
OPGW Pulling, Tensioning, and Splicing Areas	100 x 150
Underground Duct Banks	Proposed Length x 30
Underground Vaults	35 x 35
Mid-Line Series Capacitor Sites	400 x 450
Fiber Optic Repeater Sites	100 x 60

Note: The dimensions listed in this table are approximate lengths preferred for construction efficiency; actual dimensions may vary depending on Proposed Project constraints. This table does not include work within the existing substation properties.

The new structure pad locations and laydown/work areas provided in Table 3-8: Typical Laydown/Work Area Dimensions would first be graded and/or cleared of vegetation as required to provide a reasonably level and vegetation-free surface for construction activities. Sites would be graded such that water would run toward the direction of the natural drainage. In addition, drainage would be designed to prevent ponding and erosive water flows that could cause damage to the structure footings. The graded area would be compacted to at least 90-percent relative density, and would be capable of supporting heavy vehicular traffic.

Erection of the structures may also require establishment of a temporary crane pad. The crane pad would occupy an area of approximately 50 feet by 50 feet and would be located adjacent to each applicable structure within the laydown/work area used for structure assembly. The pad may be cleared of vegetation and/or graded as necessary to provide a level surface for crane operation. The decision to use a separate crane pad would be determined during final engineering for the Proposed Project and the selection of the appropriate construction methods to be used by SCE or its contractor.

Benching may be required to provide access for footing construction, assembly, erection, and wire stringing activities during line construction. Benching is a technique in which an earth-moving vehicle excavates a terraced access to structure locations in extremely steep and rugged terrain. Benching would also be used on an as-needed basis in areas to help ensure the safety of personnel during construction activities.

3.7.1.3 Access Roads and/or Spur Roads

Where required, the network of existing access roads may be improved and new roads would be constructed to current SCE road practices to support the construction and O&M of the Proposed Project.

For construction of the Proposed Project, SCE would utilize a combination of through roads and spur roads accessed from the network of existing paved and unpaved public and private roads located on public, private, and government lands. Access to the transmission line ROW for construction activities and future O&M activities associated with the Proposed Project would be accomplished by utilizing this network of roads. The following paragraphs describe construction activities typically associated with the construction of these roads.

During construction of the Proposed Project, crews would utilize existing public roads and existing transmission access roads to the maximum extent feasible. New temporary access roads would be constructed in accordance with current SCE practices for safety during construction and O&M. Rehabilitation, road widening, and/or upgrades to existing access roads may also be required to facilitate construction access and to support O&M activities.

Typical construction activities associated with rehabilitation of existing unpaved access roads include vegetation clearing; blade-grading; grubbing; mowing; and re-compacting to remove potholes, ruts, and other surface irregularities to provide a riding surface that can support heavy construction and maintenance equipment. Existing unpaved roads may also require additional upgrades, such as protection (e.g., soil cover, steel plates, etc.) for existing underground utilities.

Typical construction activities associated with new access roads generally include similar activities as described for the rehabilitation of existing unpaved roads, but may also include the following additional construction requirements that depend on the existing land terrain:

- **Existing relatively flat terrain with grades up to four percent:** Construction activities are generally similar to rehabilitation activities on existing, unpaved roads and may also require activities such as clearing and grubbing, as well as constructing drainage improvements (e.g., wet crossings, water bars, and culverts). Detailed information on locations requiring drainage improvements would be provided during final engineering.

- **Existing rolling terrain with grades of five to 12 percent:** Construction activities generally include typical to flat terrain activities and may also require cut and fill in excess of 2 feet in depth, benched grading, drainage improvements (e.g., v-ditches, downdrains, and energy dissipaters), and slope stability improvements (e.g., geogrid reinforcement). The extent of slope stability improvements would be determined during final engineering, as would detailed information on locations requiring cut and fill, benched grading, and/or drainage improvements.

- **Existing mountainous terrain with grades over 12 percent:** Construction activities would include rolling terrain construction activities and would also likely require significant cut and fill depths, benched grading, drainage improvements, and slope stability improvements. Detailed information on locations requiring cut and fill, benched grading, and/or drainage improvements would be provided during final engineering.

Typical construction activities associated with temporary access could include drive and crush, vegetation clearing, blade-grading, grubbing, mowing, and re-compacting.

In addition, other slope stability systems considered include mechanically stabilized systems, along with drainage improvements (e.g., v-ditches, downdrains, and energy dissipaters). The extent of slope stability improvements would be determined during final engineering.

Generally, access roads would have a minimum drivable width of 14 feet with 2 feet of shoulder on each side, as determined by the existing land terrain to accommodate required drainage features. Typically, the drivable road width would be widened and would generally range up to an additional 8 feet along curved sections of the access road, creating up to 22 feet of drivable surface for the access road. Access road gradients would be leveled so that sustained grades generally do not exceed 14 percent. Curves would typically have a minimum radius of curvature of 50 feet measured from the center line of the drivable road width. Specific site locations may require a wider drivable area to accommodate multi-point turns where 50-foot minimum radii cannot be achieved.

Access roads would typically have turnaround areas around the structure location. In some cases where a turnaround is not practical, an alternative configuration would be constructed to provide safe ingress/egress of vehicles to access the structure location. It is common to use access road turnaround areas for the dual purpose of structure access and as a construction pad for construction activities. If a construction pad is built, it would remain a permanent feature for O&M.

The Proposed Project access roads would generally follow the existing transmission lines. New access roads would be constructed to support construction and O&M of the new mid-line series capacitors and supporting transmission structures.

3.7.1.4 Helicopter Access

Helicopters would be used to support construction activities. Helicopter use supporting construction may include, but is not limited to, areas where access is limited (e.g., no suitable access road, limited construction area to facilitate on-site structure assembly, and/or there are environmental constraints to accessing the Proposed Project area with standard construction vehicles and equipment) or where system outage constraints are a factor.

SCE currently anticipates helicopters would be utilized in support of the construction of the Proposed Project. Helicopters may be used in other areas to facilitate construction of the Proposed Project as the exact method of construction employed and the sequence with which construction tasks occur would be dependent on final engineering, contract award, conditions of permits, and Contractor preference.

Proposed Project-related helicopter activities may include transportation of construction workers, delivery of equipment and materials to structure sites, structure placement, hardware installation, marker ball installation (if applicable), and OPGW stringing operations. SCE would consider Institute of Electrical and Electronic Engineers (IEEE) Standards 951-1996, *Guide to the Assembly and Erection of Metal Transmission Structures*, and 524-2003, *Guide to the*

Installation of Overhead Transmission Line Conductors in the construction of the Proposed Project.

Helicopter operations and support areas typically include helicopter staging and material yards, storage and maintenance sites, and ground locations (landing zones, approximately 0.3 acre in size) in close proximity to OPGW pulling, tensioning, and splice sites, and/or within previously disturbed areas near construction sites. In addition, helicopters must be able to land within SCE ROWs, which could include landing on access or spur roads. At night or during off days, for safety and security concerns, helicopters and their associated support vehicles and equipment may be based at a local airport(s).

Helicopters typically used for stringing activities would include light and medium duty helicopters. They would most likely be based out of Ludlow Airport, Laughlin/Bullhead International Airport, Kidwell Airport, and Searchlight Airport, which are within approximately 2 miles of the Proposed Project area. Refueling would most likely occur at these locations, in addition to staging and material yard sites. With the exception of Hesperia Airport, the Proposed Project is not located within available Airport Land Use Compatibility Plans. No additional public or private airports or airstrips were identified within 2 miles of the Proposed Project.

Flight paths would be determined immediately prior to construction by the helicopter contractor. Flight paths would be filed with the appropriate authorities as appropriate. SCE would implement an operating plan for helicopter use, in accordance with Title 14, Part 77 of the Code of Federal Regulations (CFR), and in coordination with and to be approved by the FAA Flight Standards District Office.

Helicopter construction activities would typically be based out of one or more of the staging yards listed in Table 3-7: Potential Staging Yard Locations. Helicopter staging yards would vary in size depending on anticipated support activities and be sited based upon a variety of factors, including the optimization of flight time to work locations. Additionally, operation crews, as well as fueling and maintenance trucks, may be based in the helicopter staging yards. Helicopter staging yards may also be used for material storage and tower assembly activities. Once tower sections are assembled, they would be transported via helicopter or ground-based vehicle to tower sites for final tower assembly.

SCE anticipates using one or more of the possible locations shown in Appendix E: Detailed Route Map, as the helicopter staging yard(s) for the Proposed Project. Preparation of the staging yard would include temporary perimeter fencing and, depending on existing ground conditions at the site, grubbing and/or grading may be required to provide a plane and dense surface for the application of gravel or crushed rock. Any land that may be disturbed at the staging yard would be restored to pre-construction conditions or to the landowner’s requirements following the completion of construction for the Proposed Project.

3.7.1.5 Vegetation Clearance

The proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor sites would require vegetation clearing (i.e., shrub and brush removal) within the 4.1- and 4.3-acre construction work areas for installation of the capacitor equipment. The three proposed repeater

sites would also require vegetation clearing similar to the mid-line series capacitors. Minor site preparation and grading may be required to allow construction of the repeater sites.

Vegetation clearing (e.g., shrub and brush removal) would also be required in the transmission ROWs to accommodate construction work areas, and to reduce the potential for fire during construction activities.

3.7.1.6 Erosion and Sediment Control and Pollution Prevention during Construction

Storm Water Pollution Prevention Plan

Construction of the Proposed Project would disturb a surface area of 1 acre or more. Therefore, SCE would be required to obtain coverage under the Statewide Construction General Permit for Storm Water Discharges (Order No. 2009-0009-DWQ, as amended by 2010-0014-DWQ and 2012-0006-DWQ) from the State Water Resources Control Board and the Nevada Division of Environmental Protection (NDEP) 2014 Construction General Permit (NVR100000).

Commonly used BMPs are storm water runoff quality control measures (i.e., boundary protection), dewatering procedures, and concrete waste management. The SWPPPs would be based on final engineering design and would include all Proposed Project components.

Dust Control

During construction, migration of fugitive dust from the construction sites would be limited by control measures set forth by the Mojave Desert Air Quality Management District and Clark County Department of Air Quality. These measures may include the use of water trucks and other dust control measures. Additional discussion regarding dust control activities is provided in Section 4.3, Air Quality.

Hazardous Materials

Construction of the Proposed Project would require the limited use of hazardous materials, such as fuels, lubricants, and cleaning solvents. All hazardous materials would be stored, handled, and used in accordance with applicable regulations. Safety Data Sheets would be made available at the construction site for all crew workers.

Based on the anticipated volume of hazardous liquid materials (e.g., mineral oil) in use being less than 1,320 gallons, a Spill Prevention, Control, and Countermeasure Plan would not be required for the Proposed Project (in accordance with Title 40, Parts 112.1 to 112.7 of the CFR).

Reusable, Recyclable, and Waste Material Management

Construction of the Proposed Project would result in generation of various waste materials, including wood, metal, soil, vegetation, and sanitation waste (portable toilets). Sanitation waste (i.e., human-generated waste) would be disposed of in accordance with applicable sanitation waste management practices. Material from existing infrastructure that would be removed as part of the Proposed Project (e.g., conductor, steel, concrete, and debris) would be temporarily stored in one or more staging yards as the material awaits salvage, recycling, and/or disposal.

The existing wood poles removed for the Proposed Project would be returned to a staging yard, and either reused by SCE, disposed of in a Class I hazardous waste landfill, and/or disposed of in the lined portion of a Regional Water Quality Control Board- (RWQCB-) certified municipal landfill. Material excavated for the Proposed Project would be used as fill, backfill for new LSTs installed for the Proposed Project, made available for use by the landowner after proper testing, and/or disposed of off-site at an appropriately licensed waste facility. If contaminated material is encountered during excavation, work would stop at that location and SCE's Spill Response Coordinator would be called to the site to make an assessment and notify the proper authorities.

Excess excavated material on BLM land would be used in the ROW or would remain on site until it is sold. The excavated soil may also be made available for use by the landowner after proper testing, or disposed of off site at an appropriately licensed waste facility.

3.7.1.7 Cleanup and Post-Construction Restoration

SCE would clean up all areas that would be temporarily disturbed by construction of the Proposed Project (which may include the material staging yard, construction setup areas, stringing sites, and splicing sites) to as close to pre-construction conditions as feasible, or to the conditions agreed upon between the landowner and SCE following the completion of construction of the Proposed Project.

If restoration and/or revegetation occurs within sensitive habitats, a habitat restoration and/or revegetation plan(s) would be developed by SCE with the appropriate resource agencies and implemented after construction is complete. Additional information pertaining to the habitat restoration and/or revegetation plan(s) can be found in Section 4.4, Biological Resources.

3.7.2 Transmission Line Construction (Above Ground)

The following subsections describe the aboveground construction activities associated with modifications to the existing transmission, telecommunications, and distribution line segments for the Proposed Project.

3.7.2.1 Pull and Tension Sites[18]

Transmission Pull and Tension Sites

The pull and tension sites associated with the Proposed Project would be temporary and the land would be restored to its previous condition following completion of pulling and splicing activities. The set-up locations require level areas to allow for maneuvering of the equipment and, when possible, these locations would be located on existing roads and level areas to minimize the need for grading and cleanup. Minor grading may be required at these sites to create level areas. Approximately 146 set-up locations are currently proposed. The final number and location of these sites would be determined upon final engineering. The approximate area needed for stringing set-ups associated with wire installation is variable and depends upon terrain. Table 3-8: Typical Laydown/Work Area Dimensions provides the approximate size of pulling, tensioning, and splicing equipment set-up areas and laydown dimensions.

[18] For the purposes of this PEA, the term "pull and tension site" is synonymous with the term "stringing site."

Wire pulls are the length of any given continuous wire installation process between two selected points along the line. Wire pulls are selected based on a variety of factors, including availability of dead-end structures, conductor size, geometry of the line as affected by points of inflection, terrain, and suitability of stringing and splicing equipment set-up locations. On relatively straight alignments, typical wire pulls and splice locations occur every 9,500 to 20,000 feet on flat terrain and may be more closely spaced in rugged terrain. When the line route alignment contains multiple deflections or is situated in rugged terrain, the length of the wire pull is typically diminished. Generally, pulling locations and equipment set-ups would be in direct line with the direction of the overhead conductors and established at a distance equal to approximately three times the height of the adjacent structure.

Each stringing operation consists of a puller set-up positioned at one end, and a tensioner set-up with a wire reel stand truck positioned at the other end of the wire pull. Pulling and wire tensioning locations may also be utilized for splicing and field snubbing of the conductors. Temporary splices, if required, may be necessary because permanent splices that join the conductor together cannot travel through the rollers. Splicing set-up locations are used to remove temporary pulling splices and install permanent splices once the conductor is strung through the rollers located on each structure. Field snubs (i.e., anchoring and dead-end hardware) would be temporarily installed to sag conductor wire to the correct tension at locations where stringing equipment cannot be positioned in back of a dead-end structure.

Telecommunications Pull and Tension Sites

The telecommunications pull and tension sites would be approximately 60 feet by 30 feet. The Proposed Project would require the use of approximately 33 telecommunications pull and tension sites on SCE property and within and adjacent to existing ROWs. The pull and tension sites require level areas to allow for maneuvering of the equipment. Existing, level areas and existing roads would be used to minimize the need for grading and cleanup when possible. Equipment used to pull the telecommunication line would be similar to the equipment described previously for the transmission lines. Within an approximately 60-foot by 30-foot work area, two splice trucks with pulling equipment would be required to complete the splicing. When existing cable is replaced, flatbed trucks would be used to haul the cable off site for disposal or recycling.

Distribution Pull and Tension Sites

The distribution pull and tension sites would be approximately 50 feet by 50 feet. The Proposed Project would require the use of approximately three distribution pull and tension sites on SCE property and within and adjacent to existing ROWs. The pull and tension sites require level areas to allow for maneuvering of the equipment. When possible, existing level areas and existing roads would be used to minimize the need for grading and cleanup. The average distance between distribution pull and tension sites would be 750 feet to 7,500 feet. Equipment used to pull the distribution line would be similar to the equipment described previously for the transmission lines. Within an approximately 40-foot by 60-foot work area, two splice trucks with pulling equipment would be required to complete the splicing. When existing cable is replaced, flatbed trucks would be used to haul the cable off site for disposal or recycling.

Temporary Structures

There are no temporary structures anticipated for the Proposed Project.

3.7.2.2 Pole/Tower Installation and Removal

At Lugo Substation, two 500 kV TSPs would be removed and two new 500 kV TSPs would be installed. Construction crews and equipment would travel to the substation using public roads and existing access roads. Section 3.7.5, Construction Workforce and Equipment describes the anticipated equipment and workforce required for the Proposed Project. To get to and from the sites, the crews would use one or more of the construction vehicles listed in Attachment 3-C: Construction Equipment and Workforce Estimates for each construction activity on any given day. The numbers of anticipated trips are discussed in Section 4.16, Transportation and Traffic.

Pole/Tower Foundation Removal

The Proposed Project would involve removing structures, conductor, and associated hardware. The proposed work is provided in the following sequence:

- Road work – Existing access roads would be used to reach structures, but some rehabilitation and grading may be necessary before removal activities would begin to establish temporary crane pads for structure removal, etc.

- Wire-pulling locations – Pull and tension sites would be located at varying distances along the existing utility corridors, and would include locations at dead-end structures and turning points, as shown in Appendix E: Detailed Route Map.

- Conductor removal – SCE would remove existing conductors in a method similar to reversing the conductor installation process. The old conductor would be transported to a construction yard where it would be prepared for recycling.

- Structure removal – Structures would be dismantled down to the foundations and the materials would be transported to a construction yard where they would be prepared for recycling. For each type of structure, a crane truck or rough terrain crane would be used to support the structure during removal; an equipment pad of approximately 70 feet by 70 feet might be required to allow a removal crane to be set up at a distance of approximately 70 feet from the structure center line. The crane rail would be located transversely from the structure locations.

- Footing/foundation removal – The existing footings would be removed to a depth of 1 to 3 feet below the adjacent surface. Holes would be filled with previously excavated soil and compacted, and then the area would be smoothed to match the surrounding grade. If excavated soil is not available, new soil would be imported from an approved vendor. Footing materials would be transported to a construction yard where they would be prepared for disposal.

Any existing transmission lines (where applicable) would be transferred to the new structures prior to removal of existing structures. Any remaining facilities that are not reused by SCE

would be removed and delivered to a facility for disposal, as described in the Reusable, Recyclable, and Waste Material Management section.

Pole/Tower Installation

Foundation Installation

Tubular Steel Pole

Each TSP would require a drilled, poured-in-place, concrete footing that would form the structure foundation. The hole would be drilled using truck- or track-mounted excavators. Excavated material would be used as described within Section 3.7.1.6, Erosion and Sediment Control and Pollution Prevention during Construction. Following excavation of the foundation footings, steel-reinforced cages would be set, positioning would be survey-verified, and concrete would then be poured. Foundations in soft or loose soil or those that extend below the groundwater level may be stabilized with drilling mud slurry. In this instance, mud slurry would be placed in the hole during the drilling process to prevent the sidewalls from sloughing. Concrete would then be pumped to the bottom of the hole, displacing the mud slurry. Depending on site conditions, the mud slurry brought to the surface would typically be collected in a pit adjacent to the foundation or vacuumed directly into a truck to be reused or discarded at an appropriate off-site disposal facility. TSP foundations typically require an excavated hole 12 feet to 15 feet in diameter at approximately 30 feet to 50 feet deep. TSPs would require approximately 125 to 325 cubic yards of concrete delivered to each structure location.

During construction, existing concrete supply facilities would be used where feasible.

During construction, a temporary concrete batch plant may be set up in an established material staging yard. Equipment would include a central mixer unit (drum type); three silos for injecting concrete additives, fly ash, and cement; a water tank; portable pumps; a pneumatic injector; and a loader for handling concrete additives not in the silos. Dust emissions would be controlled by watering the area and by sealing the silos and transferring the fine particulates pneumatically between the silos and the mixers.

Lattice Steel Tower

Structure foundations for each LST would consist of four poured-in-place concrete footings. Actual footing diameters and depths for each of the structure foundations would depend on the soil conditions and topography at each site and would be determined during final engineering.

The foundation process begins with the drilling of the holes for each type of structure. The holes would be drilled using truck- or track-mounted excavators with various diameter augers to match the diameter requirements of the structure type. LSTs typically require an excavated hole measuring 6 to 10 feet in diameter and 25 to 45 feet deep. On average, each footing for an LST structure would project approximately 1 to 4 feet AGL.

The excavated material would be distributed at each structure site, used to backfill excavations from the removal of nearby structures (if any), and/or used in the rehabilitation of existing access roads. Alternatively, the excavated soil may be disposed of at an off-site disposal facility in

accordance with the applicable laws described in Section 3.7.1.6, Erosion and Sediment Control and Pollution Prevention during Construction.

Following excavation of the foundation footings, steel reinforced rebar cages would be set, survey positioning would be verified, and concrete and stub angles would then be placed. Steel reinforced rebar cages and stub angles may be assembled at staging yards and delivered to each structure location by flatbed truck or assembled at the job site. Depending upon the type of structure being constructed, soil conditions, and the topography at each site, LSTs would require 50 to 335 cubic yards of concrete delivered to each structure location.

Potential ground caving is possible along the preferred route during the drilling of the LST foundations due to the presence of loose soils or groundwater levels. The use of water, fluid stabilizers, drilling mud, and/or casings would be made available to control ground caving and to stabilize the sidewalls from sloughing. If fluid stabilizers are utilized, mud slurry would be added in conjunction with the drilling. The concrete for the foundation is then pumped to the bottom of the hole, displacing the mud slurry. Mud slurry brought to the surface is typically collected in a pit adjacent to the foundation and/or vacuumed directly into a truck to be reused or discarded at an off-site disposal facility in accordance with all applicable laws.

Concrete samples would be drawn at the time of the pour and tested to ensure engineered strengths are achieved. A normally specified SCE concrete mix typically takes approximately 20 working days to cure to an engineered strength. This strength is verified by controlled testing of sampled concrete. Once this strength is achieved, crews would be permitted to commence erection of the structure.

Conventional construction techniques would generally be used as described previously for new foundation installation. Alternative foundation installation methods would be used where conventional methods are not practical. In certain cases, equipment and material may be deposited at structure sites using helicopters or by workers on foot, and crews may prepare the foundations using hand labor assisted by hydraulic or pneumatic equipment, or other methods.

As previously described, existing concrete supply facilities would be used where feasible and a temporary concrete batch plant may be set up in an established material staging yard. Prior to drilling for TSP foundations and LST footings, SCE or its contractor would contact Underground Service Alert to identify any existing underground utilities in the construction zone.

Lattice Steel Tower Installation

LSTs would be assembled within the construction areas at each tower site. Table 3-8: Typical Laydown/Work Area Dimensions provides approximate laydown dimensions. Structure assembly begins with the hauling and stacking of steel bundles, per engineering drawing requirements, from a staging yard to each structure location. This activity requires use of several trucks with 40-foot trailers and a rough terrain forklift. After steel is delivered and stacked, crews would proceed with the assembly of leg extensions, body panels, boxed sections, and the cages/bridges. Assembled sections would be lifted into place with a crane and secured by a combined erection and torquing crew. When the steel work is completed, the construction crew may opt to install insulators and wire rollers (i.e., travelers).

When an LST requiring modification is located in terrain inaccessible by a crane, it is anticipated that a helicopter may be used. The use of helicopters for the modification of structures would be similar to methods detailed in IEEE 951-1996, *Guide to the Assembly and Erection of Metal Transmission Structures*, Section 9, Helicopter Methods of Construction. Section 3.7.1.4, Helicopter Access provides detailed information on helicopter usage.

Tubular Steel Pole Installation

TSPs typically consist of multiple sections. The pole sections would be placed in temporary laydown areas at each pole location. See Table 3-8: Typical Laydown/Work Area Dimensions for approximate laydown dimensions. Depending on conditions at the time of construction, the top sections may come pre-configured, may be configured on the ground, or configured after pole installation with the necessary cross arms, insulators, and wire stringing hardware. A crane would then be used to set each steel pole base section on top of the previously prepared foundations. If existing terrain around the TSP location is not suitable to support crane activities, a temporary crane pad would be constructed within the laydown area. When the base section is secured, the subsequent section of the TSP would be slipped together into place onto the base section. The pole sections may also be spot welded together for additional stability. Depending on the terrain and available equipment, the pole sections could also be pre-assembled into a complete structure prior to setting the poles.

Wood Pole Installation

Each wood pole would require a hole to be excavated using an auger, backhoe, or hand tools. Excavated material would be used as described in Section 3.7.1.6, Erosion and Sediment Control and Pollution Prevention during Construction. The wood poles would be placed in temporary laydown areas at each pole location. While on the ground, the wood poles may be configured (if not reconfigured) with the necessary cross arms, insulators, and wire stringing hardware before being set in place. The wood poles would then be installed in the holes, typically by a line truck with an attached boom.

Guys with a steel wire known as a “down guy” would be used. The down guy would attach to an approximately 1-inch-diameter anchor at ground level and would attach to the opposite side of the wood pole from the tension forces applied by the attached conductors.

Light-Weight Steel Pole Installation

No light-weight steel poles are expected to be installed as part of the Proposed Project.

Microwave Installation

No microwave towers are expected to be installed as part of the Proposed Project.

Lattice Steel Tower Modification

Modification of existing LSTs typically involves raising towers. There are two methods that could be used to raise towers—tower body extensions or vertical leg extensions. The body extension method would involve installing an extension in the body of the tower using a crane or hydraulic tower lifting system to hoist a tower. A level area of approximately 50 feet by 50 feet may need to be graded adjacent to the tower if a crane pad would be necessary. The conductors may be

unclipped and put into travelers on adjacent towers to allow for movement of the conductor. After the tower extension is installed, the conductors would be clipped back in, conductor may be added, and the hydraulic lifting system would be taken down from the tower that was raised.

The vertical leg extension method would require lifting the tower. A tower lifter would be driven beneath the tower, and its four arms would be clamped to the tower legs. The legs would be unbolted from the tower base, the tower would be lifted, and leg extensions would be installed. When a tower lifter cannot be used due to terrain or availability, a crane would be used to lift the tower. A level area of approximately 50 feet by 50 feet may be graded adjacent to the tower if a crane pad would be necessary or located within the existing ROW where a crane pad would not be required. The conductors may be unclipped and put into travelers on adjacent towers to allow for movement of the conductor. After the vertical leg extensions are installed, the conductors would be clipped back in. If necessary, new footings would be identified during final engineering and would be installed as previously described.

In order to accommodate dead-end OPGW hardware assembly and the associated loads, some of the existing suspension structures being used for splicing locations would require minor bracing reinforcement to the body of the tower.

Wood Pole Modification

Each wood pole may be reconfigured with the necessary cross arms, insulators, conductor, and wire stringing hardware at a lower position. The wood pole may then be topped and cut to be shorter.

Transmission, Subtransmission, and Distribution Land Disturbance

The land disturbance from aboveground construction of the transmission, subtransmission, and distribution lines is provided in Table 3-9: Transmission, Subtransmission, and Distribution Approximate Land Disturbance.

Table 3-9: Transmission, Subtransmission, and Distribution Approximate Land Disturbance

Proposed Project Feature	Approximate Number of Structures	Typical Work Area (L x W) (Feet)	Approximate Area Disturbed during Construction (Acres)	Approximate Area to be Restored (Acres)	Approximate Area Permanently Disturbed (Acres)
500 kV LST (Raised)	9	100 x 100	2.1	2.1	0.0
500 kV LST (Tower body and peak modifications)	59	100 x 100	13.6	13.6	0.0
500 kV TSP (New)	2	220 x 150	0.2	N/A	N/A*
115 kV Wood Pole (Modified)	2	150 x 75	0.5	0.5	0.0
12 kV Wood Pole (New)	100	40 x 60	5.5	5.5	<0.1
12 kV Wood Pole (Existing/Modified)	3	40 x 40	0.1	0.1	0.0

*Note: New TSPs at Lugo Substation would be located within the previously disturbed substation footprint; therefore, no permanent disturbance would result.

3.7.2.3 Conductor/Cable Installation

Above Ground 500 kV Transmission Conductor

Wire stringing activities would be in accordance with SCE common practices and similar to process methods detailed in the IEEE Standard 524-2003, *Guide to the Installation of Overhead Transmission Line Conductors*. To ensure the safety of workers and the public, safety devices (e.g., traveling grounds), guard structures, radio-equipped public safety roving vehicles, and linemen would be in place prior to the initiation of wire stringing activities. Advanced planning is required to determine circuit outages, pulling times, and safety protocols to ensure that the safe installation of wire is accomplished.

Wire stringing includes all activities associated with the installation of the primary conductors onto transmission line structures. These activities include the installation of conductor, ground wire (OHGW), insulators, stringing sheaves (rollers or travelers), vibration dampeners, weights, suspension, and hardware assemblies.

The following five steps describe typical wire stringing activities:

- **Step 1 – Planning:** Develop a wire stringing plan to determine the sequence of wire pulls and the set-up locations for the wire pull/tensioning/splicing equipment.
- **Step 2 – Sock Line Threading:** A helicopter would fly a lightweight sock line from structure to structure, which would be threaded through rollers in order to engage a camlock device that would secure the pulling sock in the roller. This threading process would continue between all structures through the rollers of a particular set of spans selected for a wire pull.
- **Step 3 – Pulling:** The sock line would be used to pull in the conductor pulling rope and/or cable. The pulling rope or cable would be attached to the conductor using a special swivel joint to prevent damage to the wire and to allow the wire to rotate freely to prevent complications from twisting as the conductor unwinds off the reel.
- **Step 4 – Splicing, Sagging, and Dead-Ending:** Once the conductor is pulled in, if necessary, all mid-span splicing would be performed. Once the splicing has been completed, the conductor would be sagged to the proper tension and dead-ended to structures.
- **Step 5 – Clipping-In:** After the conductor is dead-ended, the conductors would be secured to all tangent structures—a process called clipping in. Once this is complete, spacers would be attached between the bundled conductors of each phase to keep uniform separation between each conductor.

Optical Ground Wire

Stringing includes all activities associated with the installation of the OPGW onto the LSTs, as well as the installation of suspension and dead-end hardware assemblies. The dimensions of the area needed for the stringing setups associated with conductor installation would vary depending on structure height and terrain, but should not extend beyond the limits of the ROW and

approved temporary construction areas. Vegetation may be removed where necessary to safely access the site and position the stringing equipment. To the extent possible, pull and tension sites would be located on level ground to minimize the need for grading. The following four steps describe the OPGW stringing activities:

- **Step 1 – Setup:** The existing OHGW would be used to pull in the OPGW. Helicopters would be used to transport equipment and workers to each tower location to begin setting up for the pulling. On average, the helicopter would operate approximately 10 hours per day during conductor stringing operations.

- **Step 2 – Pulling:** The existing OHGW would be used to pull new OPGW pulling cable. The OPGW would then be pulled through a single span or through multiple spans that would involve multiple tower structures.

  The pull site, located at one end of the OPGW pull, is where the pulling equipment would be located. The tension site would be located at the opposite end of the pulling site and would consist of several large pieces of equipment to support the wire stringing activities. Some of this equipment may include a rope machine, a tensioning machine, or "bull wheel" (used to provide tension on the OPGW as it is being pulled off the reel); several flatbed trailers with mounted reel stands; a rough terrain crane to remove/replace conductor reels off of the reel stands; and a sagging tractor or bulldozer.

  The puller and tensioner are operated together during the pulling phase to ensure that the conductor is installed in a controlled manner and that conductor-to-ground clearance is maintained.

  OPGW pull sites may occur every 9,500 to 20,000 feet on flat terrain and may be more closely spaced in rugged terrain. Wire pull locations would be selected, where possible, based on the geometry of the line as affected by changes in routing directions, changes in the terrain, and suitability of stringing and splicing equipment setups.

- **Step 3 – Splicing, Sagging, and Dead-Ending:** Once the OPGW is pulled through, OPGW splices may occur every 9,500 to 20,000 feet on flat terrain, or more closely in rugged terrain. Once the new OPGW has been installed, it would be pulled to a tighter tension that would be predetermined by engineering. This task would have the conductor at a tension that is referred to as "initial sag." Once the OPGW has been sagged, this would allow the other crews to begin their work. The tower types in a pull would determine what task would be completed next. If there are dead-end-type structures, these would have to be completed prior to working on the tangent or clipping structures. This would vary from pull to pull. Both operations would use light-lift helicopters or boom trucks to move the workers, tools, and hardware assemblies to most of the structure sites.

- **Step 4 – Clipping-In:** After the OPGW is dead-ended, the OPGW would be attached to all tangent structures—a process called clipping-in.

Stringing would be conducted in accordance with SCE's specifications, which are similar to process methods detailed in IEEE Standard 524-2003, *Guide to the Installation of Overhead*

Transmission Line Conductors. To protect the safety of workers and the public, safety devices (e.g., grounding, guard structures, and radio-equipped construction vehicles and equipment) would be in place prior to initiation of wire stringing activities.

All-Dielectric Self-Supporting Installation on Distribution Poles

Overhead ADSS would be installed by attaching cross arms on distribution poles. Overhead ADSS stringing includes the installation of vibration dampeners, suspension, and dead-end hardware assemblies. Fiber optic cable pulls typically occur every 6,000 feet to 10,000 feet over flat or mountainous terrain. Distribution line poles would be replaced or interset poles would be installed if the pole does not meet wind load or ground clearance requirements with the addition of fiber cable. An approximately 8-foot-deep hole would be drilled next to the existing pole, and a new pole would be erected. A conductor would be transferred from the existing pole to the new pole, and the old pole would be cut or removed.

Below Ground

There is no belowground transmission or subtransmission line construction associated with the Proposed Project.

Guard Structures

Guard structures are temporary facilities that would typically be installed at transportation, flood control, and utility crossings for wire stringing/removal activities. These structures are designed to stop the movement of a conductor should it momentarily drop below a conventional stringing height. SCE estimates that 95 guard structures may need to be constructed along the proposed route.

Typical guard structures are standard wood poles. Depending on the overall spacing of the conductors being installed, two to four guard poles would be required on either side of a crossing. In some cases, the wood poles could be substituted with the use of specifically equipped boom trucks or, at highway crossings, temporary netting could be installed if required. The guard structures would be removed after the conductor is secured into place.

For road, railroad, and aqueduct crossings, SCE would work closely with the applicable jurisdiction to secure the necessary permits to string conductor over the applicable infrastructure.

3.7.3 Transmission Line Construction (Below Ground)

The following subsections describe the below ground construction activities associated with installing the distribution and telecommunications line segments for the Proposed Project.

3.7.3.1 Trenching

Fiber Optic Installation

New underground conduit and structures would typically be installed with a backhoe. The trench would be excavated to approximately 24 inches wide and a minimum of 36 inches deep. Conduit would be placed in the trench and covered with approximately 30 inches of concrete slurry before it is backfilled and compacted. For manholes and pull boxes, a hole would be excavated to

be approximately 10 feet deep, 8 feet long, and 8 feet wide. The manhole or pull box would be lowered into place and connected to the conduits, and the hole around the structure would be backfilled with concrete slurry and a minimum of 24 inches of native soil cover.

The fiber optic cable would be installed throughout the length of the underground conduit and structures through an inner-duct, which provides protection and identification for the cable. First, the inner-duct would be pulled in the conduit from structure to structure using a pull rope and pulling machine or a truck-mounted hydraulic capstan. Then the fiber optic cable would be pulled inside the inner-duct using the same procedure.

Distribution Installation

The Proposed Project includes approximately 1,000 feet of underground distribution cables. An approximately 2-foot-wide by 4-foot-deep trench would be required to place the conduit underground.

Subtransmission Survey

Subtransmission surveys are not proposed as part of the Proposed Project.

Subtransmission Trenching

Subtransmission trenching is not proposed as part of the Proposed Project.

Subtransmission Vault Installation

Subtransmission vault installation is not proposed as part of the Proposed Project.

3.7.3.2 Trenchless Techniques: Microtunnel, Bore, Horizontal Directional Drilling

Unless alternate methods are required to cross existing facilities or sensitive resources, duct banks would be installed using open-cut trenching techniques. In the event that trenchless techniques are required, SCE would utilize the horizontal directional drilling (HDD) technique.

Horizontal Directional Drilling

HDD technology is an underground boring technique that uses hydraulically powered, horizontal drilling equipment. It involves drilling along a vertical arc that passes beneath the intended feature. HDD technology utilizes lubrication containing water and bentonite clay (i.e., drilling mud) to aid the drilling, coat the walls of the bore hole, and maintain the open hole. The HDD technology uses a hydraulically powered horizontal drilling rig supported by a drilling mud tank and a power unit for the hydraulic pumps and mud pumps. A variable-angle drilling unit would initially be adjusted to the proper design angle for the particular drill. A 6- to 8-inch-diameter drill would typically be used.

The first step would be to drill a fluid-filled pilot bore. The first and smallest of the cutting heads would begin the pilot hole at the surveyed entry point. The first section of the drill stem has an articulating joint near the drill-cutting head that the HDD operator can control. Successive drill stem sections would be added as the drill head bores under the crossing. The drill head would then be articulated slightly by the operator to follow a designed path under the crossing and climb upward toward the exit point. Once the pilot hole is completed, a succession of larger

cutting heads and reamers would be pulled and pushed through the bore hole until it is the appropriate size for the steel casing. Once the steel casing is in place, ducts would be installed within the steel casing using spacers to maintain the needed separation, and then the remaining space would be backfilled with a slurry mix.

During the HDD process, the underground cable to be pulled through the crossing would be strung on cable supports down the ROW or within temporary extra workspace areas.

As part of the drilling design process, geotechnical surveys of subsurface conditions would be conducted to determine the underlying geologic strata along the bore path. Infrequently, the geologic strata above the bore may be weaker than anticipated and/or unconsolidated. As the HDD passes under these locations, the high pressure of the drilling mud may result in a fracture of these strata, allowing drilling mud to rise to the surface. This situation is termed a "frac-out" and is usually resolved by reducing the mud system pressure or increasing the mud viscosity. If a frac-out occurs, the boring operation would be stopped immediately, and a frac-out contingency plan would be implemented to contain and remove the drilling mud.

3.7.3.3 Grading for Clearance Discrepancy Area

One potential clearance discrepancy area, located between Towers M29-T3 and M30-T1 on the Lugo-Mohave 500 kV Transmission Line, would be graded to remove a minimum of 2 feet of berm as required to provide a minimum transmission line clearance in accordance with CPUC G.O. 95 and/or SCE's standard practices. A conceptual grading scheme has been developed to determine any problem areas and to understand the type of limitations the site may have as design progresses. Schematic grading analysis includes analyzing drainage patterns and calculating rough estimates of cut and fill quantities. Typical grading activities associated with clearance discrepancies include vegetation clearing, blade-grading, grubbing, earthwork (e.g., cut and fill transitions), drainage improvements, and slope stability improvements (e.g., geogrid reinforcement). Less than 0.1 acre would be graded, approximately 30 cubic yards of material would be excavated, and approximately 1 cubic yard of material would be added. The excavated material would be spread on site or disposed to off site at an SCE-approved facility. In addition, one potential clearance discrepancy area, located between Towers M4-T2 and M4-T3 on the Lugo-Mohave 500 kV Transmission Line, would require removal of an abandoned concrete foundation to remove a minimum of 3.5 feet of berm/concrete as required to provide minimum transmission line clearance in accordance with CPUC G.O. 95 and/or SCE's standard practices.

3.7.4 Mid-Line Series Capacitor Construction

The following subsections describe the construction activities associated with installing the components of the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor for the Proposed Project.

3.7.4.1 Site Preparation and Grading

The sites would be prepared by clearing existing vegetation within the boundaries of the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor sites. Once vegetation clearance is completed, the sites would be graded in accordance with approved grading plans, and a temporary chain-link fence would be installed around the perimeter.

3.7.4.2 Ground Surface Improvements

Table 3-10: Mid-Line Series Capacitor Ground Surface Improvement Materials provides a summary of the ground surface improvements at the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor sites.

Table 3-10: Mid-Line Series Capacitor Ground Surface Improvement Materials

Element	Material	Approximate Area (Acres)	Approximate Volume (Cubic Yards)
Access Road Surface Areas[19]	Dirt	0.3	0.0
Mid-Line Series Capacitor Paved Areas[20]	Asphalt	0.8	259.0
Internal Road Surface Areas[21]	Aggregate Base	0.8	664.0
Gravel Surfacing[22]	Crushed Gravel	3.2	1698.0
Parking Surfacing	Asphalt/Aggregate Base	N/A	N/A

3.7.4.3 Below-Grade Construction

After the site is graded, below-grade facilities would be installed. Below-grade facilities include, for example, a ground grid, cable trenches, equipment foundations, perimeter foundations, conduits, duct banks, and vaults. As described previously in Section 3.7.2.2, Pole/Tower Installation and Removal, existing concrete supply facilities would be used where feasible and a temporary concrete batch plant may be set up in an established material staging yard.

3.7.4.4 Above-Grade Construction

Above-grade installation of capacitor facilities (e.g., buses, capacitor banks, disconnect switches, steel support structures, perimeter fence, and the MEER) would commence after the below-grade structures are in place.

3.7.4.5 Telecommunications Equipment Installation

Both the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor would include a MEER, as described in Section 3.5.4.1, Mechanical and Electrical Equipment Room. The MEER would have a separate communication room to house Proposed Project-related telecommunications equipment. Each communication room would be equipped with AC power, DC power system (including batteries and a battery charger), an overhead cable tray, redundant air conditioners, and diverse fiber entry conduits for connection to outside plant fiber optic

[19] The acreage includes additional width for ditch and berm.
[20] This item includes 2 inches over rough grade. However, enough crushed gravel needs to be added to cover a design that does not include asphalt.
[21] The 6-inch aggregate base would be overlaid with 4 inches of crushed gravel.
[22] This item includes all areas within the mid-line series capacitor sites, except for the areas paved with asphalt.

cables. SCE would install fiber optic terminating shelves, fiber optic transport terminals, channel equipment, communications alarm/switch equipment, and data equipment in the communication room. The equipment would be transported to the site and installed by SCE technicians after the MEER is completed, but before the capacitors can be placed in service.

3.7.4.6 Landscaping

There are no landscape plans required for the Proposed Project.

3.7.4.7 Mid-Line Series Capacitor Disturbance Table

Table 3-11: Mid-Line Series Capacitor Estimated Land Disturbance provides a summary of the land disturbance estimates associated with the construction of the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor.

Table 3-11: Mid-Line Series Capacitor Estimated Land Disturbance

Proposed Project Feature	Quantity	Approximate Area Disturbed during Construction (Acres)[23]	Approximate Area to be Restored (Acres)	Approximate Area Permanently Disturbed (Acres)
Newberry Springs Series Capacitor	1	4.1	0.8	3.3
Ludlow Series Capacitor	1	4.3	1.1	3.2

3.7.5 Fiber Optic Repeater Construction

The following subsections describe the construction activities associated with installing the components of the Barstow, Kelbaker, and Lanfair Fiber Optic Repeaters for the Proposed Project.

3.7.5.1 Site Preparation and Grading

The sites would be prepared by clearing existing vegetation within the boundaries of the Barstow, Kelbaker, and Lanfair Fiber Optic Repeater sites. Once vegetation clearance is completed, a temporary chain-link fence would be installed around the perimeter. Minor grading would be required inside the fence and for the access roads at each location. The maximum amount of grading at each repeater site is as follows:

- Barstow Fiber Optic Repeater site:16 cubic yards
- Kelbaker Fiber Optic Repeater site: 30 cubic yards

[23] Land disturbance acreage during construction is greater than the acreage associated with the permanent facility as described in Section 3.5.4 Mid-Line Series Capacitors.

- Lanfair Fiber Optic Repeater site: 24 cubic yards

3.7.5.2 Ground Surface Improvements

Table 3-12: Fiber Optic Repeater Ground Surface Improvement Materials provides a summary of the ground surface improvements at the fiber optic repeater sites.

Table 3-12: Fiber Optic Repeater Ground Surface Improvement Materials

Element	Material	Approximate Area (Acres)[24]	Approximate Volume (Cubic Yards)[25]
Access Road Surface Area	Dirt	0.1	85.0
Internal Road Surface Area	Asphalt	N/A	N/A
Gravel Surfacing	Crushed Gravel	0.1	66.0
Parking Surfacing	Asphalt	N/A	N/A

3.7.5.3 Below-Grade Construction

After the site is prepared, below-grade facilities would be installed. Below-grade facilities include, for example, telecommunications and distribution conduits, duct banks, and vaults.

3.7.5.4 Above-Grade Construction

Above-grade installation for the fiber optic repeater facilities (e.g., communication building, microwave tower pad, emergency generator, and an above-grade 499-gallon propane fuel tank) would commence after the below-grade structures are in place. A typical communication building would either be a block wall-type building to be constructed on site or a prefabricated building delivered to the site. Prefabricated buildings are set on a concrete foundation using a crane. The typical building size is approximately 36 feet by 12 feet; the building consists of a generator room and an equipment room. The generator room houses an emergency backup generator and manual/automatic AC switch equipment.

3.7.5.5 Landscaping

There are no landscape plans required for the Proposed Project.

3.7.5.6 Fiber Optic Repeater Disturbance Table

Table 3-13: Fiber Optic Repeater Estimated Land Disturbance provides a summary of the land disturbance estimates associated with the construction of the proposed fiber optic repeaters.

[24] The approximate area includes all three repeater sites.
[25] The approximate volume includes all three repeater sites.

Table 3-13: Fiber Optic Repeater Estimated Land Disturbance

Fiber Optic Repeater	Quantity	Approximate Area Disturbed during Construction (Acres)	Approximate Area to be Restored (Acres)	Approximate Area Permanently Disturbed (Acres)
Barstow	1	0.7	0.6	0.1
Kelbaker	1	0.4	0.3	0.1
Lanfair	1	0.4	0.3	0.1

3.7.6 Modifications at Other Facilities

As described in Section 3.5.4.1, Modifications to Existing Substations, minor internal modifications would be necessary at the Lugo, Mohave, and Eldorado Substations.

3.7.7 Land Disturbance Summary

Land disturbance would include all areas affected by construction of the Proposed Project. It is estimated that the total permanent land disturbance for the Proposed Project would be approximately 8.8 acres. It is estimated that the Proposed Project would temporarily disturb approximately 385.2 acres. The estimated amount of land disturbance for each Proposed Project component is summarized in Table 3-14: Proposed Project Estimated Land Disturbance.[26]

[26] Table 3-14: Proposed Project Estimated Land Disturbance calculates total temporary and permanent disturbance acreages associated with the Proposed Project. In many areas, components and work areas overlap; however, for the purposes of calculating overall disturbance, areas of overlap have been removed using GIS tools to eliminate over-counting. Disturbance areas have been assigned according to a hierarchy that prioritizes permanent impacts over temporary impacts. For work areas associated with any particular component, refer to previous tables in this chapter that describe component work areas.

Table 3-14: Proposed Project Estimated Land Disturbance

Proposed Project Feature	Quantity	Total Approximate Area Disturbed during Construction (Acres)	Temporary Disturbance		Approximate Area Permanently Disturbed (Acres)
			Approximate Area Previously Disturbed (Acres)	Approximate Area to be Restored (Acres)	
Mid-Line Series Capacitors					
Newberry Springs Series Capacitor	1	4.1	0.0	0.8	3.3
Ludlow Series Capacitor	1	4.3	0.0	1.1	3.2
Total Estimate for Mid-Line Series Capacitors		*8.4*	*0.0*	*1.9*	*6.5*
Transmission					
Guard Structures	95	7.4	0.0	7.4	0.0
Pull and Tension Sites	146	51.2	0.0	49.6	1.6
Discrepancy Work Areas	14	6.1	3.6	2.1	0.4
OPGW/Tower Work	78	18.4	18.4	0.0	0.0
Total Estimated for Transmission		*83.1*	*22.0*	*59.1*	*2.0*
Telecommunications					
Fiber Optic Repeaters	3	1.7	0.0	1.5	0.2

Proposed Project Feature	Quantity	Total Approximate Area Disturbed during Construction (Acres)	Temporary Disturbance		Approximate Area Permanently Disturbed (Acres)
			Approximate Area Previously Disturbed (Acres)	Approximate Area to be Restored (Acres)	
Telecommunications Work Areas (Mohave Substation, Mid-Line Series Capacitors, Fiber Optic Repeaters, and Pull and Tension Sites)	39	30.4	1.1	29.3	0.0
Total Estimated for Telecommunications		*32.1*	*1.1*	*30.8*	*0.2*
Distribution					
Mid-Line Series Capacitor Work Areas (includes Joint Distribution/ Telecommunications Route between Capacitors)	3	20.0	0.0	20.0	0.0
Fiber Optic Repeater Work Areas	3	5.7	0.0	5.7	0.0
Total Estimated for Distribution		*25.7*	*0.0*	*25.7*	*0.0*
Substations					
Lugo Substation	1	18.5	18.5	0.0	0.0
Mohave Substation	1	21.5	21.5	0.0	0.0
Eldorado Substation	1	9.5	9.5	0.0	0.0
Total Estimated for Substations		*49.5*	*49.5*	*0.0*	*0.0*

Proposed Project Feature	Quantity	Total Approximate Area Disturbed during Construction (Acres)	Temporary Disturbance		Approximate Area Permanently Disturbed (Acres)
			Approximate Area Previously Disturbed (Acres)	Approximate Area to be Restored (Acres)	
Staging Areas					
Staging Areas	17	93.5	20.0	73.5	0.0
Landing Zones	219	71.6	0.1	71.5	0.0
Parking Areas	4	17.6	11.5	6.1	0.0
Total Estimated for Staging Areas		*182.7*	*31.6*	*151.1*	*0.0*
Access Roads and/or Spur Roads					
Access Roads and/or Spur Roads	70	10.8	0.5	10.2	0.1
Footpaths	40	1.7	0.0	1.7	0.0
Total Area Estimated for Access Roads and/or Spur Roads and Footpaths		*12.5*	*0.5*	*11.9*	*0.1*
Total Estimated for Proposed Project		**394.0**	**104.7**	**280.5**	**8.8**

Notes: Work areas at substations are previously disturbed, and do not contribute to the new, permanent disturbance acreage associated with the Proposed Project. Work area acreages are based on preliminary planning and may be adjusted due to final engineering.

3.7.8 Construction Workforce and Equipment

The estimated elements, materials, and number of personnel and equipment required for construction of the Proposed Project are summarized in Attachment 3-C: Construction Equipment and Workforce Estimates.

Construction would be performed by either SCE construction crews or contractors. If SCE construction crews are used, they typically would be based at SCE's local facilities (e.g., service centers, substation, transmission ROW, etc.) or a temporary material staging yard set up for the Proposed Project. Contractor construction personnel would be managed by SCE construction management personnel and based out of the Contractor's existing yard or temporary material staging yard set up for the Proposed Project. SCE anticipates a total of 15 to 346 (or an average of 159) construction personnel working on any given day. SCE anticipates that crews would work concurrently whenever possible; however, the estimated deployment and number of crew members would vary depending on factors such as material availability, resource availability, and construction scheduling.

In general, construction efforts would occur in accordance with accepted construction industry standards. If feasible, SCE would comply with local ordinances for construction activities.

3.7.8.1 Equipment Description

Table 3-15: Construction Equipment Description lists the equipment SCE expects to use during construction and a brief description of the use of that equipment.

Table 3-15: Construction Equipment Description

Equipment Type	Use Description
1-Ton Crew Cab	Transport and support construction personnel
¾-Ton Truck/Foreman's Truck	Transport and support construction personnel
Backhoe	Excavate and load materials
Bobcat	Excavate, move, and load materials
Bucket Truck	Lift and transport workers; and frame and string overhead cable lines
Bullwheel Puller	Install underground components
Compactor	Compact soil
Compressor Trailer	Provide compressed air for pneumatic tools
Concrete Mixer Truck	Deliver and mix concrete
Crane/Boom Truck	Lift and place materials
Digger Derrick	Dig holes, hoist, and set utility poles
Ditch Witch	Dig trenches
Dozer	Grade pads and access roads
Drill Rig	Drill subsurface holes
Dump Truck	Transport import/export material
Excavator	Excavate materials
Fiber Tensioner	Remove and install OPGW
Flatbed Truck	Deliver poles and hardware
Forklift	Lift and move materials
Foundation Auger	Drill foundation holes
Generator	Provide power to the work area
Grader	Grade substation site, pads, and access roads; ROW clearing; and restoration
V-Groove Puller	Remove and install OPGW
Helicopter	Install conductor/OPGW
Helicopter Support Truck	Install conductor/OPGW
Hydraulic Crane	Lift and place materials

Equipment Type	Use Description
Hydraulic Rewind Puller	Pull conductor/OPGW
LoDrill	Drill foundation holes
Low Bed Hauler	Transport equipment
Low Side End Dump	Transport import/export material
Manlift	Set steel and install equipment
Motor Grader	Grade terrain
Paving Machine	Lay asphalt
Reach Lift	Install equipment
Rock Crusher	Process and crush oversized rocks
Scissor Lift	Provide access to elevated work areas
Scraper	Grade pads and access roads
Semi-Tractor Truck	Transport materials
Skid Steer Loader	Move materials
Skip Loader	Move or load materials
Static Truck/Tensioner	Provide tension during conductor/OPGW during installation
Splicing Lab/Truck	Splice conductor/OPGW
Storage Trailer	Storage
Test Truck (less than 1-ton truck)	Transport workers and test equipment to site
Tool Truck	Transport tools
Trencher	Dig trenches
Utility Cart	Support construction activities
Van (Cargo)	Transport telecommunications personnel and equipment
Water Buffalo	Transport water
Water Pull	Suppress dust and condition soil for compaction
Water Truck	Suppress dust and condition soil for compaction
Wire Truck/Trailer	Transport and hold conductor/OPGW during stringing operations

3.7.9 Construction Schedule

SCE anticipates that construction of the Proposed Project would take approximately 15 months, as shown in Table 3-16: Proposed Construction Schedule.[27] Construction would commence following CPUC approval, final engineering, procurement activities, land rights acquisition, and receipt of all applicable permits.

Table 3-16: Proposed Construction Schedule

Proposed Project Activity	Approximate Duration (Months)	Approximate Start Date
CPUC Permit to Construct	N/A	June 2019
BLM Record of Decision	N/A	February 2019
Final Engineering	N/A	September 2017
ROW/Property Acquisition	N/A	February 2019
Acquisition of Required Permits	N/A	April 2019
Mid-Line Series Capacitor Construction	13	Second quarter 2019
Substation Modifications	10	Second quarter 2019 (Nevada) August 2019 (California)
OPGW Construction	9	Second quarter 2019 (Nevada) November 2019 (California)
500 kV Transmission (Discrepancy) Construction	6	Second quarter 2019 (Nevada) October 2019 (California)
Telecommunications Construction	11	July 2019
Distribution Construction	5	October 2019
Proposed Project In-Service	N/A	June 2020
Cleanup	6	December 2021

3.7.10 Energizing Transmission and Subtransmission Lines

The Proposed Project involves upgrades to existing transmission and subtransmission lines. Therefore, energizing is not required for the Proposed Project.

[27] The proposed construction schedule does not account for unforeseen Proposed Project delays, including but not limited to those due to inclement weather and/or stoppage necessary to protect biological resources (e.g., nesting birds).

3.8 Operation and Maintenance

Ongoing O&M activities are necessary to ensure reliable service, as well as the safety of the utility worker and the general public, as mandated by the CPUC. SCE facilities are subject to Federal Energy Regulatory Commission jurisdiction. SCE transmission facilities are under operational control of CAISO.

3.8.1 Proposed Mid-Line Series Capacitors

The proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor would require minimal O&M. Typical routine inspection and maintenance activities would include the following:

- Monthly inspections to check and record pressure gauges readings, operation counter readings, battery voltage and current readings, mimic display, and fence conditions (e.g., any cut or damage to the fences)

- Annual inspection of platform structures, capacitor equipment, metal oxide varistors, damping reactors, instrument transformers, fiber optics, triggered air gaps/fast bypass devices, insulators, bus-work and fitting, protection and control systems, internal bypass switch(es), external bypass switch, and isolating disconnect switches with ground attachments

- Periodic testing on instrument transformers, triggered air gaps/fast bypass devices, protection and control systems, and internal bypass switches; the frequency of the tests ranges from once per year to once every five years, depending on the types of equipment and types of tests

Routine O&M activities would typically involve two to four operators, electricians, and testmen over a period of two to five days. A manlift is required for all activities on mid-line series capacitor platforms, which are typically 19 to 20 feet AGL.

3.8.2 Existing Substations

The existing Mohave Substation is unstaffed, and electrical equipment within the substation is remotely monitored and controlled from SCE's Eldorado Substation Switching Center. SCE maintains an Energy Management System that allows it to monitor and respond to alarms as the system status changes.

The existing Lugo and Eldorado Substations are both manned facilities that function as Switching Centers manned by System Operators acting under the direction of the Grid Control Center to operate the portion of the system under their respective substation jurisdiction.

Substation personnel perform station inspections in both manned and unmanned substations when there is an indication of trouble or to perform routine maintenance. Routine circuit breaker and disconnect switching operations at remotely controlled stations would normally be performed by remote control on orders by the responsible switching center. Substation personnel

are responsible for maintaining the correct status of all lines and equipment under their jurisdiction.

3.8.3 Transmission, Subtransmission, and Distribution Lines

The existing transmission, subtransmission, and distribution lines would continue to be maintained in a manner consistent with CPUC G.O. 95 and G.O. 128 as applicable, and the NESC for those circuits that are located outside of California. Normal operation of the lines would be controlled remotely through SCE control systems, and manually in the field as required. SCE inspects the transmission, subtransmission, and distribution overhead facilities in a manner consistent with CPUC G.O. 165 a minimum of once per year via ground and/or aerial observation, but inspections usually occur more frequently based on system reliability. Maintenance would occur as needed and could include activities such as repairing or replacing conductors, washing or replacing insulators, repairing or replacing other hardware components, repairing or replacing poles and towers, tree trimming, brush and weed control, and access road maintenance. Most regular O&M activities of overhead facilities are performed from existing access roads with no surface disturbance. Repairs done to existing facilities, such as repairing or replacing existing poles and towers, could occur in undisturbed areas. Existing conductors could require re-stringing to repair damages. Some pulling site locations could be in previously undisturbed areas, and at times, conductors could be passed through existing vegetation en route to their destination.

Routine access road maintenance is conducted on an annual and/or as-needed basis. Road maintenance includes maintaining a vegetation-free corridor (to facilitate access and for fire prevention) and blading to smooth over washouts, eroded areas, and washboard surfaces as needed. Access road maintenance could include brushing (i.e., trimming or removal of shrubs) 2 to 5 feet beyond berms or a road's edge when necessary to keep vegetation from intruding into the roadway. Road maintenance would also include cleaning ditches, moving and establishing berms, clearing and making functional drain inlets to culverts, culvert repair, clearing and establishing water bars, and cleaning and repairing over-side drains. Access road maintenance includes the repair, replacement, and installation of storm water diversion devices on an as-needed basis.

Insulators could require periodic washing with water to prevent the buildup of contaminants (e.g., dust, salts, droppings, smog, condensation, etc.) and reduce the possibility of electrical arcing, which can result in circuit outages and potential fire. Frequency of insulator washing is region specific and based on local conditions and build-up of contaminants. Replacement of insulators, hardware, and other components is performed as needed to maintain circuit reliability.

Some tower or pole locations and/or laydown areas could be in previously undisturbed areas and could result in ground and/or vegetation disturbance, though attempts would be made to utilize previously disturbed areas to the greatest extent possible. In some cases, new access is created to remove and replace an existing tower or pole. Wood pole testing and treating is a necessary maintenance activity conducted to evaluate the condition of wood structures both above and below ground level. Intrusive inspections require the temporary removal of soil around the base of the pole, usually to a depth of 12 to 18 inches, to check for signs of deterioration. Roads and

trails are utilized for access to poles. For impact prevention, all soil removed for intrusive inspections would be reinstalled and compacted at completion of the testing.

Existing conductors could require re-stringing to repair damages. Some pulling site locations could be in previously undisturbed areas, and at times, conductors could be passed through existing vegetation en route to their destination.

Regular tree pruning must be performed to be in compliance with existing State and federal laws, rules, and regulations and is crucial for maintaining reliable service, especially during severe weather or disasters. Tree pruning standards for distances from overhead lines have been set by the CPUC (G.O. 95, Rule 35); California Public Resources Code Section 4293; California Code of Regulations Title 14, Article 4; and other government and regulatory agencies. SCE's standard approach to tree pruning is to remove at least the minimum required by law plus one year's growth (species dependent).

In addition to maintaining vegetation-free access roads, helipads, and clearances around electrical lines, clearance of brush and weeds around poles and/or transmission tower pads may be required by applicable regulations on fee-owned ROWs, as necessary for fire protection. A 10-foot radial clearance around non-exempt poles (as defined by California Code of Regulations Title 14, Article 4) and a 25- to 50-foot radial clearance around non-exempt towers (as defined by California Code of Regulations Title 14, Article 4) are maintained in accordance with California Public resources Code Section 4292.

In some cases, towers or poles do not have existing access roads and are accessed on foot, by helicopter, or by creating temporary access areas. O&M-related helicopter activities could include transportation of transmission line workers, delivery of equipment and materials to structure sites, structure placement, hardware installation, and OPGW stringing operations. Helicopter landing areas could occur where access by road is infeasible. In addition, helicopters must be able to land within SCE ROWs, which could include landing on access or spur roads.

In addition to regular O&M activities, SCE conducts a wide variety of emergency repairs in response to emergency situations, such as damage resulting from high winds, storms, fires, and other natural disasters, and accidents. Such repairs could include replacement of downed poles, transmission towers, or lines or re-stringing conductors. Emergency repairs could be needed at any time.

3.8.4 Telecommunications Facilities

The telecommunications equipment would be subject to maintenance and repair activities on an as-needed or emergency basis. Activities would include replacing defective circuit boards, damaged radio antennas, or feedlines; and testing the equipment. Telecommunications equipment would also be subject to routine inspection and preventative maintenance, such as filter change-outs or software and hardware upgrades. Most regular O&M activities for telecommunications equipment are performed at substation or communication sites and inside the equipment rooms, and are accessed from existing access roads with no surface disturbance; helicopter transportation may be required to access remote communications sites for routine or

emergency maintenance activities. Access road maintenance is performed as described previously in Section 3.8.3, Transmission, Subtransmission, and Distribution Lines.

The telecommunications cables would be maintained on an as-needed or emergency basis. Maintenance activities would include patrolling, testing, repairing, and replacing damaged cable and hardware. Most regular maintenance activities of overhead facilities are performed from existing access roads with no surface disturbance. Repairs done to existing facilities, such as repairing or replacing existing cables and re-stringing cables, could occur in undisturbed areas. Access and habitat restoration may be required for routine or emergency maintenance activities, as mentioned previously in Section 3.8.3, Transmission, Subtransmission, and Distribution Lines.

3.8.4.1 Fiber Optic Repeater Sites

The fiber optic repeater sites would require the following site maintenance/inspection schedule:

- Generator – once per year
- Fuel tank – once per year; refuel as required by usage
- Site vegetation clearance – once per year, or as required
- Building inspection – once per year

3.9 Applicant-Proposed Measures

As part of the Proposed Project, SCE has identified 19 applicant-proposed measures (APMs) that it plans to implement during construction and/or O&M of the Proposed Project to reduce or avoid impacts. SCE would conduct the design, construction, and O&M of the Proposed Project in accordance with the APMs. The proposed APMs are listed in Table 3-17: Applicant-Proposed Measures.

Table 3-17: Applicant-Proposed Measures

APM	Description
APM-AIR-01: Fugitive Dust	During construction, fugitive dust would be controlled by implementing the following measures: ▪ Surfaces disturbed by construction activities would be covered or treated with a dust suppressant or water until the completion of activities at each site of disturbance. ▪ Inactive disturbed (e.g., excavated or graded areas) soil and soil piles would be sufficiently watered or sprayed with a soil stabilizer to create a surface crust, or would be covered. ▪ Drop heights from excavators and loaders would be minimized to a distance of no more than 5 feet. Vehicles hauling soil and other loose material would be covered with tarps or maintain at least 6 inches of freeboard. ▪ Within Nevada, vehicle speeds on unpaved traffic and parking areas would be restricted to 15 miles per hour. In California, vehicle speeds on unpaved roadways would adhere to all posted speed limits. ▪ Within Nevada, unpaved non-public traffic and parking areas designated for utilization during Proposed Project construction would be effectively stabilized to control dust emissions (e.g., using water or chemical stabilizer/suppressant). In California, unpaved non-public traffic and parking areas designated for utilization during Proposed Project construction would be effectively stabilized to control dust emissions with a chemical stabilizer/suppressant.
APM-AIR-02: Tier 4 Engines	Off-road diesel construction equipment with a rating between 100 and 750 horsepower would be required to use engines compliant with the U.S. Environmental Protection Agency's final Tier 4 non-road engine standards. In the event that a Tier 4 engine is not available, the equipment would be equipped with a Tier 3 engine and documentation would be provided from a local rental company stating that the rental company does not currently have the required diesel-fueled, off-road construction equipment, or that the vehicle is specialized and is not available to rent. Similarly, if a Tier 3 engine is not available, that equipment would be equipped with a Tier 2 or 1 engine, and documentation of unavailability would be provided.
APM-AIR-03: Idling	Equipment would not be left idling in excess of five minutes, except when idling is required for the equipment to perform its task or has a California clean-idle sticker.

APM	Description
APM-AIR-04: Equipment Maintenance	Diesel engines would be maintained in good working order and according to manufacturer's specifications to reduce emissions.
APM-AIR-05: Ridesharing	Workers would be encouraged to carpool to work sites, and/or utilize public transportation for employee commutes.
APM-BIO-01: Revegetation Plan	To the extent feasible, SCE would minimize temporary impacts and permanent loss to sensitive natural vegetation communities and special-status plants. Impacts would be minimized at construction sites by clearly demarcating work areas and flagging resources to be avoided. If unable to avoid impacts to sensitive natural vegetation communities and special-status plants, a revegetation plan would be prepared in coordination with the applicable agencies. The revegetation plan would describe, at a minimum, which vegetation restoration method (e.g., natural revegetation, planting, or reseeding with native seed stock in compliance with the Proposed Project's SWPPPs) would be implemented in the Proposed Project area. The revegetation plan would also include the plant species or habitats to be restored or revegetated, the replacement or restoration ratios (as appropriate), the restoration methods and techniques, and the monitoring periods and success criteria.
APM-BIO-02: Special-Status Plant Species Protection	Prior to construction and during the appropriate phenological (i.e., blooming) periods, a qualified biologist would flag the locations of any special-status plants present within a work area. These flagged areas would be avoided to the extent possible and monitored by a qualified biologist during construction activities. Where disturbance to these areas cannot be avoided, SCE would develop and implement a revegetation plan (APM-BIO-01). Weed species would be removed, where necessary, from areas to be revegetated to ensure successful revegetation to pre-construction conditions.
APM-BIO-03: Noxious and Invasive Weed Management Plan	Prior to construction, SCE would prepare a Noxious and Invasive Weed Management Plan (NIWMP) that is intended to minimize the spread of noxious and invasive weeds during construction. The NIWMP would include, but would not be limited to, ensuring that construction (earth-moving or ground-disturbing) vehicles arrive to work sites clean and weed-free prior to entering the ROW in cross-country areas, ensuring straw wattles used to contain storm water runoff are weed-free, and documenting the extent of noxious weeds within the construction areas prior to construction. Noxious weeds are defined as species rated as High on the California Invasive Plant Inventory Database, published by the California Invasive Plant Council. Construction within urban/developed areas and intensive agricultural areas would be exempt from the NIWMP requirements.

APM	Description
APM-BIO-04: Desert Tortoise Protection	The following list of measures is designed to avoid and minimize impacts to desert tortoise and would apply to all construction activities in areas with the potential to support the species: 1. Pre-activity Surveys: No more than seven days prior to the onset of ground-disturbing activities, an agency-approved biologist—with experience monitoring and handling desert tortoise—would conduct a pre-activity survey in all work areas within potential desert tortoise habitat, plus an approximately 300-foot buffer. All desert tortoise burrows within the pre-activity survey area (including desert tortoise pallets) would be prominently flagged at that time so that they may be avoided during work activities. Proposed actions would avoid disturbing desert tortoise burrows to the extent possible. However, burrows would be excavated if they would be impacted by construction activities. If a potential tortoise burrow must be excavated, the biologist would proceed according to the Desert Tortoise Council's Guidelines for Handling Desert Tortoise during Construction Projects. 2. Monitoring: The approved tortoise biologist would be available on site to monitor any work areas for desert tortoise, as needed. The approved tortoise biologist would be responsible for performing surveys prior to Proposed Project activities in suitable desert tortoise habitat. The approved tortoise biologist would have the authority to halt all non-emergency actions (as soon as safely possible) that may result in harm to desert tortoise, and would assist in the overall implementation of APMs for the tortoise. 3. Desert Tortoise in Work Area: In the event that a desert tortoise is encountered in the work area, all work would cease and the approved biologist would be contacted. Work would not commence until the animal has voluntarily moved to a safe distance away from the work area. Desert tortoises may be moved by an agency-approved biologist if necessary to move them out of harm's way. Encounters with desert tortoise would be reported to an approved biologist. Encounters with desert tortoise would be documented and provided to the California Department of Fish and Wildlife (CDFW), BLM, and U.S. Fish and Wildlife Service (USFWS). In the event that a dead or injured desert tortoise is observed, the approved biologist would be responsible for notifying SCE's herpetologist and reporting the incident to the CDFW, BLM, and USFWS. 4. Under Vehicle Checks: Desert tortoises commonly seek shade during the hottest times of the day. Employees working within the geographic range of this species would be required to check under their equipment or vehicles before they are moved. If desert tortoises are encountered, the vehicle is not to be

APM	Description
	moved until the animals have voluntarily moved to a safe distance away from the parked vehicle. Desert tortoises may be moved by the approved biologist, if necessary, to move them out of harm's way. 5. Handling Desert Tortoise: Only an agency-approved biologist may move or handle desert tortoises. When a desert tortoise is moved, the approved biologist would be responsible for taking appropriate measures to ensure that the animal is not exposed to harmful temperature extremes. The approved biologist would follow the appropriate protocols outlined in the Desert Tortoise Council's *Guidelines for Handling Desert Tortoises During Construction Projects* when handling desert tortoises or excavating their burrows. 6. Excavation of Desert Tortoise Burrows: Should it prove necessary to excavate a desert tortoise from its burrow to move it out of harm's way, excavation would be done using hand tools, either by or under the direct supervision of an approved biologist. Excavation of desert tortoise burrows would occur no more than seven days before the onset of construction or O&M activities. All desert tortoises removed from burrows would be placed in an unoccupied burrow that is approximately the same size as the one from which it was removed. If an existing burrow is unavailable, the approved biologist would construct or direct the construction of a burrow of similar shape, size, depth, and orientation as the original burrow. To ensure their safety, desert tortoises moved during inactive periods would be monitored for at least two days after placement in the new burrows or until the end of the construction activity. If desert tortoises need to be moved at a time of day when ambient temperatures could harm them (i.e., at temperatures lower than 40 degrees Fahrenheit (°F) or higher than 90°F), they would be held overnight in a clean cardboard box. These desert tortoises would be kept in the care of the approved biologist under appropriate controlled temperatures and released the following day when temperatures are favorable. All cardboard boxes would be appropriately discarded after one use. 7. Disposal of Trash: Trash and food items would be contained in closed containers and removed daily to reduce attractiveness to opportunistic predators, such as common ravens (*Corvus corax*), coyotes (*Canis latrans*), and feral dogs (*Canis lupus familiaris*). 8. Pets Prohibited: Employees would not bring pets to the Proposed Project area. 9. Vehicle Travel: Motor vehicles would be limited to maintained roads and designated routes. If additional routes are needed, they would be surveyed by the approved biologist.

APM	Description
	10. Raven Management: SCE would implement a Raven Management Plan (RMP) to minimize avian predation of desert tortoise for the Proposed Project. The purpose of the RMP is to utilize methods that deter raven depredation of juvenile desert tortoises, and other wildlife species. The RMP is not intended to eliminate or control raven populations, but would target offending ravens that have been found to prey upon desert tortoises. The RMP would incorporate an adaptive management strategy for immediate implementation following construction of the Proposed Project. The RMP would be evaluated after three years of implementation, or as needed, if avian predation becomes apparent. The following activities may be implemented as part of the RMP: 1) Common raven nest/power line monitoring, 2) Funding of offending raven control via contract with the U.S. Department of Agriculture, and 3) Alternative control strategies developed in coordination with USFWS (e.g. egg-oiling, laser deterrents, etc.). Mutual and timely cooperation between SCE and the BLM, USFWS, and CDFW is central to effective implementation of the RMP.
APM-BIO-05: Compensation for Impacts to Desert Tortoise Critical Habitat	Compensation for temporary and permanent impacts to desert tortoise habitat disturbance is proposed at the following ratios: ▪ A 5-to-1 ratio for impacts to desert tortoise critical habitat. ▪ A 1-to-1 ratio for impacts to desert tortoise habitat, excluding critical habitat. No compensatory mitigation is required for disturbed areas (i.e., totally denuded, mostly denuded with scattered shrub-like vegetation, active agricultural, residential, and urban) that provide no habitat value to the species. Although much of the desert tortoise habitat disturbance resulting from Proposed Project activities would be temporary, compensatory mitigation would be provided at a permanent ratio due to the slow recovery time of habitats in desert ecosystems. No mitigation would occur for impacts to developed land within the Proposed Project area.

APM	Description
APM-BIO-06: Nesting Birds	SCE would conduct pre-construction clearance surveys no more than seven days prior to construction to determine the location of nesting birds and territories, during the nesting bird season (typically February 1 to August 31, or earlier for species such as raptors). An avian biologist would establish a buffer area around active nest(s) and would monitor the effects of construction activities to prevent failure of the active nest. The buffer would be established based on construction activities, potential noise disturbance levels, and behavior of the species. Monitoring of construction activities that have the potential to affect active nest(s) would continue until the adjacent construction activities are completed or until the nest is no longer active.
APM-BIO-07: Western Burrowing Owl (*Athene cunicularia*) Protection	Pre-construction burrowing owl surveys would be conducted within suitable habitat in accordance with Appendix D of the Staff Report on Burrowing Owl Mitigation (CDFW 2012). Prior to construction activities SCE would prepare a survey report in accordance with the requirements of the staff report. If a breeding territory or nest is confirmed, the CDFW would be notified and SCE would avoid impacts to burrowing owl to the extent feasible. If unavoidable impacts to western burrowing owl are anticipated, SCE would implement mitigation methods as outlined in the staff report and in coordination with the CDFW.
APM-BIO-08: Compensation for Permanent Impacts to Jurisdictional Water Resources	All necessary authorizations must be obtained from the applicable jurisdictional agencies for impacts to aquatic resources. Permanent impacts to all jurisdictional water resources would be compensated for at a one-to-one ratio, or as agreed upon with the U.S. Army Corps of Engineers, State Water Resources Control Board, NDEP, and CDFW.
APM CUL-01: Environmentally Sensitive Areas	Where operationally feasible, all National Register of Historic Places- (NRHP-) and California Register of Historic Resources- (CRHR-) eligible resources would be protected from direct impacts by Proposed Project redesign (i.e., relocation of the line, ancillary facilities, or temporary facilities or work areas). Avoidance mechanisms would include fencing off areas such as Environmentally Sensitive Areas (ESAs) for the duration of the Proposed Project or as outlined in the Cultural Resources Management Plan (CRMP). If avoidance of NRHP- or CRHR-eligible resources is not feasible, SCE would prepare and submit a Historic Properties Treatment Plan (HPTP) to outline the treatment of cultural resources that cannot be avoided. The HPTP would be submitted to the appropriate agencies for review and approval. All treatment measures outlined in the HPTP would be implemented at least 30 days before the start of construction.

APM	Description
APM-CUL-02: Cultural Resources Survey	SCE would perform surveys prior to construction for any Proposed Project areas not yet surveyed (e.g., new or modified staging areas, pull sites, or other work areas). Resources discovered during the surveys would be subject to APM-CUL-03.

APM	Description
APM-CUL-03: CRMP	SCE would prepare and submit for approval a CRMP to guide all cultural resource management activities during Proposed Project construction. Management of cultural resources would follow the standards and guidelines established by the NPS for implementing Section 106 of the National Historic Preservation Act ("Archeology and Historic Preservation; Secretary of the Interior's Standards and Guidelines," 48 Federal Register 190 [29 September 1983], pp. 44716-44742). The CRMP would be submitted to the BLM for review and approval at least 30 days before the start of construction. The CRMP would define and map all known or assumed eligible NRHP and CRHR properties in or within 100 feet of the Proposed Project Area of Potential Effect and would identify the cultural values that contribute to their NRHP and CRHR eligibility. A cultural resources protection plan would be included that details how NRHP- and CRHR-eligible properties would be avoided and protected during construction. Measures would include, at a minimum, designation and marking of ESAs, archaeological monitoring, personnel training, and effectiveness reporting. The plan would detail the measures to be used; how, when, and where they would be implemented; and how protective measures and enforcement would be coordinated with construction personnel. The CRMP would also define any additional areas that are considered to be of high sensitivity for the discovery of buried NRHP- and CRHR-eligible cultural resources, including burials, cremations, or sacred features. The CRMP would detail provisions for monitoring construction in these high-sensitivity areas. It would also detail procedures for halting construction; making appropriate notifications to agencies, officials, and Native Americans; and assessing NRHP and CRHR eligibility in the event that unknown cultural resources are discovered during construction. For all unanticipated cultural resource discoveries, the CRMP would detail the methods, the consultation procedures, and the timelines for assessing NRHP and CRHR eligibility, formulating a mitigation plan, and implementing treatment. Mitigation and treatment plans for unanticipated discoveries would be reviewed by the appropriate Native Americans and approved by the BLM, and the Office of Historic Preservation (OHP) prior to implementation. The CRMP would include provisions for analysis of data in a regional context, reporting of results within one year of the completion of field studies, curation of artifacts (except from private land) and data (e.g., maps, field notes, archival materials, recordings, reports, photographs, and analysts' data) at a facility that is approved by the BLM, and dissemination of reports to local and State repositories, libraries, and interested professionals. The BLM would retain ownership of artifacts collected from BLM-managed lands. SCE would attempt to gain permission for artifacts from privately held land to be curated with the other project collections. The CRMP

APM	Description
	would specify that archaeologists and other discipline specialists conducting the studies must meet the Professional Qualifications Standards mandated by the OHP.

APM	Description
APM-CUL-04: Paleontological Resource Mitigation and Monitoring Plan	SCE would prepare and submit to the BLM for review and approval a Paleontological Resources Mitigation and Monitoring Plan (PRMMP) that is consistent with the following requirements: ▪ The PRMMP would be prepared by a qualified paleontologist, would be based on Society of Vertebrate Paleontology guidelines, and would meet all regulatory requirements. The qualified paleontologist would have a master's degree or a Doctor of Philosophy in paleontology, would have knowledge of the local paleontology, and would be familiar with paleontological procedures and techniques. ▪ The PRMMP would include a site-specific investigation to identify construction impact areas of moderate (Potential Fossil Yield Classification [PFYC] 3a) to very high (PFYC 5) sensitivity for encountering significant resources and the approximate depths where those resources are likely to be encountered for each Proposed Project component. ▪ The PRMMP would require the qualified paleontological monitor to monitor all construction-related ground disturbance in sediments determined to have a moderate (PFYC 3a) to very high (PFYC 5) sensitivity. ▪ The PRMMP would define monitoring procedures and methodology, and would specify that sediments of undetermined sensitivity must be monitored on a part-time basis (as determined by the qualified paleontologist). Sediments with very low or low sensitivity would not require paleontological monitoring. The qualified paleontological monitor would have at least a Bachelor of Science degree in geology or paleontology, as well as demonstrated field experience in the collection and identification of fossil material. ▪ The PRMMP would state which resources would be avoided and which would be recovered for their data potential. Where possible, recovery is preferred over avoidance in order to mitigate the potential for looting of paleontological resources. The PRMMP would also detail methods of recovery, preparation and analysis of specimens, final curation of specimens at a federally accredited repository, data analysis, and reporting. ▪ The PRMMP would specify that all paleontological work undertaken by SCE on public lands managed by the BLM would be carried out by qualified, permitted paleontologists with the appropriate current paleontological resources use permit.

APM	Description
APM-NOI-01: Duration of Helicopter Use	Active helicopter operation at landing zones within 700 feet of occupied residences would be limited to 2 hours per day. Helicopter use may be extended if required to ensure that electrical service is maintained for customers or for safety reasons.
APM-NOI-02: Helicopter Use in Residential Areas	Helicopters would be required to maintain a height of at least 500 feet when passing over residential areas, except at temporary construction areas or when actively assisting with conductor stringing. All helicopters would be required to maintain a lateral distance of at least 500 feet from all schools.

3.9.1 Environmental Surveys

SCE has conducted an initial biological, cultural, and paleontological resources evaluation and would conduct further focused environmental surveys after approval of the Proposed Project, but prior to the start of construction. These surveys would identify and/or address any potential sensitive biological, cultural, and paleontological resources that may be impacted by the Proposed Project, including the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor sites; transmission, subtransmission, distribution, and telecommunications lines; access roads; construction work areas; and staging yards. Where feasible, the information gathered from these surveys may be used to finalize the Proposed Project design in order to avoid sensitive resources, or to minimize the potential impact to sensitive resources from Proposed Project-related activities. The results of these surveys would also determine the extent to which environmental specialist construction monitors would be required.

Biological resources in the vicinity of the Proposed Project are presented in detail in Section 4.4, Biological Resources. The following biological surveys would occur prior to construction:

- Nesting bird surveys
- Burrowing owl surveys
- Desert tortoise surveys

Thirty days prior to the start of ground-disturbing activity, the following surveys would be conducted:

- Clearance Surveys – A clearance survey would be conducted no more than 30 days prior to the start of construction in a particular area to identify potential plant and animal species that may be impacted by construction activities. Clearance surveys include a field survey by a qualified botanist and wildlife biologist and would be limited to areas directly impacted by construction activities.

Cultural resources in the vicinity of the Proposed Project are presented in detail in Section 4.5, Cultural Resources.

3.9.2 Worker Environmental Awareness Training

Prior to construction, a Worker Environmental Awareness Program would be developed. A presentation would be prepared by SCE and used to train all site personnel prior to the commencement of work. A record of all trained personnel would be kept. In addition to instruction on compliance with any additional APMs and Proposed Project mitigation measures developed after the pre-construction surveys, all construction personnel would also receive the following:

- A list of phone numbers of SCE environmental specialist personnel associated with the Proposed Project (e.g., archaeologist, biologist, environmental coordinator, and regional spill response coordinator)

- Instruction on the Mojave Desert Air Quality Management District and Clark County Department of Air Quality fugitive dust rules

- A description of applicable noise construction time and/or noise level limits
- A review of applicable local, State, and federal ordinances; laws and regulations pertaining to historic and paleontological preservation; a discussion of disciplinary and other actions that could be taken against persons violating historic and paleontological preservation laws and SCE policies; a review of paleontology, archaeology, history, prehistory, and Native American cultures associated with historical and paleontological resources in the Proposed Project vicinity, inclusive of instruction on what typical cultural and paleontological resources look like; and instruction that if discovered during construction, work is to be suspended in the vicinity of any find, and the site foreman and SCE Project Archaeologist or environmental compliance coordinator are to be contacted for further direction
- Instruction on the roles of environmental monitors (i.e., biological, cultural, and paleontological), if present, and the appropriate treatment by on-site personnel of areas designated as Environmentally Sensitive Areas
- Instruction on the importance of maintaining the construction site inclusive of ensuring all food scraps, wrappers, food containers, cans, bottles, and other trash from the Proposed Project area would be deposited in closed trash containers; trash containers would be removed from the Proposed Project as required and would not be permitted to overfill
- Instruction on the individual responsibilities under the Clean Water Act, the Proposed Project SWPPPs, site-specific BMPs, and the location of Safety Data Sheets for the Proposed Project
- Instructions to notify the foreman and regional spill response coordinator in case of a hazardous materials spill or leak from equipment, or upon the discovery of soil or groundwater contamination
- Instructions to cover all holes/trenches at the end of each day
- A copy of the truck routes to be used for material delivery
- Instruction that non-compliance with any laws, rules, regulations, or mitigation measures could result in being barred from participating in any remaining construction activities associated with the Proposed Project

3.9.3 Traffic Control

Construction activities completed within public street ROWs would require the use of a traffic control service, and all lane closures would be conducted in accordance with applicable requirements. These traffic control measures would be consistent with those published in the *California Joint Utility Traffic Control Manual* (California Inter-Utility Coordinating Committee, 2010).

3.10 Generator Interconnection Facilities Description

There are no interconnection facilities associated with the Proposed Project.

3.11 Generator Interconnection Facilities Construction

There are no interconnection facilities associated with the Proposed Project.

3.12 Other Major Components Description

There are no other major components associated with the Proposed Project.

3.13 Other Major Components Construction

There are no other major components associated with the Proposed Project.

3.14 Decommissioning

Decommissioning is not proposed as part of the Proposed Project.

3.15 Project Alternatives Components Description

Consistent with Section 15126.6(d) of the CEQA Guidelines, this PEA analyzes alternatives to the Proposed Project. Section 5.2, Description of Project Alternatives and Impact Analysis identifies and compares the construction and operation of SCE's Proposed Project with its alternatives, including alternatives that did not meet key Proposed Project objectives and were not carried forward. Alternatives include two electrical system alternatives, alternative locations for the proposed Newberry Springs and Ludlow Series Capacitors, as well as the No Project Alternative. Both the electrical system alternatives and the No Project Alternative were determined to be insufficient to meet all Proposed Project objectives. The impacts of these alternatives are summarized within Chapter 5, Detailed Discussion of Significant Impacts and are not addressed further in the PEA. The alternative sites for the proposed Newberry Springs Series Capacitor and Ludlow Series Capacitor that were not eliminated during the site evaluation process are described within Chapter 5, Detailed Discussion of Significant Impacts and are further evaluated for impacts to resources in Chapter 4, Environmental Impact Assessment Summary.[28]

[28] After review of the preliminary cultural resource survey results, the BLM has indicated that the alternative site for Ludlow Series Capacitor would not be permitted due to the existence of culturally significant sites in the immediate area.

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ATTACHMENT 3-A: DISCREPANCY WORK AREAS

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ATTACHMENT 3-A: DISCREPANCY WORK AREAS

Number	Tower Number	Location	Encroachment Type	Option 1 (Preferred)	Option 2 (Alternative)
Eldorado-Lugo 500 kilovolt (kV) Transmission Line					
1.	Between Towers M14-T3 and M14-T4	San Bernardino County, California	Ground/rock	Raise Tower M14-T4 by a minimum of 18.5 feet	Not Applicable (N/A)
2.	Between Towers M14-T4 and M15-T1	San Bernardino County, California	Ground	Raise Tower M14-T4 by a minimum of 18.5 feet	N/A
3.	Between Towers M20-T2 and M20-T3	San Bernardino County, California	115 kV crossing wire	Reframe 115 kV subtransmission line—lower by a minimum of 5 feet and lower the 12 kV distribution structure[1]	N/A
4.	Between Towers M33-T1 and M33-T2	San Bernardino County, California	Ground/rock	Raise Tower M33-T1 by a minimum of 5 feet	N/A
5.	Between Towers M58-T1 and M58-T2	San Bernardino County, California	Ground	Modify conductor	N/A

[1] This proposed mitigation would also correct the discrepancy between towers M20-T3 and M20-T4 on the Lugo-Mohave 500 kV Transmission Line.

Number	Tower Number	Location	Encroachment Type	Option 1 (Preferred)	Option 2 (Alternative)
6.	Between Towers M63-T3 and M63-T4	San Bernardino County, California	Ground	Raise Tower M63-T3 by a minimum of 13.5 feet	N/A
7.	Between Towers M64-T1 and M64-T2	San Bernardino County, California	Ground	Raise Tower M64-T2 by a minimum of 5 feet	N/A
8.	Between Towers M97-T1 and M97-T2	San Bernardino County, California	Railroad	Raise Towers M97-T1 and M97-T2 by 18.5 feet	N/A
Lugo-Mohave 500 kV Transmission Line					
9.	Between Towers M4-T2 and M4-T3	San Bernardino County, California	Ground	Remove approximately 3.5 feet of concrete below conductor	N/A
10.	Between Towers M8-T1 and M8-T2	San Bernardino County, California	12 kV crossing wire	Reframe distribution line—to be lowered by a minimum of 5 feet	N/A
11.	Between Towers M20-T3 and M20-T4	San Bernardino County, California	115 kV crossing wire	This would be corrected by the proposed mitigation between towers M20-T2 and M20-T3 on the Eldorado-Lugo 500 kV Transmission Line (Reframe 115 kV line)—lower by a minimum of 5 feet	N/A

Number	Tower Number	Location	Encroachment Type	Option 1 (Preferred)	Option 2 (Alternative)
12.	Between Towers M22-T3 and M22-T4	San Bernardino County, California	Ground	Raise Tower M22-T4 by a minimum of 13.5 feet	N/A
13.	Between Towers M29-T3 and M30-T1	San Bernardino County, California	Ground	Grade/remove berm by approximately 2 feet	N/A
14.	Between Towers M68-T1 and M68-T2	San Bernardino County, California	Ground/ highway	Raise Tower M68-T1 by a minimum of 8.5 feet	N/A
15.	Between Towers M89-T1 and M89-T2	San Bernardino County, California	Ground	Modify conductor	N/A
Eldorado-Mohave 500 kV Transmission Line					
16.	Between Towers M4-T1 and M4-T2	Clark County, Nevada	230 kV crossing wire	Raise Tower M4-T1 by a minimum of 18.5 feet and modify foundation as required	N/A

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ATTACHMENT 3-B: TOWER MODIFICATIONS ASSOCIATED WITH OPTICAL GROUND WIRE INSTALLATION

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ATTACHMENT 3-B: TOWER MODIFICATIONS ASSOCIATED WITH OPTICAL GROUND WIRE INSTALLATION

Splice Location[1]	Structure Type	Ground Wire Peak Modification	Body Modification	Bent Steel Repair
Eldorado-Mohave 500 kilovolt (kV) Transmission Line Splice Locations				
M0-T1	EDE-1	--	--	--
M2-T1	ELD-1	--	--	--
M4-T1	EMT-3	Yes	Yes	Yes
M6-T2	EHT-S-3	Yes	--	Yes
M9-T3	EMT-2	Yes	Yes	Yes
M13-T1	EMT-3	Yes	Yes	Yes
M16-T3	ELD-T-1	--	--	--
M19-T3	EMT-3	Yes	--	--
M23-T1	EMT-3	Yes	--	--
M26-T2	EMT-3	Yes	Yes	--
M29-T4	EMT-3	Yes	--	--
M33-T2	EMT-3	Yes	--	--
M36-T4	EMT-4	Yes	--	--
M40-T1	EMT-3	Yes	--	--
M43-T3	EMT-1	Yes	Yes	--
M46-T3	EMT-3	Yes	--	--
M49-T4	ELD-1	--	--	--
M53-T2	EHT-S-2	Yes	--	--
M56-T1	EMT-3	Yes	Yes	--
M59-T2*	DHA-1	--	--	--
Lugo-Mohave 500 kV Transmission Line Splice Locations				
M0-T1*	DHA-2	--	--	--
M2-T3	ELD-1	--	--	--

[1] Asterisks are given for locations that are possible splice locations. These locations are not to be used if the optical ground wire is run straight into the substation rack.

Splice Location[1]	Structure Type	Ground Wire Peak Modification	Body Modification	Bent Steel Repair
M5-T4	EHT-2	Yes	--	--
M9-T1	ELD-T-1	--	--	--
M12-T2	EMT-3	Yes	--	--
M15-T3	EMT-3	Yes	Yes	--
M18-T4	EHD-1	--	--	--
M22-T2	ELD-2	--	--	--
M24-T5	ELD-1	--	--	--
M27-T3	EMT-3	Yes	--	--
M29-T3	EMT-3	Yes	--	--
M31-T1	EMT-3	Yes	--	--
M33-T2	EMT-3	Yes	--	--
M36-T3	EMT-3	Yes	--	--
M40-T1	EMT-3	Yes	Yes	--
M42-T4	ELD-1	--	--	--
M46-T2	EMT-2	Yes	Yes	--
M49-T3	ELD-1	--	--	--
M53-T1	EMT-3	Yes	--	--
M56-T2	EMT-2	Yes	Yes	--
M59-T3	EMT-2	Yes	Yes	--
M63-T1	EMT-3	Yes	--	--
M66-T2	ELD-2	--	--	--
M69-T1	ELD-1	--	--	--
M72-T1	EMT-2	Yes	Yes	--
M75-T3	EMT-1	Yes	Yes	--
M78-T4	ELD-1	--	--	--
M82-T1	EMT-2	Yes	Yes	--
M85-T2	EMT-3	Yes	Yes	--
M88-T4	EMT-1	Yes	Yes	--

Splice Location[1]	Structure Type	Ground Wire Peak Modification	Body Modification	Bent Steel Repair
M92-T1	EMT-2	Yes	Yes	--
M95-T1	EMT-3	Yes	--	--
M98-T2	EMT-3	Yes	Yes	--
M102-T1	EMT-3	Yes	Yes	--
M105-T2	EMT-3	Yes	--	--
M108-T2	EMT-3	Yes	--	--
M111-T3	EMT-3	Yes	--	--
M114-T4	EMT-1	Yes	Yes	--
M118-T2	EMT-2	Yes	Yes	--
M121-T2	EMT-3	Yes	--	--
M124-T3	EMT-3	Yes	--	--
M128-T1	EMT-2	Yes	Yes	--
M131-T2	EMT-3	Yes	--	--
M134-T2	EMT-3	Yes	--	--
M137-T3	EMT-2	Yes	Yes	--
M141-T1	EMT-2	Yes	Yes	--
M144-T2	EMT-3	Yes	--	--
M147-T4	EMT-3	Yes	--	--
M151-T1	EMT-3	Yes	--	--
M154-T3	EMT-2	Yes	Yes	--
M157-T1	EMT-2	Yes	Yes	--
M160-T2	EHT-S-2	Yes	--	--
M163-T4	EMT-3	Yes	--	--
M167-T1	EMT-3	Yes	--	--
M170-T1	EMT-2	Yes	Yes	--
M173-T2	ELD-1	--	--	--

Transmission Line	Ground Wire Peak Modification	Body Modification	Bent Steel Repair
Eldorado-Mohave 500 kV Transmission Line	15	6	4
Lugo-Mohave 500 kV Transmission Line	44	21	0

ATTACHMENT 3-C: CONSTRUCTION EQUIPMENT AND WORKFORCE ESTIMATES

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ATTACHMENT 3-C: CONSTRUCTION EQUIPMENT AND WORKFORCE ESTIMATES

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Capacitors												
Capacitors - Eldorado Series Cap- SC3 - Commissioning: Testing	Scissor Lift	40	3	10	--	Aerial Lifts	50	6	0	100	74	0
Capacitors - Eldorado Series Cap- SC3 - Commissioning: Testing	Foreman's Truck	40	1	10	Passenger	--	--	--	0	100	74	0
Capacitors - Eldorado Series Cap- SC3 - Commissioning: Testing	Job Site Utility Cart	35	1	10	Passenger	--	--	--	0	100	74	0
Capacitors - Eldorado Series Cap- SC3 - Commissioning: Testing	Test Truck	40	1	10	Delivery	--	--	--	0	100	74	0
Capacitors - Eldorado Series Cap- SC3 - Commissioning: Testing	Tool Truck	35	1	10	Delivery	--	--	--	0	100	74	0
Capacitors - Eldorado Series Cap- SC3 - Commissioning: Testing	Worker Commute Automobile	40	10	10	Passenger	--	--	--	0	100	74	0
Capacitors - Eldorado Series Cap- SC3 - Demo: Removals, Refurbishing	250-Ton Hydraulic Crane	15	1	5	--	Cranes	450	5	0	100	54	0
Capacitors - Eldorado Series Cap- SC3 - Demo: Removals, Refurbishing	500-Gallon Water Buffalo with Truck	15	1	5	--	Off-Highway Trucks	185	5	0	100	54	0
Capacitors - Eldorado Series Cap- SC3 - Demo: Removals, Refurbishing	Bobcat Skid Steer	15	1	5	--	Skid Steer Loaders	93	8	0	100	54	0
Capacitors - Eldorado Series Cap- SC3 - Demo: Removals, Refurbishing	Bobcat with Auger	15	1	5	--	Skid Steer Loaders	93	8	0	100	54	0
Capacitors - Eldorado Series Cap- SC3 - Demo: Removals, Refurbishing	Bobcat with Sweeper	15	1	5	--	Skid Steer Loaders	93	8	0	100	54	0
Capacitors - Eldorado Series Cap- SC3 - Demo: Removals, Refurbishing	Ditch Witch	20	1	5	--	Trenchers	42	8	0	100	54	0
Capacitors - Eldorado Series Cap- SC3 - Demo: Removals, Refurbishing	Mini Excavator	15	1	5	--	Excavators	50	8	0	100	54	0
Capacitors - Eldorado Series Cap- SC3 - Demo: Removals, Refurbishing	10-Cubic-Yard Dump Truck	20	3	5	HHDT	--	--	--	0	100	54	0
Capacitors - Eldorado Series Cap- SC3 - Demo: Removals, Refurbishing	4,000-Gallon Water Truck	20	3	5	HHDT	--	--	--	0	100	54	0
Capacitors - Eldorado Series Cap- SC3 - Demo: Removals, Refurbishing	Foreman's Truck	15	1	5	Passenger	--	--	--	0	100	54	0

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Capacitors - Eldorado Series Cap- SC3 - Demo: Removals, Refurbishing	Job Site Utility Cart	15	1	5	Passenger	--	--	--	0	100	54	0
Capacitors - Eldorado Series Cap- SC3 - Demo: Removals, Refurbishing	Low Bed Equipment Hauler (5 axle)	15	1	5	HHDT	--	--	--	0	100	54	0
Capacitors - Eldorado Series Cap- SC3 - Demo: Removals, Refurbishing	Low Bed Equipment Hauler (7 axle)	15	1	5	HHDT	--	--	--	0	100	54	0
Capacitors - Eldorado Series Cap- SC3 - Demo: Removals, Refurbishing	Worker Commute Automobile	20	5	5	Passenger	--	--	--	0	100	54	0
Capacitors - Eldorado Series Cap- SC3 - Installations: Equipment, Wiring	135-Foot Manlift	20	1	15	--	Aerial Lifts	75	5	0	100	66	0
Capacitors - Eldorado Series Cap- SC3 - Installations: Equipment, Wiring	20,000-Pound Forklift	40	1	15	--	Forklifts	150	8	0	100	66	0
Capacitors - Eldorado Series Cap- SC3 - Installations: Equipment, Wiring	27-Ton Boom Truck	40	1	15	--	Cranes	350	5	0	100	66	0
Capacitors - Eldorado Series Cap- SC3 - Installations: Equipment, Wiring	65-Foot Manlift	40	1	15	--	Aerial Lifts	75	5	0	100	66	0
Capacitors - Eldorado Series Cap- SC3 - Installations: Equipment, Wiring	85-Foot Manlift	30	1	15	--	Aerial Lifts	75	5	0	100	66	0
Capacitors - Eldorado Series Cap- SC3 - Installations: Equipment, Wiring	Bobcat with Forks	90	2	15	--	Skid Steer Loaders	93	8	0	100	66	0
Capacitors - Eldorado Series Cap- SC3 - Installations: Equipment, Wiring	Crane	10	1	15	--	Cranes	350	5	0	100	66	0
Capacitors - Eldorado Series Cap- SC3 - Installations: Equipment, Wiring	Genie 45-Foot Manlift	35	1	15	--	Aerial Lifts	75	5	0	100	66	0
Capacitors - Eldorado Series Cap- SC3 - Installations: Equipment, Wiring	Scissor Lift	95	3	15	--	Aerial Lifts	50	6	0	100	66	0
Capacitors - Eldorado Series Cap- SC3 - Installations: Equipment, Wiring	Tele-Handler Forklift (5,000-7,000 Pounds)	75	1	15	--	Rough Terrain Forklifts	150	8	0	100	66	0
Capacitors - Eldorado Series Cap- SC3 - Installations: Equipment, Wiring	Tele-Handler Forklift (8,000-12,000 Pounds)	50	1	15	--	Rough Terrain Forklifts	150	8	0	100	66	0
Capacitors - Eldorado Series Cap- SC3 - Installations: Equipment, Wiring	Foreman's Truck	95	1	15	Passenger	--	--	--	0	100	66	0
Capacitors - Eldorado Series Cap- SC3 - Installations: Equipment, Wiring	Job Site Utility Cart	95	1	15	Passenger	--	--	--	0	100	66	0
Capacitors - Eldorado Series Cap- SC3 - Installations: Equipment, Wiring	Tool Truck	95	1	15	Delivery	--	--	--	0	100	66	0

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Capacitors - Eldorado Series Cap- SC3 - Installations: Equipment, Wiring	Worker Commute Automobile	95	15	15	Passenger	--	--	--	0	100	66	0
Capacitors - Ludlow Series Cap- SC5 - Civil: Foundations, Below Grade, Stone Cover	140 Motor Grader	25	1	12	--	Graders	250	8	100	0	73	0
Capacitors - Ludlow Series Cap- SC5 - Civil: Foundations, Below Grade, Stone Cover	250-Ton Hydraulic Crane	30	1	12	--	Cranes	450	5	100	0	73	0
Capacitors - Ludlow Series Cap- SC5 - Civil: Foundations, Below Grade, Stone Cover	50,000-Pound Excavator /Breaker	30	1	12	--	Excavators	200	8	100	0	73	0
Capacitors - Ludlow Series Cap- SC5 - Civil: Foundations, Below Grade, Stone Cover	500-Gallon Water Buffalo with Truck	90	1	12	--	Off-Highway Trucks	185	5	100	0	73	0
Capacitors - Ludlow Series Cap- SC5 - Civil: Foundations, Below Grade, Stone Cover	75,000-Pound Excavator	30	1	12	--	Excavators	350	8	100	0	73	0
Capacitors - Ludlow Series Cap- SC5 - Civil: Foundations, Below Grade, Stone Cover	84-Inch Vibratory Roller Compactor	35	2	12	--	Rollers	130	8	100	0	73	0
Capacitors - Ludlow Series Cap- SC5 - Civil: Foundations, Below Grade, Stone Cover	Bobcat Compactor	50	1	12	--	Skid Steer Loaders	93	8	100	0	73	0
Capacitors - Ludlow Series Cap- SC5 - Civil: Foundations, Below Grade, Stone Cover	Bobcat Skid Steer	90	1	12	--	Skid Steer Loaders	93	8	100	0	73	0
Capacitors - Ludlow Series Cap- SC5 - Civil: Foundations, Below Grade, Stone Cover	Bobcat with Auger	90	1	12	--	Skid Steer Loaders	93	8	100	0	73	0
Capacitors - Ludlow Series Cap- SC5 - Civil: Foundations, Below Grade, Stone Cover	Bobcat with Sweeper	90	1	12	--	Skid Steer Loaders	93	8	100	0	73	0
Capacitors - Ludlow Series Cap- SC5 - Civil: Foundations, Below Grade, Stone Cover	Cat 623 Scraper	30	1	12	--	Graders	400	8	100	0	73	0
Capacitors - Ludlow Series Cap- SC5 - Civil: Foundations, Below Grade, Stone Cover	Cat 950 Loader	40	1	12	--	Tractors/Loaders/ Backhoes	130	8	100	0	73	0
Capacitors - Ludlow Series Cap- SC5 - Civil: Foundations, Below Grade, Stone Cover	D-6 Cat Dozer	40	1	12	--	Crawler Tractors	215	8	100	0	73	0
Capacitors - Ludlow Series Cap- SC5 - Civil: Foundations, Below Grade, Stone Cover	Ditch Witch	50	1	12	--	Trenchers	42	8	100	0	73	0
Capacitors - Ludlow Series Cap- SC5 - Civil: Foundations, Below Grade, Stone Cover	LoDrill Over 50,000 Pounds	20	1	12	--	Bore/Drill Rigs	350	5	100	0	73	0
Capacitors - Ludlow Series Cap- SC5 - Civil: Foundations, Below Grade, Stone Cover	LoDrill up to 50,000 Pounds	30	1	12	--	Bore/Drill Rigs	200	5	100	0	73	0
Capacitors - Ludlow Series Cap- SC5 - Civil: Foundations, Below Grade, Stone Cover	Mini Excavator	50	1	12	--	Excavators	50	8	100	0	73	0

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Capacitors - Ludlow Series Cap- SC5 - Civil: Foundations, Below Grade, Stone Cover	Premiertrak 300 Rock Crusher	10	1	12	--	Crushing/Proc. Equipment	280	9	100	0	73	0
Capacitors - Ludlow Series Cap- SC5 - Civil: Foundations, Below Grade, Stone Cover	Skip Loader	100	1	12	--	Tractors/Loaders/ Backhoes	150	4	100	0	73	0
Capacitors - Ludlow Series Cap- SC5 - Civil: Foundations, Below Grade, Stone Cover	Vermeer RT-450 Trencher	30	1	12	--	Trenchers	50	8	100	0	73	0
Capacitors - Ludlow Series Cap- SC5 - Civil: Foundations, Below Grade, Stone Cover	10-Cubic-Yard Dump Truck	100	3	12	HHDT	--	--	--	100	0	73	0
Capacitors - Ludlow Series Cap- SC5 - Civil: Foundations, Below Grade, Stone Cover	4,000-Gallon Water Truck	100	3	12	HHDT	--	--	--	100	0	73	0
Capacitors - Ludlow Series Cap- SC5 - Civil: Foundations, Below Grade, Stone Cover	Foreman's Truck	90	1	12	Passenger	--	--	--	100	0	73	0
Capacitors - Ludlow Series Cap- SC5 - Civil: Foundations, Below Grade, Stone Cover	Job Site Utility Cart	90	1	12	Passenger	--	--	--	100	0	73	0
Capacitors - Ludlow Series Cap- SC5 - Civil: Foundations, Below Grade, Stone Cover	Low Bed Equipment Hauler (5 axle)	40	1	12	HHDT	--	--	--	100	0	73	0
Capacitors - Ludlow Series Cap- SC5 - Civil: Foundations, Below Grade, Stone Cover	Low Bed Equipment Hauler (7 axle)	40	1	12	HHDT	--	--	--	100	0	73	0
Capacitors - Ludlow Series Cap- SC5 - Civil: Foundations, Below Grade, Stone Cover	Low Side End Dump	100	3	12	HHDT	--	--	--	100	0	73	0
Capacitors - Ludlow Series Cap- SC5 - Civil: Foundations, Below Grade, Stone Cover	Tool Truck	50	1	12	Delivery	--	--	--	100	0	73	0
Capacitors - Ludlow Series Cap- SC5 - Civil: Foundations, Below Grade, Stone Cover	Worker Commute Automobile	100	12	12	Passenger	--	--	--	100	0	73	0
Capacitors - Ludlow Series Cap- SC5 - Commissioning: Testing	Scissor Lift	50	3	10	--	Aerial Lifts	50	6	100	0	0	34
Capacitors - Ludlow Series Cap- SC5 - Commissioning: Testing	Foreman’s Truck	50	1	10	Passenger	--	--	--	100	0	0	34
Capacitors - Ludlow Series Cap- SC5 - Commissioning: Testing	Job Site Utility Cart	50	1	10	Passenger	--	--	--	100	0	0	34
Capacitors - Ludlow Series Cap- SC5 - Commissioning: Testing	Test Truck	50	1	10	Delivery	--	--	--	100	0	0	34
Capacitors - Ludlow Series Cap- SC5 - Commissioning: Testing	Tool Truck	50	1	10	Delivery	--	--	--	100	0	0	34
Capacitors - Ludlow Series Cap- SC5 - Commissioning: Testing	Worker Commute Automobile	50	10	10	Passenger	--	--	--	100	0	0	34

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Capacitors - Ludlow Series Cap- SC5 – Grading	140 Motor Grader	25	1	12	--	Graders	250	8	100	0	60	0
Capacitors - Ludlow Series Cap- SC5 – Grading	250-Ton Hydraulic Crane	30	1	12	--	Cranes	450	5	100	0	60	0
Capacitors - Ludlow Series Cap- SC5 – Grading	50,000-Pound Excavator /Breaker	30	1	12	--	Excavators	200	8	100	0	60	0
Capacitors - Ludlow Series Cap- SC5 – Grading	500-Gallon Water Buffalo with Truck	90	1	12	--	Off-Highway Trucks	185	5	100	0	60	0
Capacitors - Ludlow Series Cap- SC5 – Grading	75,000-Pound Excavator	30	1	12	--	Excavators	350	8	100	0	60	0
Capacitors - Ludlow Series Cap- SC5 – Grading	84-Inch Vibratory Roller Compactor	35	2	12	--	Rollers	130	8	100	0	60	0
Capacitors - Ludlow Series Cap- SC5 – Grading	Bobcat Compactor	50	1	12	--	Skid Steer Loaders	93	8	100	0	60	0
Capacitors - Ludlow Series Cap- SC5 – Grading	Bobcat Skid Steer	90	1	12	--	Skid Steer Loaders	93	8	100	0	60	0
Capacitors - Ludlow Series Cap- SC5 – Grading	Bobcat with Auger	90	1	12	--	Skid Steer Loaders	93	8	100	0	60	0
Capacitors - Ludlow Series Cap- SC5 – Grading	Bobcat with Sweeper	90	1	12	--	Skid Steer Loaders	93	8	100	0	60	0
Capacitors - Ludlow Series Cap- SC5 – Grading	Cat 623 Scraper	30	1	12	--	Graders	400	8	100	0	60	0
Capacitors - Ludlow Series Cap- SC5 – Grading	Cat 950 Loader	40	1	12	--	Tractors/Loaders/ Backhoes	130	8	100	0	60	0
Capacitors - Ludlow Series Cap- SC5 – Grading	D-6 Cat Dozer	40	1	12	--	Crawler Tractors	215	8	100	0	60	0
Capacitors - Ludlow Series Cap- SC5 – Grading	Ditch Witch	50	1	12	--	Trenchers	42	8	100	0	60	0
Capacitors - Ludlow Series Cap- SC5 – Grading	LoDrill Over 50,000 Pounds	20	1	12	--	Bore/Drill Rigs	350	5	100	0	60	0
Capacitors - Ludlow Series Cap- SC5 – Grading	LoDrill up to 50,000 Pounds	30	1	12	--	Bore/Drill Rigs	200	5	100	0	60	0
Capacitors - Ludlow Series Cap- SC5 – Grading	Mini Excavator	50	1	12	--	Excavators	50	8	100	0	60	0
Capacitors - Ludlow Series Cap- SC5 – Grading	Premiertrak 300 Rock Crusher	10	1	12	--	Crushing/Proc. Equipment	280	9	100	0	60	0

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Capacitors - Ludlow Series Cap- SC5 – Grading	Skip Loader	100	1	12	--	Tractors/Loaders/ Backhoes	150	4	100	0	60	0
Capacitors - Ludlow Series Cap- SC5 – Grading	Vermeer RT-450 Trencher	30	1	12	--	Trenchers	50	8	100	0	60	0
Capacitors - Ludlow Series Cap- SC5 – Grading	10-Cubic-Yard Dump Truck	100	3	12	HHDT	--	--	--	100	0	60	0
Capacitors - Ludlow Series Cap- SC5 – Grading	4,000-Gallon Water Truck	100	3	12	HHDT	--	--	--	100	0	60	0
Capacitors - Ludlow Series Cap- SC5 – Grading	Foreman's Truck	90	1	12	Passenger	--	--	--	100	0	60	0
Capacitors - Ludlow Series Cap- SC5 – Grading	Job Site Utility Cart	90	1	12	Passenger	--	--	--	100	0	60	0
Capacitors - Ludlow Series Cap- SC5 – Grading	Low Bed Equipment Hauler (5 axle)	40	1	12	HHDT	--	--	--	100	0	60	0
Capacitors - Ludlow Series Cap- SC5 – Grading	Low Bed Equipment Hauler (7 axle)	40	1	12	HHDT	--	--	--	100	0	60	0
Capacitors - Ludlow Series Cap- SC5 – Grading	Low Side End Dump	100	3	12	HHDT	--	--	--	100	0	60	0
Capacitors - Ludlow Series Cap- SC5 – Grading	Tool Truck	50	1	12	Delivery	--	--	--	100	0	60	0
Capacitors - Ludlow Series Cap- SC5 – Grading	Worker Commute Automobile	100	12	12	Passenger	--	--	--	100	0	60	0
Capacitors - Ludlow Series Cap- SC5 - Installations: Structures, Equipment, Wiring	135-Foot Manlift	20	1	20	--	Aerial Lifts	75	5	100	0	83	53
Capacitors - Ludlow Series Cap- SC5 - Installations: Structures, Equipment, Wiring	20,000-Pound Forklift	40	1	20	--	Forklifts	150	8	100	0	83	53
Capacitors - Ludlow Series Cap- SC5 - Installations: Structures, Equipment, Wiring	27-Ton Boom Truck	60	1	20	--	Cranes	350	5	100	0	83	53
Capacitors - Ludlow Series Cap- SC5 - Installations: Structures, Equipment, Wiring	65-Foot Manlift	40	1	20	--	Aerial Lifts	75	5	100	0	83	53
Capacitors - Ludlow Series Cap- SC5 - Installations: Structures, Equipment, Wiring	85-Foot Manlift	40	1	20	--	Aerial Lifts	75	5	100	0	83	53
Capacitors - Ludlow Series Cap- SC5 - Installations: Structures, Equipment, Wiring	Bobcat with Forks	100	2	20	--	Skid Steer Loaders	93	8	100	0	83	53
Capacitors - Ludlow Series Cap- SC5 - Installations: Structures, Equipment, Wiring	Crane	20	1	20	--	Cranes	350	5	100	0	83	53

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Capacitors - Ludlow Series Cap- SC5 - Installations: Structures, Equipment, Wiring	Generator	100	1	20	--	Generator Sets	50	12	100	0	83	53
Capacitors - Ludlow Series Cap- SC5 - Installations: Structures, Equipment, Wiring	Genie 45-Foot Manlift	40	1	20	--	Aerial Lifts	75	5	100	0	83	53
Capacitors - Ludlow Series Cap- SC5 - Installations: Structures, Equipment, Wiring	Scissor Lift	100	3	20	--	Aerial Lifts	50	6	100	0	83	53
Capacitors - Ludlow Series Cap- SC5 - Installations: Structures, Equipment, Wiring	Tele-Handler Forklift (5,000-7,000 Pounds)	85	1	20	--	Rough Terrain Forklifts	150	8	100	0	83	53
Capacitors - Ludlow Series Cap- SC5 - Installations: Structures, Equipment, Wiring	Tele-Handler Forklift (8,000-12,000 Pounds)	65	1	20	--	Rough Terrain Forklifts	150	8	100	0	83	53
Capacitors - Ludlow Series Cap- SC5 - Installations: Structures, Equipment, Wiring	Foreman's Truck	100	1	20	Passenger	--	--	--	100	0	83	53
Capacitors - Ludlow Series Cap- SC5 - Installations: Structures, Equipment, Wiring	Job Site Utility Cart	100	1	20	Passenger	--	--	--	100	0	83	53
Capacitors - Ludlow Series Cap- SC5 - Installations: Structures, Equipment, Wiring	Tool Truck	100	1	20	Delivery	--	--	--	100	0	83	53
Capacitors - Ludlow Series Cap- SC5 - Installations: Structures, Equipment, Wiring	Worker Commute Automobile	100	20	20	Passenger	--	--	--	100	0	83	53
Capacitors - Lugo Series Cap- SC1 - Commissioning: Testing	Foreman's Truck	35	1	6	Passenger	--	--	--	100	0	0	54
Capacitors - Lugo Series Cap- SC1 - Commissioning: Testing	Job Site Utility Cart	35	1	6	Passenger	--	--	--	100	0	0	54
Capacitors - Lugo Series Cap- SC1 - Commissioning: Testing	Test Truck	35	1	6	Delivery	--	--	--	100	0	0	54
Capacitors - Lugo Series Cap- SC1 - Commissioning: Testing	Tool Truck	35	1	6	Delivery	--	--	--	100	0	0	54
Capacitors - Lugo Series Cap- SC1 - Commissioning: Testing	Worker Commute Automobile	35	6	6	Passenger	--	--	--	100	0	0	54
Capacitors - Lugo Series Cap- SC1 - Demo: Removals, Refurbishing	250-Ton Hydraulic Crane	30	1	5	--	Cranes	450	5	100	0	48	0
Capacitors - Lugo Series Cap- SC1 - Demo: Removals, Refurbishing	500-Gallon Water Buffalo with Truck	30	1	5	--	Off-Highway Trucks	185	5	100	0	48	0
Capacitors - Lugo Series Cap- SC1 - Demo: Removals, Refurbishing	Bobcat Skid Steer	30	1	5	--	Skid Steer Loaders	93	8	100	0	48	0
Capacitors - Lugo Series Cap- SC1 - Demo: Removals, Refurbishing	Bobcat with Auger	30	1	5	--	Skid Steer Loaders	93	8	100	0	48	0

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Capacitors - Lugo Series Cap- SC1 - Demo: Removals, Refurbishing	Bobcat with Sweeper	30	1	5	--	Skid Steer Loaders	93	8	100	0	48	0
Capacitors - Lugo Series Cap- SC1 - Demo: Removals, Refurbishing	10-Cubic-Yard Dump Truck	30	3	5	HHDT	--	--	--	100	0	48	0
Capacitors - Lugo Series Cap- SC1 - Demo: Removals, Refurbishing	4,000 Water Truck	30	3	5	HHDT	--	--	--	100	0	48	0
Capacitors - Lugo Series Cap- SC1 - Demo: Removals, Refurbishing	Foreman's Truck	30	1	5	Passenger	--	--	--	100	0	48	0
Capacitors - Lugo Series Cap- SC1 - Demo: Removals, Refurbishing	Job site Utility Cart	30	1	5	Passenger	--	--	--	100	0	48	0
Capacitors - Lugo Series Cap- SC1 - Demo: Removals, Refurbishing	Low Bed Equipment Hauler (5 axle)	20	1	5	HHDT	--	--	--	100	0	48	0
Capacitors - Lugo Series Cap- SC1 - Demo: Removals, Refurbishing	Low Bed Equipment Hauler (7 axle)	20	1	5	HHDT	--	--	--	100	0	48	0
Capacitors - Lugo Series Cap- SC1 - Demo: Removals, Refurbishing	Worker Commute Automobile	30	5	5	Passenger	--	--	--	100	0	48	0
Capacitors - Lugo Series Cap- SC1 - Installations: Equipment, Wiring	135-Foot Manlift	40	1	15	--	Aerial Lifts	75	5	100	0	53	13
Capacitors - Lugo Series Cap- SC1 - Installations: Equipment, Wiring	20,000-Pound Forklift	50	1	15	--	Forklifts	150	8	100	0	53	13
Capacitors - Lugo Series Cap- SC1 - Installations: Equipment, Wiring	27-Ton Boom Truck	50	1	15	--	Cranes	350	5	100	0	53	13
Capacitors - Lugo Series Cap- SC1 - Installations: Equipment, Wiring	65-Foot Manlift	50	1	15	--	Aerial Lifts	75	5	100	0	53	13
Capacitors - Lugo Series Cap- SC1 - Installations: Equipment, Wiring	85-Foot Manlift	40	1	15	--	Aerial Lifts	75	5	100	0	53	13
Capacitors - Lugo Series Cap- SC1 - Installations: Equipment, Wiring	Bobcat with Forks	50	2	15	--	Skid Steer Loaders	93	8	100	0	53	13
Capacitors - Lugo Series Cap- SC1 - Installations: Equipment, Wiring	Crane	20	1	15	--	Cranes	350	5	100	0	53	13
Capacitors - Lugo Series Cap- SC1 - Installations: Equipment, Wiring	Genie 45-Foot Manlift	50	1	15	--	Aerial Lifts	75	5	100	0	53	13
Capacitors - Lugo Series Cap- SC1 - Installations: Equipment, Wiring	Scissor Lift	50	3	15	--	Aerial Lifts	50	6	100	0	53	13
Capacitors - Lugo Series Cap- SC1 - Installations: Equipment, Wiring	Tele-Handler Forklift (5,000-7,000 Pounds)	50	1	15	--	Rough Terrain Forklifts	150	8	100	0	53	13

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Capacitors - Lugo Series Cap- SC1 - Installations: Equipment, Wiring	Tele-Handler Forklift (8,000-12,000 Pounds)	50	1	15	--	Rough Terrain Forklifts	150	8	100	0	53	13
Capacitors - Lugo Series Cap- SC1 - Installations: Equipment, Wiring	Foreman's Truck	50	1	15	Passenger	--	--	--	100	0	53	13
Capacitors - Lugo Series Cap- SC1 - Installations: Equipment, Wiring	Job Site Utility Cart	50	1	15	Passenger	--	--	--	100	0	53	13
Capacitors - Lugo Series Cap- SC1 - Installations: Equipment, Wiring	Tool Truck	50	1	15	Delivery	--	--	--	100	0	53	13
Capacitors - Lugo Series Cap- SC1 - Installations: Equipment, Wiring	Worker Commute Automobile	50	15	15	Passenger	--	--	--	100	0	53	13
Capacitors - Lugo Series Cap- SC4 - Commissioning: Testing	Foreman's Truck	35	1	6	Passenger	--	--	--	100	0	0	41
Capacitors - Lugo Series Cap- SC4 - Commissioning: Testing	Job Site Utility Cart	35	1	6	Passenger	--	--	--	100	0	0	41
Capacitors - Lugo Series Cap- SC4 - Commissioning: Testing	Test Truck	35	1	6	Delivery	--	--	--	100	0	0	41
Capacitors - Lugo Series Cap- SC4 - Commissioning: Testing	Tool Truck	35	1	6	Delivery	--	--	--	100	0	0	41
Capacitors - Lugo Series Cap- SC4 - Commissioning: Testing	Worker Commute Automobile	35	6	6	Passenger	--	--	--	100	0	0	41
Capacitors - Lugo Series Cap- SC4 - Demo: Removals, Refurbishing	250-Ton Hydraulic Crane	30	1	5	--	Cranes	450	5	100	0	56	0
Capacitors - Lugo Series Cap- SC4 - Demo: Removals, Refurbishing	500-Gallon Water Buffalo with Truck	30	1	5	--	Off-Highway Trucks	185	5	100	0	56	0
Capacitors - Lugo Series Cap- SC4 - Demo: Removals, Refurbishing	Bobcat Skid Steer	30	1	5	--	Skid Steer Loaders	93	8	100	0	56	0
Capacitors - Lugo Series Cap- SC4 - Demo: Removals, Refurbishing	Bobcat with Auger	30	1	5	--	Skid Steer Loaders	93	8	100	0	56	0
Capacitors - Lugo Series Cap- SC4 - Demo: Removals, Refurbishing	Bobcat with Sweeper	30	1	5	--	Skid Steer Loaders	93	8	100	0	56	0
Capacitors - Lugo Series Cap- SC4 - Demo: Removals, Refurbishing	10-Cubic-Yard Dump Truck	30	3	5	HHDT	--	--	--	100	0	56	0
Capacitors - Lugo Series Cap- SC4 - Demo: Removals, Refurbishing	4,000 Water Truck	30	3	5	HHDT	--	--	--	100	0	56	0
Capacitors - Lugo Series Cap- SC4 - Demo: Removals, Refurbishing	Foreman's Truck	30	1	5	Passenger	--	--	--	100	0	56	0

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Capacitors - Lugo Series Cap- SC4 - Demo: Removals, Refurbishing	Job site Utility Cart	30	1	5	Passenger	--	--	--	100	0	56	0
Capacitors - Lugo Series Cap- SC4 - Demo: Removals, Refurbishing	Low Bed Equipment Hauler (5 axle)	20	1	5	HHDT	--	--	--	100	0	56	0
Capacitors - Lugo Series Cap- SC4 - Demo: Removals, Refurbishing	Low Bed Equipment Hauler (7 axle)	20	1	5	HHDT	--	--	--	100	0	56	0
Capacitors - Lugo Series Cap- SC4 - Demo: Removals, Refurbishing	Worker Commute Automobile	30	5	5	Passenger	--	--	--	100	0	56	0
Capacitors - Lugo Series Cap- SC4 - Installations: Equipment, Wiring	135-Foot Manlift	40	1	15	--	Aerial Lifts	75	5	100	0	41	37
Capacitors - Lugo Series Cap- SC4 - Installations: Equipment, Wiring	20,000-Pound Forklift	50	1	15	--	Forklifts	150	8	100	0	41	37
Capacitors - Lugo Series Cap- SC4 - Installations: Equipment, Wiring	27-Ton Boom Truck	50	1	15	--	Cranes	350	5	100	0	41	37
Capacitors - Lugo Series Cap- SC4 - Installations: Equipment, Wiring	65-Foot Manlift	50	1	15	--	Aerial Lifts	75	5	100	0	41	37
Capacitors - Lugo Series Cap- SC4 - Installations: Equipment, Wiring	85-Foot Manlift	40	1	15	--	Aerial Lifts	75	5	100	0	41	37
Capacitors - Lugo Series Cap- SC4 - Installations: Equipment, Wiring	Bobcat with Forks	50	2	15	--	Skid Steer Loaders	93	8	100	0	41	37
Capacitors - Lugo Series Cap- SC4 - Installations: Equipment, Wiring	Crane	20	1	15	--	Cranes	350	5	100	0	41	37
Capacitors - Lugo Series Cap- SC4 - Installations: Equipment, Wiring	Genie 45-Foot Manlift	50	1	15	--	Aerial Lifts	75	5	100	0	41	37
Capacitors - Lugo Series Cap- SC4 - Installations: Equipment, Wiring	Scissor Lift	50	3	15	--	Aerial Lifts	50	6	100	0	41	37
Capacitors - Lugo Series Cap- SC4 - Installations: Equipment, Wiring	Tele-Handler Forklift (5,000-7,000 Pounds)	50	1	15	--	Rough Terrain Forklifts	150	8	100	0	41	37
Capacitors - Lugo Series Cap- SC4 - Installations: Equipment, Wiring	Tele-Handler Forklift (8,000-12,000 Pounds)	50	1	15	--	Rough Terrain Forklifts	150	8	100	0	41	37
Capacitors - Lugo Series Cap- SC4 - Installations: Equipment, Wiring	Foreman's Truck	50	1	15	Passenger	--	--	--	100	0	41	37
Capacitors - Lugo Series Cap- SC4 - Installations: Equipment, Wiring	Job Site Utility Cart	50	1	15	Passenger	--	--	--	100	0	41	37
Capacitors - Lugo Series Cap- SC4 - Installations: Equipment, Wiring	Tool Truck	50	1	15	Delivery	--	--	--	100	0	41	37

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Capacitors - Lugo Series Cap- SC4 - Installations: Equipment, Wiring	Worker Commute Automobile	50	15	15	Passenger	--	--	--	100	0	41	37
Capacitors - Mohave Series Cap- SC6 - Civil: Grading, Foundations, Below Grade	250-Ton Hydraulic Crane	30	1	10	--	Cranes	450	5	0	100	80	0
Capacitors - Mohave Series Cap- SC6 - Civil: Grading, Foundations, Below Grade	50,000-Pound Excavator /Breaker	30	1	10	--	Excavators	200	8	0	100	80	0
Capacitors - Mohave Series Cap- SC6 - Civil: Grading, Foundations, Below Grade	500-Gallon Water Buffalo with Truck	90	1	10	--	Off-Highway Trucks	185	8	0	100	80	0
Capacitors - Mohave Series Cap- SC6 - Civil: Grading, Foundations, Below Grade	75,000-Pound Excavator	30	1	10	--	Excavators	350	8	0	100	80	0
Capacitors - Mohave Series Cap- SC6 - Civil: Grading, Foundations, Below Grade	84-Inch Vibratory Roller Compactor	35	1	10	--	Rollers	130	8	0	100	80	0
Capacitors - Mohave Series Cap- SC6 - Civil: Grading, Foundations, Below Grade	Bobcat Compactor	50	1	10	--	Skid Steer Loaders	93	8	0	100	80	0
Capacitors - Mohave Series Cap- SC6 - Civil: Grading, Foundations, Below Grade	Bobcat Skid Steer	90	1	10	--	Skid Steer Loaders	93	8	0	100	80	0
Capacitors - Mohave Series Cap- SC6 - Civil: Grading, Foundations, Below Grade	Bobcat with Auger	90	1	10	--	Skid Steer Loaders	93	8	0	100	80	0
Capacitors - Mohave Series Cap- SC6 - Civil: Grading, Foundations, Below Grade	Bobcat with Sweeper	90	1	10	--	Skid Steer Loaders	93	4	0	100	80	0
Capacitors - Mohave Series Cap- SC6 - Civil: Grading, Foundations, Below Grade	Cat 950 Loader	40	1	10	--	Tractors/Loaders/ Backhoes	130	8	0	100	80	0
Capacitors - Mohave Series Cap- SC6 - Civil: Grading, Foundations, Below Grade	D-6 Cat Dozer	40	1	10	--	Crawler Tractors	215	8	0	100	80	0
Capacitors - Mohave Series Cap- SC6 - Civil: Grading, Foundations, Below Grade	Ditch Witch	50	1	10	--	Trenchers	42	8	0	100	80	0
Capacitors - Mohave Series Cap- SC6 - Civil: Grading, Foundations, Below Grade	Drill Rig	50	1	10	--	Bore/Drill Rigs	500	5	0	100	80	0
Capacitors - Mohave Series Cap- SC6 - Civil: Grading, Foundations, Below Grade	Excavator with Breaker	50	1	10	--	Excavators	524	5	0	100	80	0
Capacitors - Mohave Series Cap- SC6 - Civil: Grading, Foundations, Below Grade	LoDrill Over 50,000 Pounds	20	1	10	--	Bore/Drill Rigs	350	5	0	100	80	0
Capacitors - Mohave Series Cap- SC6 - Civil: Grading, Foundations, Below Grade	LoDrill up to 50,000 Pounds	30	1	10	--	Bore/Drill Rigs	200	5	0	100	80	0
Capacitors - Mohave Series Cap- SC6 - Civil: Grading, Foundations, Below Grade	Mini Excavator	50	1	10	--	Excavators	50	5	0	100	80	0

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Capacitors - Mohave Series Cap- SC6 - Civil: Grading, Foundations, Below Grade	Motor Grader	25	1	10	--	Graders	250	8	0	100	80	0
Capacitors - Mohave Series Cap- SC6 - Civil: Grading, Foundations, Below Grade	Skip Loader	90	1	10	--	Tractors/Loaders/ Backhoes	150	5	0	100	80	0
Capacitors - Mohave Series Cap- SC6 - Civil: Grading, Foundations, Below Grade	Vermeer RT-450 Trencher	30	1	10	--	Trenchers	50	5	0	100	80	0
Capacitors - Mohave Series Cap- SC6 - Civil: Grading, Foundations, Below Grade	10 Cubic Yard Dump Truck	90	3	10	HHDT	--	--	--	0	100	80	0
Capacitors - Mohave Series Cap- SC6 - Civil: Grading, Foundations, Below Grade	4,000-Gallon Water Truck	90	3	10	HHDT	--	--	--	0	100	80	0
Capacitors - Mohave Series Cap- SC6 - Civil: Grading, Foundations, Below Grade	8,000-Gallon Water Pull	40	1	10	HHDT	--	--	--	0	100	80	0
Capacitors - Mohave Series Cap- SC6 - Civil: Grading, Foundations, Below Grade	Foreman's Truck	90	1	10	Passenger	--	--	--	0	100	80	0
Capacitors - Mohave Series Cap- SC6 - Civil: Grading, Foundations, Below Grade	Job Site Utility Cart	90	1	10	Passenger	--	--	--	0	100	80	0
Capacitors - Mohave Series Cap- SC6 - Civil: Grading, Foundations, Below Grade	Low Bed Equipment Hauler (5 axle)	40	1	10	HHDT	--	--	--	0	100	80	0
Capacitors - Mohave Series Cap- SC6 - Civil: Grading, Foundations, Below Grade	Low Bed Equipment Hauler (7 axle)	40	1	10	HHDT	--	--	--	0	100	80	0
Capacitors - Mohave Series Cap- SC6 - Civil: Grading, Foundations, Below Grade	Low Side End Dump	90	3	10	HHDT	--	--	--	0	100	80	0
Capacitors - Mohave Series Cap- SC6 - Civil: Grading, Foundations, Below Grade	Tool Truck	50	1	10	Delivery	--	--	--	0	100	80	0
Capacitors - Mohave Series Cap- SC6 - Civil: Grading, Foundations, Below Grade	Worker Commute	90	10	10	Passenger	--	--	--	0	100	80	0
Capacitors - Mohave Series Cap- SC6 - Commissioning: Testing	Scissor Lift	50	3	6	--	Aerial Lifts	50	6	0	100	38	0
Capacitors - Mohave Series Cap- SC6 - Commissioning: Testing	Foreman's Truck	50	1	6	Passenger	--	--	--	0	100	38	0
Capacitors - Mohave Series Cap- SC6 - Commissioning: Testing	Job Site Utility Cart	50	1	6	Passenger	--	--	--	0	100	38	0
Capacitors - Mohave Series Cap- SC6 - Commissioning: Testing	Test Truck	40	1	6	Delivery	--	--	--	0	100	38	0
Capacitors - Mohave Series Cap- SC6 - Commissioning: Testing	Tool Truck	50	1	6	Delivery	--	--	--	0	100	38	0

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Capacitors - Mohave Series Cap- SC6 - Commissioning: Testing	Worker Commute Automobile	50	6	6	Passenger	--	--	--	0	100	38	0
Capacitors - Mohave Series Cap- SC6 - Demo: Removals, Refurbishing	250-Ton Hydraulic Crane	30	1	10	--	Cranes	450	5	0	100	26	0
Capacitors - Mohave Series Cap- SC6 - Demo: Removals, Refurbishing	50,000-Pound Excavator /Breaker	30	1	10	--	Excavators	200	8	0	100	26	0
Capacitors - Mohave Series Cap- SC6 - Demo: Removals, Refurbishing	500-Gallon Water Buffalo with Truck	90	1	10	--	Off-Highway Trucks	185	8	0	100	26	0
Capacitors - Mohave Series Cap- SC6 - Demo: Removals, Refurbishing	75,000-Pound Excavator	30	1	10	--	Excavators	350	8	0	100	26	0
Capacitors - Mohave Series Cap- SC6 - Demo: Removals, Refurbishing	84-Inch Vibratory Roller Compactor	35	1	10	--	Rollers	130	8	0	100	26	0
Capacitors - Mohave Series Cap- SC6 - Demo: Removals, Refurbishing	Bobcat Compactor	50	1	10	--	Skid Steer Loaders	93	8	0	100	26	0
Capacitors - Mohave Series Cap- SC6 - Demo: Removals, Refurbishing	Bobcat Skid Steer	90	1	10	--	Skid Steer Loaders	93	8	0	100	26	0
Capacitors - Mohave Series Cap- SC6 - Demo: Removals, Refurbishing	Bobcat with Auger	90	1	10	--	Skid Steer Loaders	93	8	0	100	26	0
Capacitors - Mohave Series Cap- SC6 - Demo: Removals, Refurbishing	Bobcat with Sweeper	90	1	10	--	Skid Steer Loaders	93	4	0	100	26	0
Capacitors - Mohave Series Cap- SC6 - Demo: Removals, Refurbishing	Cat 950 Loader	40	1	10	--	Tractors/Loaders/ Backhoes	130	8	0	100	26	0
Capacitors - Mohave Series Cap- SC6 - Demo: Removals, Refurbishing	D-6 Cat Dozer	40	1	10	--	Crawler Tractors	215	8	0	100	26	0
Capacitors - Mohave Series Cap- SC6 - Demo: Removals, Refurbishing	Ditch Witch	50	1	10	--	Trenchers	42	8	0	100	26	0
Capacitors - Mohave Series Cap- SC6 - Demo: Removals, Refurbishing	Drill Rig	50	1	10	--	Bore/Drill Rigs	500	5	0	100	26	0
Capacitors - Mohave Series Cap- SC6 - Demo: Removals, Refurbishing	Excavator with Breaker	50	1	10	--	Excavators	524	5	0	100	26	0
Capacitors - Mohave Series Cap- SC6 - Demo: Removals, Refurbishing	LoDrill Over 50,000 Pounds	20	1	10	--	Bore/Drill Rigs	350	5	0	100	26	0
Capacitors - Mohave Series Cap- SC6 - Demo: Removals, Refurbishing	LoDrill up to 50,000 Pounds	30	1	10	--	Bore/Drill Rigs	200	5	0	100	26	0
Capacitors - Mohave Series Cap- SC6 - Demo: Removals, Refurbishing	Mini Excavator	50	1	10	--	Excavators	50	5	0	100	26	0

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Capacitors - Mohave Series Cap- SC6 - Demo: Removals, Refurbishing	Motor Grader	25	1	10	--	Graders	250	8	0	100	26	0
Capacitors - Mohave Series Cap- SC6 - Demo: Removals, Refurbishing	Skip Loader	90	1	10	--	Tractors/Loaders/ Backhoes	150	5	0	100	26	0
Capacitors - Mohave Series Cap- SC6 - Demo: Removals, Refurbishing	Vermeer RT-450 Trencher	30	1	10	--	Trenchers	50	5	0	100	26	0
Capacitors - Mohave Series Cap- SC6 - Demo: Removals, Refurbishing	10 Cubic Yard Dump Truck	90	3	10	HHDT	--	--	--	0	100	26	0
Capacitors - Mohave Series Cap- SC6 - Demo: Removals, Refurbishing	4,000-Gallon Water Truck	90	3	10	HHDT	--	--	--	0	100	26	0
Capacitors - Mohave Series Cap- SC6 - Demo: Removals, Refurbishing	8,000-Gallon Water Pull	40	1	10	HHDT	--	--	--	0	100	26	0
Capacitors - Mohave Series Cap- SC6 - Demo: Removals, Refurbishing	Foreman's Truck	90	1	10	Passenger	--	--	--	0	100	26	0
Capacitors - Mohave Series Cap- SC6 - Demo: Removals, Refurbishing	Job Site Utility Cart	90	1	10	Passenger	--	--	--	0	100	26	0
Capacitors - Mohave Series Cap- SC6 - Demo: Removals, Refurbishing	Low Bed Equipment Hauler (5 axle)	40	1	10	HHDT	--	--	--	0	100	26	0
Capacitors - Mohave Series Cap- SC6 - Demo: Removals, Refurbishing	Low Bed Equipment Hauler (7 axle)	40	1	10	HHDT	--	--	--	0	100	26	0
Capacitors - Mohave Series Cap- SC6 - Demo: Removals, Refurbishing	Low Side End Dump	90	3	10	HHDT	--	--	--	0	100	26	0
Capacitors - Mohave Series Cap- SC6 - Demo: Removals, Refurbishing	Tool Truck	50	1	10	Delivery	--	--	--	0	100	26	0
Capacitors - Mohave Series Cap- SC6 - Demo: Removals, Refurbishing	Worker Commute Automobile	90	10	10	Passenger	--	--	--	0	100	26	0
Capacitors - Mohave Series Cap- SC6 - Installations: Equipment, Wiring	135-Foot Manlift	20	1	15	--	Aerial Lifts	75	5	0	100	108	0
Capacitors - Mohave Series Cap- SC6 - Installations: Equipment, Wiring	20,000-Pound Forklift	40	1	15	--	Forklifts	150	8	0	100	108	0
Capacitors - Mohave Series Cap- SC6 - Installations: Equipment, Wiring	27-Ton Boom Truck	60	1	15	--	Cranes	350	5	0	100	108	0
Capacitors - Mohave Series Cap- SC6 - Installations: Equipment, Wiring	65-Foot Manlift	40	1	15	--	Aerial Lifts	75	5	0	100	108	0
Capacitors - Mohave Series Cap- SC6 - Installations: Equipment, Wiring	85-Foot Manlift	40	1	15	--	Aerial Lifts	75	5	0	100	108	0

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Capacitors - Mohave Series Cap- SC6 - Installations: Equipment, Wiring	Bobcat with Forks	90	2	15	--	Skid Steer Loaders	93	8	0	100	108	0
Capacitors - Mohave Series Cap- SC6 - Installations: Equipment, Wiring	Crane	20	1	15	--	Cranes	350	5	0	100	108	0
Capacitors - Mohave Series Cap- SC6 - Installations: Equipment, Wiring	Generator	90	1	15	--	Generator Sets	50	12	0	100	108	0
Capacitors - Mohave Series Cap- SC6 - Installations: Equipment, Wiring	Genie 45-Foot Manlift	40	1	15	--	Aerial Lifts	75	5	0	100	108	0
Capacitors - Mohave Series Cap- SC6 - Installations: Equipment, Wiring	Scissor Lift	90	3	15	--	Aerial Lifts	50	6	0	100	108	0
Capacitors - Mohave Series Cap- SC6 - Installations: Equipment, Wiring	Tele-Handler Forklift (5,000-7,000 Pounds)	85	1	15	--	Rough Terrain Forklifts	150	8	0	100	108	0
Capacitors - Mohave Series Cap- SC6 - Installations: Equipment, Wiring	Tele-Handler Forklift (8,000-12,000 Pounds)	65	1	15	--	Rough Terrain Forklifts	150	8	0	100	108	0
Capacitors - Mohave Series Cap- SC6 - Installations: Equipment, Wiring	Foreman's Truck	90	1	15	Passenger	--	--	--	0	100	108	0
Capacitors - Mohave Series Cap- SC6 - Installations: Equipment, Wiring	Job Site Utility Cart	90	1	15	Passenger	--	--	--	0	100	108	0
Capacitors - Mohave Series Cap- SC6 - Installations: Equipment, Wiring	Tool Truck	90	1	15	Delivery	--	--	--	0	100	108	0
Capacitors - Mohave Series Cap- SC6 - Installations: Equipment, Wiring	Worker Commute Automobile	90	15	15	Passenger	--	--	--	0	100	108	0
Capacitors - Newberry Springs Series Cap- SC2 - Civil: Foundations, Below Grade, Stone Cover	140 Motor Grader	25	1	12	--	Graders	250	8	100	0	88	0
Capacitors - Newberry Springs Series Cap- SC2 - Civil: Foundations, Below Grade, Stone Cover	250-Ton Hydraulic Crane	30	1	12	--	Cranes	450	5	100	0	88	0
Capacitors - Newberry Springs Series Cap- SC2 - Civil: Foundations, Below Grade, Stone Cover	50,000-Pound Excavator /Breaker	30	1	12	--	Excavators	200	8	100	0	88	0
Capacitors - Newberry Springs Series Cap- SC2 - Civil: Foundations, Below Grade, Stone Cover	500-Gallon Water Buffalo w/ Truck	90	1	12	--	Off-Highway Trucks	185	5	100	0	88	0
Capacitors - Newberry Springs Series Cap- SC2 - Civil: Foundations, Below Grade, Stone Cover	75,000-Pound Excavator	30	1	12	--	Excavators	350	8	100	0	88	0

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Capacitors - Newberry Springs Series Cap-SC2 - Civil: Foundations, Below Grade, Stone Cover	84-Inch Vibratory Roller Compactor	35	2	12	--	Rollers	130	8	100	0	88	0
Capacitors - Newberry Springs Series Cap-SC2 - Civil: Foundations, Below Grade, Stone Cover	Bobcat Compactor	50	1	12	--	Skid Steer Loaders	93	8	100	0	88	0
Capacitors - Newberry Springs Series Cap-SC2 - Civil: Foundations, Below Grade, Stone Cover	Bobcat Skid Steer	90	1	12	--	Skid Steer Loaders	93	8	100	0	88	0
Capacitors - Newberry Springs Series Cap-SC2 - Civil: Foundations, Below Grade, Stone Cover	Bobcat with Auger	90	1	12	--	Skid Steer Loaders	93	8	100	0	88	0
Capacitors - Newberry Springs Series Cap-SC2 - Civil: Foundations, Below Grade, Stone Cover	Bobcat with Sweeper	90	1	12	--	Skid Steer Loaders	93	8	100	0	88	0
Capacitors - Newberry Springs Series Cap-SC2 - Civil: Foundations, Below Grade, Stone Cover	Cat 623 Scraper	30	1	12	--	Graders	400	8	100	0	88	0
Capacitors - Newberry Springs Series Cap-SC2 - Civil: Foundations, Below Grade, Stone Cover	Cat 950 Loader	40	1	12	--	Tractors/Loaders/ Backhoes	130	8	100	0	88	0
Capacitors - Newberry Springs Series Cap-SC2 - Civil: Foundations, Below Grade, Stone Cover	D-6 Cat Dozer	40	1	12	--	Crawler Tractors	215	8	100	0	88	0
Capacitors - Newberry Springs Series Cap-SC2 - Civil: Foundations, Below Grade, Stone Cover	Ditch Witch	50	1	12	--	Trenchers	42	8	100	0	88	0
Capacitors - Newberry Springs Series Cap-SC2 - Civil: Foundations, Below Grade, Stone Cover	LoDrill Over 50,000 Pounds	20	1	12	--	Bore/Drill Rigs	350	5	100	0	88	0
Capacitors - Newberry Springs Series Cap-SC2 - Civil: Foundations, Below Grade, Stone Cover	LoDrill up to 50,000 Pounds	30	1	12	--	Bore/Drill Rigs	200	5	100	0	88	0
Capacitors - Newberry Springs Series Cap-SC2 - Civil: Foundations, Below Grade, Stone Cover	Mini Excavator	50	1	12	--	Excavators	50	8	100	0	88	0

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Capacitors - Newberry Springs Series Cap-SC2 - Civil: Foundations, Below Grade, Stone Cover	Premiertak 300 Rock Crusher	10	1	12	--	Crushing/Proc. Equipment	280	9	100	0	88	0
Capacitors - Newberry Springs Series Cap-SC2 - Civil: Foundations, Below Grade, Stone Cover	Skip Loader	100	1	12	--	Tractors/Loaders/ Backhoes	150	4	100	0	88	0
Capacitors - Newberry Springs Series Cap-SC2 - Civil: Foundations, Below Grade, Stone Cover	Vermeer RT-450 Trencher	30	1	12	--	Trenchers	50	8	100	0	88	0
Capacitors - Newberry Springs Series Cap-SC2 - Civil: Foundations, Below Grade, Stone Cover	10-Cubic-Yard Dump Truck	100	3	12	HHDT	--	--	--	100	0	88	0
Capacitors - Newberry Springs Series Cap-SC2 - Civil: Foundations, Below Grade, Stone Cover	4,000-Gallon Water Truck	100	3	12	HHDT	--	--	--	100	0	88	0
Capacitors - Newberry Springs Series Cap-SC2 - Civil: Foundations, Below Grade, Stone Cover	Foreman's Truck	90	1	12	Passenger	--	--	--	100	0	88	0
Capacitors - Newberry Springs Series Cap-SC2 - Civil: Foundations, Below Grade, Stone Cover	Job Site Utility Cart	90	1	12	Passenger	--	--	--	100	0	88	0
Capacitors - Newberry Springs Series Cap-SC2 - Civil: Foundations, Below Grade, Stone Cover	Low Bed Equipment Hauler (5 axle)	40	1	12	HHDT	--	--	--	100	0	88	0
Capacitors - Newberry Springs Series Cap-SC2 - Civil: Foundations, Below Grade, Stone Cover	Low Bed Equipment Hauler (7 axle)	40	1	12	HHDT	--	--	--	100	0	88	0
Capacitors - Newberry Springs Series Cap-SC2 - Civil: Foundations, Below Grade, Stone Cover	Low Side End Dump	100	3	12	HHDT	--	--	--	100	0	88	0
Capacitors - Newberry Springs Series Cap-SC2 - Civil: Foundations, Below Grade, Stone Cover	Tool Truck	50	1	12	Delivery	--	--	--	100	0	88	0
Capacitors - Newberry Springs Series Cap-SC2 - Civil: Foundations, Below Grade, Stone Cover	Worker Commute Automobile	100	12	12	Passenger	--	--	--	100	0	88	0
Capacitors - Newberry Springs Series Cap-SC2 - Commissioning: Testing	Scissor Lift	35	3	10	--	Aerial Lifts	50	6	100	0	0	28

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Capacitors - Newberry Springs Series Cap-SC2 - Commissioning: Testing	Foreman's Truck	35	1	10	Passenger	--	--	--	100	0	0	28
Capacitors - Newberry Springs Series Cap-SC2 - Commissioning: Testing	Job Site Utility Cart	35	1	10	Passenger	--	--	--	100	0	0	28
Capacitors - Newberry Springs Series Cap-SC2 - Commissioning: Testing	Test Truck	35	1	10	Delivery	--	--	--	100	0	0	28
Capacitors - Newberry Springs Series Cap-SC2 - Commissioning: Testing	Tool Truck	35	1	10	Delivery	--	--	--	100	0	0	28
Capacitors - Newberry Springs Series Cap-SC2 - Commissioning: Testing	Worker Commute Automobile	35	10	10	Passenger	--	--	--	100	0	0	28
Capacitors - Newberry Springs Series Cap-SC2 – Grading	140 Motor Grader	25	1	12	--	Graders	250	8	100	0	46	0
Capacitors - Newberry Springs Series Cap-SC2 – Grading	250-Ton Hydraulic Crane	30	1	12	--	Cranes	450	5	100	0	46	0
Capacitors - Newberry Springs Series Cap-SC2 – Grading	50,000-Pound Excavator /Breaker	30	1	12	--	Excavators	200	8	100	0	46	0
Capacitors - Newberry Springs Series Cap-SC2 – Grading	500-Gallon Water Buffalo w/ Truck	90	1	12	--	Off-Highway Trucks	185	5	100	0	46	0
Capacitors - Newberry Springs Series Cap-SC2 – Grading	75,000-Pound Excavator	30	1	12	--	Excavators	350	8	100	0	46	0
Capacitors - Newberry Springs Series Cap-SC2 – Grading	84-Inch Vibratory Roller Compactor	35	2	12	--	Rollers	130	8	100	0	46	0
Capacitors - Newberry Springs Series Cap-SC2 – Grading	Bobcat Compactor	50	1	12	--	Skid Steer Loaders	93	8	100	0	46	0
Capacitors - Newberry Springs Series Cap-SC2 – Grading	Bobcat Skid Steer	90	1	12	--	Skid Steer Loaders	93	8	100	0	46	0
Capacitors - Newberry Springs Series Cap-SC2 – Grading	Bobcat with Auger	90	1	12	--	Skid Steer Loaders	93	8	100	0	46	0
Capacitors - Newberry Springs Series Cap-SC2 – Grading	Bobcat with Sweeper	90	1	12	--	Skid Steer Loaders	93	8	100	0	46	0
Capacitors - Newberry Springs Series Cap-SC2 – Grading	Cat 623 Scraper	30	1	12	--	Graders	400	8	100	0	46	0
Capacitors - Newberry Springs Series Cap-SC2 – Grading	Cat 950 Loader	40	1	12	--	Tractors/Loaders/ Backhoes	130	8	100	0	46	0
Capacitors - Newberry Springs Series Cap-SC2 – Grading	D-6 Cat Dozer	40	1	12	--	Crawler Tractors	215	8	100	0	46	0

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Capacitors - Newberry Springs Series Cap-SC2 – Grading	Ditch Witch	50	1	12	--	Trenchers	42	8	100	0	46	0
Capacitors - Newberry Springs Series Cap-SC2 – Grading	LoDrill Over 50,000 Pounds	20	1	12	--	Bore/Drill Rigs	350	5	100	0	46	0
Capacitors - Newberry Springs Series Cap-SC2 – Grading	LoDrill up to 50,000 Pounds	30	1	12	--	Bore/Drill Rigs	200	5	100	0	46	0
Capacitors - Newberry Springs Series Cap-SC2 – Grading	Mini Excavator	50	1	12	--	Excavators	50	8	100	0	46	0
Capacitors - Newberry Springs Series Cap-SC2 – Grading	Premiertak 300 Rock Crusher	10	1	12	--	Crushing/Proc. Equipment	280	9	100	0	46	0
Capacitors - Newberry Springs Series Cap-SC2 – Grading	Skip Loader	100	1	12	--	Tractors/Loaders/ Backhoes	150	4	100	0	46	0
Capacitors - Newberry Springs Series Cap-SC2 – Grading	Vermeer RT-450 Trencher	30	1	12	--	Trenchers	50	8	100	0	46	0
Capacitors - Newberry Springs Series Cap-SC2 – Grading	10-Cubic-Yard Dump Truck	100	3	12	HHDT	--	--	--	100	0	46	0
Capacitors - Newberry Springs Series Cap-SC2 – Grading	4,000-Gallon Water Truck	100	3	12	HHDT	--	--	--	100	0	46	0
Capacitors - Newberry Springs Series Cap-SC2 – Grading	Foreman's Truck	90	1	12	Passenger	--	--	--	100	0	46	0
Capacitors - Newberry Springs Series Cap-SC2 – Grading	Job Site Utility Cart	90	1	12	Passenger	--	--	--	100	0	46	0
Capacitors - Newberry Springs Series Cap-SC2 – Grading	Low Bed Equipment Hauler (5 axle)	40	1	12	HHDT	--	--	--	100	0	46	0
Capacitors - Newberry Springs Series Cap-SC2 – Grading	Low Bed Equipment Hauler (7 axle)	40	1	12	HHDT	--	--	--	100	0	46	0
Capacitors - Newberry Springs Series Cap-SC2 – Grading	Low Side End Dump	100	3	12	HHDT	--	--	--	100	0	46	0
Capacitors - Newberry Springs Series Cap-SC2 – Grading	Tool Truck	50	1	12	Delivery	--	--	--	100	0	46	0
Capacitors - Newberry Springs Series Cap-SC2 – Grading	Worker Commute Automobile	100	12	12	Passenger	--	--	--	100	0	46	0
Capacitors - Newberry Springs Series Cap-SC2 - Installations: Structures, Equipment, Wiring	135-Foot Manlift	20	1	20	--	Aerial Lifts	75	5	100	0	101	40

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Capacitors - Newberry Springs Series Cap-SC2 - Installations: Structures, Equipment, Wiring	20,000-Pound Forklift	40	1	20	--	Forklifts	150	8	100	0	101	40
Capacitors - Newberry Springs Series Cap-SC2 - Installations: Structures, Equipment, Wiring	27-Ton Boom Truck	60	1	20	--	Cranes	350	5	100	0	101	40
Capacitors - Newberry Springs Series Cap-SC2 - Installations: Structures, Equipment, Wiring	65-Foot Manlift	40	1	20	--	Aerial Lifts	75	5	100	0	101	40
Capacitors - Newberry Springs Series Cap-SC2 - Installations: Structures, Equipment, Wiring	85-Foot Manlift	40	1	20	--	Aerial Lifts	75	5	100	0	101	40
Capacitors - Newberry Springs Series Cap-SC2 - Installations: Structures, Equipment, Wiring	Bobcat with Forks	100	2	20	--	Skid Steer Loaders	93	8	100	0	101	40
Capacitors - Newberry Springs Series Cap-SC2 - Installations: Structures, Equipment, Wiring	Crane	20	1	20	--	Cranes	350	5	100	0	101	40
Capacitors - Newberry Springs Series Cap-SC2 - Installations: Structures, Equipment, Wiring	Generator	100	1	20	--	Generator Sets	50	10	100	0	101	40
Capacitors - Newberry Springs Series Cap-SC2 - Installations: Structures, Equipment, Wiring	Genie 45-Foot Manlift	40	1	20	--	Aerial Lifts	75	5	100	0	101	40
Capacitors - Newberry Springs Series Cap-SC2 - Installations: Structures, Equipment, Wiring	Scissor Lift	100	3	20	--	Aerial Lifts	50	6	100	0	101	40
Capacitors - Newberry Springs Series Cap-SC2 - Installations: Structures, Equipment, Wiring	Tele-Handler Forklift (5,000-7,000 Pounds)	85	1	20	--	Rough Terrain Forklifts	150	8	100	0	101	40
Capacitors - Newberry Springs Series Cap-SC2 - Installations: Structures, Equipment, Wiring	Tele-Handler Forklift (8,000-12,000 Pounds)	65	1	20	--	Rough Terrain Forklifts	150	8	100	0	101	40
Capacitors - Newberry Springs Series Cap-SC2 - Installations: Structures, Equipment, Wiring	Foreman's Truck	100	1	20	Passenger	--	--	--	100	0	101	40

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Capacitors - Newberry Springs Series Cap-SC2 - Installations: Structures, Equipment, Wiring	Job Site Utility Cart	100	1	20	Passenger	--	--	--	100	0	101	40
Capacitors - Newberry Springs Series Cap-SC2 - Installations: Structures, Equipment, Wiring	Tool Truck	100	1	20	Delivery	--	--	--	100	0	101	40
Capacitors - Newberry Springs Series Cap-SC2 - Installations: Structures, Equipment, Wiring	Worker Commute Automobile	100	20	20	Passenger	--	--	--	100	0	101	40
Transmission												
Transmission - 500 kV - Survey (1)	1-Ton Truck, 4x4	90	2	8	Passenger	--	--	--	75	25	236	156
Transmission - 500 kV - Survey (1)	Worker Commute Automobile	90	8	8	Passenger	--	--	--	75	25	236	156
Transmission - 500 kV - Fiber Splicing and Termination	1-Ton Truck, 4x4	60	1	5	Passenger	--	--	--	75	25	184	132
Transmission - 500 kV - Fiber Splicing and Termination	Medium Duty Splicing Lab Truck	60	2	5	Delivery	--	--	--	75	25	184	132
Transmission - 500 kV - Fiber Splicing and Termination	Worker Commute Automobile	60	5	5	Passenger	--	--	--	75	25	184	132
Transmission - 500 kV - Lugo-Moh - Guard Structure Installation (5)	Auger Truck	30	1	6	--	Bore/Drill Rigs	210	4	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Guard Structure Installation (5)	Boom/Crane Truck	30	1	6	--	Cranes	350	6	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Guard Structure Installation (5)	Compressor Trailer	30	1	6	--	Air Compressors	60	4	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Guard Structure Installation (5)	Digger Derrick 6060	30	2	6	--	Bore/Drill Rigs	300	8	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Guard Structure Installation (5)	Manlift/Bucket Truck	30	1	6	--	Aerial Lifts	250	4	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Guard Structure Installation (5)	1-Ton Truck, 4x4	30	1	6	Passenger	--	--	--	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Guard Structure Installation (5)	3/4-Ton Truck, 4x4	30	1	6	Passenger	--	--	--	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Guard Structure Installation (5)	Extendable Flat Bed Pole Truck	30	1	6	HHDT	--	--	--	95	5	66	53

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Transmission - 500 kV - Lugo-Moh - Guard Structure Installation (5)	Worker Commute Automobile	30	6	6	Passenger	--	--	--	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Guard Structure Removal (15)	Boom/Crane Truck	20	1	6	--	Cranes	350	6	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Guard Structure Removal (15)	Compressor Trailer	20	1	6	--	Air Compressors	60	4	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Guard Structure Removal (15)	Digger Derrick 6060	20	2	6	--	Bore/Drill Rigs	300	8	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Guard Structure Removal (15)	Manlift/Bucket Truck	20	1	6	--	Aerial Lifts	250	4	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Guard Structure Removal (15)	1-Ton Truck, 4x4	20	1	6	Passenger	--	--	--	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Guard Structure Removal (15)	3/4-Ton Truck, 4x4	20	1	6	Passenger	--	--	--	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Guard Structure Removal (15)	Extendable Flat Bed Pole Truck	20	1	6	HHDT	--	--	--	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Guard Structure Removal (15)	Worker Commute Automobile	20	6	6	Passenger	--	--	--	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Install Underground Fiber	Manlift/Bucket Truck	15	3	5	--	Aerial Lifts	250	6	100	0	80	0
Transmission - 500 kV - Lugo-Moh - Install Underground Fiber	Wire Truck/Trailer	15	1	5	--	Other Construction Equipment	10	6	100	0	80	0
Transmission - 500 kV - Lugo-Moh - Install Underground Fiber	1-Ton Truck, 4x4	15	1	5	Passenger	--	--	--	100	0	80	0
Transmission - 500 kV - Lugo-Moh - Install Underground Fiber	Worker Commute Automobile	15	5	5	Passenger	--	--	--	100	0	80	0
Transmission - 500 kV - Lugo-Moh - Pull-site preparation	Backhoe/Front Loader	8	1	5	--	Tractors/Loaders/ Backhoes	200	4	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Pull-site preparation	Drum Type Compactor	8	1	5	--	Rollers	100	6	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Pull-site preparation	Excavator	4	1	5	--	Excavators	160	4	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Pull-site preparation	Motor Grader	8	1	5	--	Graders	250	6	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Pull-site preparation	Track Type Dozer	8	1	5	--	Crawler Tractors	150	4	95	5	66	53

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Transmission - 500 kV - Lugo-Moh - Pull-site preparation	1-Ton Truck, 4x4	8	1	5	Passenger	--	--	--	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Pull-site preparation	Lowboy Truck/Trailer	8	1	5	HHDT	--	--	--	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Pull-site preparation	Water Truck	8	1	5	HHDT	--	--	--	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Pull-site preparation	Worker Commute	8	5	5	Passenger	--	--	--	95	5	66	53
Transmission - 500 kV - Lugo-Moh - R/W Clearing	Backhoe/Front Loader	82	1	5	--	Tractors/Loaders/ Backhoes	200	6	95	5	66	53
Transmission - 500 kV - Lugo-Moh - R/W Clearing	Motor Grader	82	1	5	--	Graders	250	6	95	5	66	53
Transmission - 500 kV - Lugo-Moh - R/W Clearing	Track Type Dozer	82	1	5	--	Crawler Tractors	150	6	95	5	66	53
Transmission - 500 kV - Lugo-Moh - R/W Clearing	1-Ton Truck, 4x4	82	1	5	Passenger	--	--	--	95	5	66	53
Transmission - 500 kV - Lugo-Moh - R/W Clearing	Lowboy Truck/Trailer	82	1	5	HHDT	--	--	--	95	5	66	53
Transmission - 500 kV - Lugo-Moh - R/W Clearing	Water Truck	82	1	5	HHDT	--	--	--	95	5	66	53
Transmission - 500 kV - Lugo-Moh - R/W Clearing	Worker Commute Automobile	82	5	5	Passenger	--	--	--	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	Hughes 530F Helicopter	210	4	44	--	--	NA	6	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	Backhoe/Front Loader	210	1	44	--	Tractors/Loaders/ Backhoes	200	4	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	Boom/Crane Truck	210	2	44	--	Cranes	350	8	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	Bullwheel Puller	150	1	44	--	Other Construction Equipment	350	8	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	D8 Cat	210	2	44	--	Crawler Tractors	350	2	95	5	66	53

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Transmission - 500 kV - Lugo-Moh - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	Manlift/Bucket Truck	210	4	44	--	Aerial Lifts	250	8	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	R/T Crane (M)	210	2	44	--	Cranes	215	4	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	Sag Cat w/ 2 winches	105	2	44	--	Crawler Tractors	350	2	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	Skid Steer Mulcher	210	2	44	--	Tractors/Loaders/ Backhoes	110	8	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	Static Truck/ Tensioner	210	1	44	--	Other Construction Equipment	350	8	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	Wire Truck/Trailer	150	4	44	--	Other Construction Equipment	10	6	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	1-Ton Truck, 4x4	210	6	44	Passenger	--	--	--	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	3/4-Ton Truck, 4x4	210	4	44	Passenger	--	--	--	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	Dump Truck	210	1	44	HHDT	--	--	--	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	Fuel, Helicopter Support Truck	210	4	44	HHDT	--	--	--	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	Lowboy Truck/Trailer	210	3	44	HHDT	--	--	--	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	Splicing Lab	210	2	44	Passenger	--	--	--	95	5	66	53

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Transmission - 500 kV - Lugo-Moh - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	Worker Commute Automobile	210	44	44	Passenger	--	--	--	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Restoration (16)	Backhoe/Front Loader	82	1	7	--	Tractors/Loaders/ Backhoes	200	4	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Restoration (16)	Drum Type Compactor	82	1	7	--	Rollers	100	4	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Restoration (16)	Motor Grader	82	1	7	--	Graders	250	6	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Restoration (16)	1-Ton Truck, 4x4	82	2	7	Passenger	--	--	--	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Restoration (16)	Lowboy Truck/Trailer	82	1	7	HHDT	--	--	--	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Restoration (16)	Water Truck	82	1	7	HHDT	--	--	--	95	5	66	53
Transmission - 500 kV - Lugo-Moh - Restoration (16)	Worker Commute	82	7	7	Passenger	--	--	--	95	5	66	53
Transmission - 500 kV - Marshalling Yard (2)	Boom/Crane Truck	78	1	4	--	Cranes	350	2	75	25	79	0
Transmission - 500 kV - Marshalling Yard (2)	R/T Forklift	78	1	4	--	Rough Terrain Forklifts	125	6	75	25	79	0
Transmission - 500 kV - Marshalling Yard (2)	1-Ton Truck, 4x4	78	1	4	Passenger	--	--	--	75	25	79	0
Transmission - 500 kV - Marshalling Yard (2)	Truck, Semi-Tractor	78	1	4	HHDT	--	--	--	75	25	79	0
Transmission - 500 kV - Marshalling Yard (2)	Water Truck	78	1	4	HHDT	--	--	--	75	25	79	0
Transmission - 500 kV - Marshalling Yard (2)	Worker Commute Automobile	78	4	4	Passenger	--	--	--	75	25	79	0
Transmission - 500 kV - Moh-Eld - Guard Structure Installation (5)	Auger Truck	30	1	6	--	Bore/Drill Rigs	210	4	0	100	54	0
Transmission - 500 kV - Moh-Eld - Guard Structure Installation (5)	Boom/Crane Truck	30	1	6	--	Cranes	350	6	0	100	54	0
Transmission - 500 kV - Moh-Eld - Guard Structure Installation (5)	Compressor Trailer	30	1	6	--	Air Compressors	60	4	0	100	54	0

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Transmission - 500 kV - Moh-Eld - Guard Structure Installation (5)	Digger Derrick 6060	30	2	6	--	Bore/Drill Rigs	300	8	0	100	54	0
Transmission - 500 kV - Moh-Eld - Guard Structure Installation (5)	Manlift/Bucket Truck	30	1	6	--	Aerial Lifts	250	4	0	100	54	0
Transmission - 500 kV - Moh-Eld - Guard Structure Installation (5)	1-Ton Truck, 4x4	30	1	6	Passenger	--	--	--	0	100	54	0
Transmission - 500 kV - Moh-Eld - Guard Structure Installation (5)	3/4-Ton Truck, 4x4	30	1	6	Passenger	--	--	--	0	100	54	0
Transmission - 500 kV - Moh-Eld - Guard Structure Installation (5)	Extendable Flat Bed Pole Truck	30	1	6	HHDT	--	--	--	0	100	54	0
Transmission - 500 kV - Moh-Eld - Guard Structure Installation (5)	Worker Commute Automobile	30	6	6	Passenger	--	--	--	0	100	54	0
Transmission - 500 kV - Moh-Eld - Guard Structure Removal (15)	Boom/Crane Truck	20	1	6	--	Cranes	350	6	0	100	54	0
Transmission - 500 kV - Moh-Eld - Guard Structure Removal (15)	Compressor Trailer	20	1	6	--	Air Compressors	60	4	0	100	54	0
Transmission - 500 kV - Moh-Eld - Guard Structure Removal (15)	Digger Derrick 6060	20	2	6	--	Bore/Drill Rigs	300	8	0	100	54	0
Transmission - 500 kV - Moh-Eld - Guard Structure Removal (15)	Manlift/Bucket Truck	20	1	6	--	Aerial Lifts	250	4	0	100	54	0
Transmission - 500 kV - Moh-Eld - Guard Structure Removal (15)	1-Ton Truck, 4x4	20	1	6	Passenger	--	--	--	0	100	54	0
Transmission - 500 kV - Moh-Eld - Guard Structure Removal (15)	3/4-Ton Truck, 4x4	20	1	6	Passenger	--	--	--	0	100	54	0
Transmission - 500 kV - Moh-Eld - Guard Structure Removal (15)	Extendable Flat Bed Pole Truck	20	1	6	HHDT	--	--	--	0	100	54	0
Transmission - 500 kV - Moh-Eld - Guard Structure Removal (15)	Worker Commute Automobile	20	6	6	Passenger	--	--	--	0	100	54	0
Transmission - 500 kV - Moh-Eld - LST Foundation Reinforcement14	Auger Truck	20	1	7	--	Bore/Drill Rigs	210	6	0	100	7	0
Transmission - 500 kV - Moh-Eld - LST Foundation Reinforcement14	Backhoe/Front Loader	20	1	7	--	Tractors/Loaders/ Backhoes	200	6	0	100	7	0
Transmission - 500 kV - Moh-Eld - LST Foundation Reinforcement14	Boom/Crane Truck	20	1	7	--	Cranes	350	4	0	100	7	0
Transmission - 500 kV - Moh-Eld - LST Foundation Reinforcement14	3/4-Ton Truck, 4x4	20	2	7	Passenger	--	--	--	0	100	7	0

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Transmission - 500 kV - Moh-Eld - LST Foundation Reinforcement14	Concrete Mixer Truck	15	3	7	HHDT	--	--	--	0	100	7	0
Transmission - 500 kV - Moh-Eld - LST Foundation Reinforcement14	Dump Truck	20	1	7	HHDT	--	--	--	0	100	7	0
Transmission - 500 kV - Moh-Eld - LST Foundation Reinforcement14	Water Truck	20	1	7	HHDT	--	--	--	0	100	7	0
Transmission - 500 kV - Moh-Eld - LST Foundation Reinforcement14	Worker Commute Automobile	20	7	7	Passenger	--	--	--	0	100	7	0
Transmission - 500 kV - Moh-Eld - Pull-site preparation	Backhoe/Front Loader	8	1	5	--	Tractors/Loaders/ Backhoes	200	4	0	100	54	0
Transmission - 500 kV - Moh-Eld - Pull-site preparation	Drum Type Compactor	8	1	5	--	Rollers	100	6	0	100	54	0
Transmission - 500 kV - Moh-Eld - Pull-site preparation	Excavator	4	1	5	--	Excavators	160	4	0	100	54	0
Transmission - 500 kV - Moh-Eld - Pull-site preparation	Motor Grader	8	1	5	--	Graders	250	6	0	100	54	0
Transmission - 500 kV - Moh-Eld - Pull-site preparation	Track Type Dozer	8	1	5	--	Crawler Tractors	150	4	0	100	54	0
Transmission - 500 kV - Moh-Eld - Pull-site preparation	1-Ton Truck, 4x4	8	1	5	Passenger	--	--	--	0	100	54	0
Transmission - 500 kV - Moh-Eld - Pull-site preparation	Lowboy Truck/Trailer	8	1	5	HHDT	--	--	--	0	100	54	0
Transmission - 500 kV - Moh-Eld - Pull-site preparation	Water Truck	8	1	5	HHDT	--	--	--	0	100	54	0
Transmission - 500 kV - Moh-Eld - Pull-site preparation	Worker Commute	8	5	5	Passenger	--	--	--	0	100	54	0
Transmission - 500 kV - Moh-Eld - R/W Clearing	Backhoe/Front Loader	82	1	5	--	Tractors/Loaders/ Backhoes	200	6	0	100	54	0
Transmission - 500 kV - Moh-Eld - R/W Clearing	Motor Grader	82	1	5	--	Graders	250	6	0	100	54	0
Transmission - 500 kV - Moh-Eld - R/W Clearing	Track Type Dozer	82	1	5	--	Crawler Tractors	150	6	0	100	54	0
Transmission - 500 kV - Moh-Eld - R/W Clearing	1-Ton Truck, 4x4	82	1	5	Passenger	--	--	--	0	100	54	0
Transmission - 500 kV - Moh-Eld - R/W Clearing	Lowboy Truck/Trailer	82	1	5	HHDT	--	--	--	0	100	54	0

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Transmission - 500 kV - Moh-Eld - R/W Clearing	Water Truck	82	1	5	HHDT	--	--	--	0	100	54	0
Transmission - 500 kV - Moh-Eld - R/W Clearing	Worker Commute Automobile	82	5	5	Passenger	--	--	--	0	100	54	0
Transmission - 500 kV - Moh-Eld - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	Hughes 530F Helicopter	210	4	44	--	--	NA	6	0	100	54	0
Transmission - 500 kV - Moh-Eld - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	Backhoe/Front Loader	210	1	44	--	Tractors/Loaders/ Backhoes	200	4	0	100	54	0
Transmission - 500 kV - Moh-Eld - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	Boom/Crane Truck	210	2	44	--	Cranes	350	8	0	100	54	0
Transmission - 500 kV - Moh-Eld - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	Bullwheel Puller	150	1	44	--	Other Construction Equipment	350	8	0	100	54	0
Transmission - 500 kV - Moh-Eld - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	D8 Cat	210	2	44	--	Crawler Tractors	350	2	0	100	54	0
Transmission - 500 kV - Moh-Eld - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	Manlift/Bucket Truck	210	4	44	--	Aerial Lifts	250	8	0	100	54	0
Transmission - 500 kV - Moh-Eld - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	R/T Crane (M)	210	2	44	--	Cranes	215	4	0	100	54	0
Transmission - 500 kV - Moh-Eld - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	Sag Cat w/ 2 winches	105	2	44	--	Crawler Tractors	350	2	0	100	54	0
Transmission - 500 kV - Moh-Eld - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	Skid Steer Mulcher	210	2	44	--	Tractors/Loaders/ Backhoes	110	8	0	100	54	0
Transmission - 500 kV - Moh-Eld - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	Static Truck/ Tensioner	210	1	44	--	Other Construction Equipment	350	8	0	100	54	0
Transmission - 500 kV - Moh-Eld - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	Wire Truck/Trailer	150	4	44	--	Other Construction Equipment	10	6	0	100	54	0

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Transmission - 500 kV - Moh-Eld - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	1-Ton Truck, 4x4	210	6	44	Passenger	--	--	--	0	100	54	0
Transmission - 500 kV - Moh-Eld - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	3/4-Ton Truck, 4x4	210	4	44	Passenger	--	--	--	0	100	54	0
Transmission - 500 kV - Moh-Eld - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	Dump Truck	210	1	44	HHDT	--	--	--	0	100	54	0
Transmission - 500 kV - Moh-Eld - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	Fuel, Helicopter Support Truck	210	4	44	HHDT	--	--	--	0	100	54	0
Transmission - 500 kV - Moh-Eld - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	Lowboy Truck/Trailer	210	3	44	HHDT	--	--	--	0	100	54	0
Transmission - 500 kV - Moh-Eld - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	Splicing Lab	210	2	44	Passenger	--	--	--	0	100	54	0
Transmission - 500 kV - Moh-Eld - Remove OHGW, Install OPGW, Splicing, Peak Mod (14)	Worker Commute Automobile	210	44	44	Passenger	--	--	--	0	100	54	0
Transmission - 500 kV - Moh-Eld - Restoration (16)	Backhoe/Front Loader	82	1	7	--	Tractors/Loaders/ Backhoes	200	4	0	100	54	0
Transmission - 500 kV - Moh-Eld - Restoration (16)	Drum Type Compactor	82	1	7	--	Rollers	100	4	0	100	54	0
Transmission - 500 kV - Moh-Eld - Restoration (16)	Motor Grader	82	1	7	--	Graders	250	6	0	100	54	0
Transmission - 500 kV - Moh-Eld - Restoration (16)	1-Ton Truck, 4x4	82	2	7	Passenger	--	--	--	0	100	54	0
Transmission - 500 kV - Moh-Eld - Restoration (16)	Lowboy Truck/Trailer	82	1	7	HHDT	--	--	--	0	100	54	0
Transmission - 500 kV - Moh-Eld - Restoration (16)	Water Truck	82	1	7	HHDT	--	--	--	0	100	54	0
Transmission - 500 kV - Moh-Eld - Restoration (16)	Worker Commute Automobile	82	7	7	Passenger	--	--	--	0	100	54	0
Transmission - 500 kV - Overhead Conductor Modifications	Manlift/Bucket Truck	6	3	5	--	Aerial Lifts	250	6	100	0	79	1

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Transmission - 500 kV - Overhead Conductor Modifications	Wire Truck/Trailer	6	1	5	--	Other Construction Equipment	10	6	100	0	79	1
Transmission - 500 kV - Overhead Conductor Modifications	1-Ton Truck, 4x4	6	1	5	Passenger	--	--	--	100	0	79	1
Transmission - 500 kV - Overhead Conductor Modifications	Worker Commute Automobile	6	5	5	Passenger	--	--	--	100	0	79	1
Transmission - 500 kV - Install TSP Foundations	Auger Truck	3	1	6	--	Bore/Drill Rigs	210	6	100	0	53	104
Transmission - 500 kV - Install TSP Foundations	Backhoe/Front Loader	6	1	6	--	Tractors/Loaders/ Backhoes	200	6	100	0	53	104
Transmission - 500 kV - Install TSP Foundations	Boom/Crane Truck	6	1	6	--	Cranes	350	4	100	0	53	104
Transmission - 500 kV - Install TSP Foundations	3/4-Ton Truck, 4x4	6	2	6	Passenger	--	--	--	100	0	53	104
Transmission - 500 kV - Install TSP Foundations	Concrete Mixer Truck	4	3	6	HHDT	--	--	--	100	0	53	104
Transmission - 500 kV - Install TSP Foundations	Dump Truck	6	1	6	HHDT	--	--	--	100	0	53	104
Transmission - 500 kV - Install TSP Foundations	Water Truck	6	1	6	HHDT	--	--	--	100	0	53	104
Transmission - 500 kV - Install TSP Foundations	Worker Commute	6	6	6	Passenger	--	--	--	100	0	53	104
Transmission - 500 kV - Install Trench (17)	Backhoe/Front Loader	90	1	8	--	Tractors/Loaders/ Backhoes	200	6	75	25	79	78
Transmission - 500 kV - Install Trench (17)	Compressor Trailer	90	1	8	--	Air Compressors	60	6	75	25	79	78
Transmission - 500 kV - Install Trench (17)	1-Ton Truck, 4x4	90	2	8	Passenger	--	--	--	75	25	79	78
Transmission - 500 kV - Install Trench (17)	Dump Truck	90	2	8	HHDT	--	--	--	75	25	79	78
Transmission - 500 kV - Install Trench (17)	Water Truck	90	1	8	HHDT	--	--	--	75	25	79	78
Transmission - 500 kV - Install Trench (17)	Worker Commute	90	8	8	Passenger	--	--	--	75	25	79	78
Transmission - 500 kV - TSP Assembly	Boom/Crane Truck	2	1	10	--	Cranes	350	8	100	0	53	104
Transmission - 500 kV - TSP Assembly	Compressor Trailer	2	1	10	--	Air Compressors	60	6	100	0	53	104
Transmission - 500 kV - TSP Assembly	1-Ton Truck, 4x4	2	2	10	Passenger	--	--	--	100	0	53	104
Transmission - 500 kV - TSP Assembly	3/4-Ton Truck, 4x4	2	2	10	Passenger	--	--	--	100	0	53	104
Transmission - 500 kV - TSP Assembly	Worker Commute	2	10	10	Passenger	--	--	--	100	0	53	104
Transmission - 500 kV - TSP Erection	Compressor Trailer	2	1	10	--	Air Compressors	60	4	100	0	53	104

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Transmission - 500 kV - TSP Erection	R/T Crane (L)	2	1	10	--	Cranes	275	8	100	0	53	104
Transmission - 500 kV - TSP Erection	1-Ton Truck, 4x4	2	2	10	Passenger	--	--	--	100	0	53	104
Transmission - 500 kV - TSP Erection	3/4-Ton Truck, 4x4	2	2	10	Passenger	--	--	--	100	0	53	104
Transmission - 500 kV - TSP Erection	Worker Commute Automobile	2	10	10	Passenger	--	--	--	100	0	53	104
Transmission - 500 kV - TSP Foundation Removal	Backhoe/Front Loader	8	1	4	--	Tractors/Loaders/ Backhoes	200	6	100	0	53	104
Transmission - 500 kV - TSP Foundation Removal	Compressor Trailer	8	1	4	--	Air Compressors	60	8	100	0	53	104
Transmission - 500 kV - TSP Foundation Removal	Excavator	8	1	4	--	Excavators	160	4	100	0	53	104
Transmission - 500 kV - TSP Foundation Removal	3/4-Ton Truck, 4x4	8	1	4	Passenger	--	--	--	100	0	53	104
Transmission - 500 kV - TSP Foundation Removal	Dump Truck	8	1	4	HHDT	--	--	--	100	0	53	104
Transmission - 500 kV - TSP Foundation Removal	Worker Commute Automobile	8	4	4	Passenger	--	--	--	100	0	53	104
Transmission - 500 kV - TSP Haul	Boom/Crane Truck	1	1	4	--	Cranes	350	6	100	0	53	104
Transmission - 500 kV - TSP Haul	3/4-Ton Truck, 4x4	1	1	4	Passenger	--	--	--	100	0	53	104
Transmission - 500 kV - TSP Haul	Flat Bed Pole Truck	1	1	4	HHDT	--	--	--	100	0	53	104
Transmission - 500 kV - TSP Haul	Worker Commute Automobile	1	4	4	Passenger	--	--	--	100	0	53	104
Transmission - 500 kV - TSP Removal	Boom/Crane Truck	6	1	6	--	Cranes	350	6	100	0	53	104
Transmission - 500 kV - TSP Removal	Compressor Trailer	6	1	6	--	Air Compressors	60	8	100	0	53	104
Transmission - 500 kV - TSP Removal	R/T Crane (M)	6	1	6	--	Cranes	215	6	100	0	53	104
Transmission - 500 kV - TSP Removal	1-Ton Truck, 4x4	6	2	6	Passenger	--	--	--	100	0	53	104
Transmission - 500 kV - TSP Removal	Flat Bed Truck/Trailer	6	1	6	HHDT	--	--	--	100	0	53	104
Transmission - 500 kV - TSP Removal	Worker Commute Automobile	6	6	6	Passenger	--	--	--	100	0	53	104
Transmission - 500 kV - Wood Pole Modification (6)	Boom/Crane Truck	2	1	10	--	Cranes	350	6	75	25	105	91
Transmission - 500 kV - Wood Pole Modification (6)	Compressor Trailer	2	1	10	--	Air Compressors	60	4	75	25	105	91
Transmission - 500 kV - Wood Pole Modification (6)	Manlift/Bucket Truck	2	1	10	--	Aerial Lifts	250	6	75	25	105	91

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Transmission - 500 kV - Wood Pole Modification (6)	1-Ton Truck, 4x4	2	2	10	Passenger	--	--	--	75	25	105	91
Transmission - 500 kV - Wood Pole Modification (6)	Flat Bed Truck/ Trailer	2	1	10	HHDT	--	--	--	75	25	105	91
Transmission - 500 kV - Wood Pole Modification (6)	Worker Commute Automobile	2	10	10	Passenger	--	--	--	75	25	105	91
Telecommuications												
Telecom - Barstow Communication Repeater - Tower/Shelter Installation	Backhoe/Front Loader	10	1	8	--	Tractors/Loaders/ Backhoes	200	6	100	0	79	0
Telecom - Barstow Communication Repeater - Tower/Shelter Installation	Concrete Pump	2	1	8	--	Pumps	350	6	100	0	79	0
Telecom - Barstow Communication Repeater - Tower/Shelter Installation	Crane	6	1	8	--	Cranes	350	4	100	0	79	0
Telecom - Barstow Communication Repeater - Tower/Shelter Installation	Drill Rig	7	1	8	--	Bore/Drill Rigs	500	6	100	0	79	0
Telecom - Barstow Communication Repeater - Tower/Shelter Installation	Fork lift	10	1	8	--	Forklifts	200	4	100	0	79	0
Telecom - Barstow Communication Repeater - Tower/Shelter Installation	1-Ton Crew Cab 4x4	12	1	8	Passenger	--	--	--	100	0	79	0
Telecom - Barstow Communication Repeater - Tower/Shelter Installation	2-Ton Truck	12	1	8	Delivery	--	--	--	100	0	79	0
Telecom - Barstow Communication Repeater - Tower/Shelter Installation	Concrete Truck	2	1	8	HHDT	--	--	--	100	0	79	0
Telecom - Barstow Communication Repeater - Tower/Shelter Installation	Dump Truck	7	1	8	HHDT	--	--	--	100	0	79	0
Telecom - Barstow Communication Repeater - Tower/Shelter Installation	Flat Bed Truck	2	1	8	HHDT	--	--	--	100	0	79	0
Telecom - Barstow Communication Repeater - Tower/Shelter Installation	Worker Commute Automobile	12	8	8	Passenger	--	--	--	100	0	79	0
Telecom - Kelbaker Communication Repeater - Tower/Shelter Installation	Backhoe/front loader	10	1	8	--	Tractors/Loaders/ Backhoes	200	6	100	0	79	0
Telecom - Kelbaker Communication Repeater - Tower/Shelter Installation	Concrete Pump	2	1	8	--	Pumps	350	6	100	0	79	0
Telecom - Kelbaker Communication Repeater - Tower/Shelter Installation	Crane	6	1	8	--	Cranes	350	4	100	0	79	0

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Telecom - Kelbaker Communication Repeater - Tower/Shelter Installation	Drill Rig	7	1	8	--	Bore/Drill Rigs	500	6	100	0	79	0
Telecom - Kelbaker Communication Repeater - Tower/Shelter Installation	Fork lift	10	1	8	--	Forklifts	200	4	100	0	79	0
Telecom - Kelbaker Communication Repeater - Tower/Shelter Installation	1-Ton Crew Cab 4x4	12	1	8	Passenger	--	--	--	100	0	79	0
Telecom - Kelbaker Communication Repeater - Tower/Shelter Installation	2-Ton Truck	12	1	8	Delivery	--	--	--	100	0	79	0
Telecom - Kelbaker Communication Repeater - Tower/Shelter Installation	Concrete Truck	2	1	8	HHDT	--	--	--	100	0	79	0
Telecom - Kelbaker Communication Repeater - Tower/Shelter Installation	Dump Truck	7	1	8	HHDT	--	--	--	100	0	79	0
Telecom - Kelbaker Communication Repeater - Tower/Shelter Installation	Flat Bed Truck	2	1	8	HHDT	--	--	--	100	0	79	0
Telecom - Kelbaker Communication Repeater - Tower/Shelter Installation	Worker Commute	12	8	8	Passenger	--	--	--	100	0	79	0
Telecom - Lanfair Communication Repeater - Tower/Shelter Installation	Backhoe/Front Loader	10	1	8	--	Tractors/Loaders/ Backhoes	200	6	100	0	79	0
Telecom - Lanfair Communication Repeater - Tower/Shelter Installation	Concrete Pump	2	1	8	--	Pumps	350	6	100	0	79	0
Telecom - Lanfair Communication Repeater - Tower/Shelter Installation	Crane	6	1	8	--	Cranes	350	4	100	0	79	0
Telecom - Lanfair Communication Repeater - Tower/Shelter Installation	Drill Rig	7	1	8	--	Bore/Drill Rigs	500	6	100	0	79	0
Telecom - Lanfair Communication Repeater - Tower/Shelter Installation	Fork lift	10	1	8	--	Forklifts	200	4	100	0	79	0
Telecom - Lanfair Communication Repeater - Tower/Shelter Installation	1-Ton Crew Cab 4x4	12	1	8	Passenger	--	--	--	100	0	79	0
Telecom - Lanfair Communication Repeater - Tower/Shelter Installation	2-Ton Truck	12	1	8	Delivery	--	--	--	100	0	79	0
Telecom - Lanfair Communication Repeater - Tower/Shelter Installation	Concrete Truck	2	1	8	HHDT	--	--	--	100	0	79	0
Telecom - Lanfair Communication Repeater - Tower/Shelter Installation	Dump Truck	7	1	8	HHDT	--	--	--	100	0	79	0
Telecom - Lanfair Communication Repeater - Tower/Shelter Installation	Flat Bed Truck	2	1	8	HHDT	--	--	--	100	0	79	0

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Telecom - Lanfair Communication Repeater - Tower/Shelter Installation	Worker Commute Automobile	12	8	8	Passenger	--	--	--	100	0	79	0
Distribution												
Distribution - Barstow Communication Repeater - Overhead Line Work(2)	55-Foot Double Bucket Truck	1	1	6	--	Aerial Lifts	300	7	100	0	79	78
Distribution - Barstow Communication Repeater - Overhead Line Work(2)	60-Foot Digger Derrick	1	1	6	--	Bore/Drill Rigs	275	4	100	0	79	78
Distribution - Barstow Communication Repeater - Overhead Line Work(2)	1-Ton Crew Cab, 4x4	1	1	6	Passenger	--	--	--	100	0	79	78
Distribution - Barstow Communication Repeater - Overhead Line Work(2)	Worker Commute Automobile	1	6	6	Passenger	--	--	--	100	0	79	78
Distribution - Barstow Communication Repeater - Pole Installation (5)	55-Foot Double Bucket Truck	1	1	6	--	Aerial Lifts	300	7	100	0	79	78
Distribution - Barstow Communication Repeater - Pole Installation (5)	60-Foot Digger Derrick	1	1	6	--	Bore/Drill Rigs	275	4	100	0	79	78
Distribution - Barstow Communication Repeater - Pole Installation (5)	1-Ton Crew Cab, 4x4	1	2	6	Passenger	--	--	--	100	0	79	78
Distribution - Barstow Communication Repeater - Pole Installation (5)	Worker Commute Automobile	1	6	6	Passenger	--	--	--	100	0	79	78
Distribution - Barstow Communication Repeater - Trenching, Structure Excavation(1)	Backhoe Front Loader	1	1	4	--	Tractors/Loaders/ Backhoes	300	8	100	0	79	78
Distribution - Barstow Communication Repeater - Trenching, Structure Excavation(1)	1-Ton Crew Cab	1	1	4	Passenger	--	--	--	100	0	79	78
Distribution - Barstow Communication Repeater - Trenching, Structure Excavation(1)	Dump Truck	1	1	4	HHDT	--	--	--	100	0	79	78
Distribution - Barstow Communication Repeater - Trenching, Structure Excavation(1)	Worker Commute Automobile	1	4	4	Passenger	--	--	--	100	0	79	78
Distribution - Barstow Communication Repeater - Underground Cable Makeup (4)	55-Foot Double Bucket Truck	1	1	3	--	Aerial Lifts	300	4	100	0	79	78
Distribution - Barstow Communication Repeater - Underground Cable Makeup (4)	1- Ton Crew Cab, 4x4	1	1	3	Passenger	--	--	--	100	0	79	78
Distribution - Barstow Communication Repeater - Underground Cable Makeup (4)	Worker Commute Automobile	1	3	3	Passenger	--	--	--	100	0	79	78

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Distribution - Barstow Communication Repeater - Underground Cable Pulling (3)& Transformer Installation	55-Foot Double Bucket Truck	1	1	4	--	Aerial Lifts	300	7	100	0	79	78
Distribution - Barstow Communication Repeater - Underground Cable Pulling (3)& Transformer Installation	Hydraulic Rewind Puller	1	1	4	--	Other Construction Equipment	300	6	100	0	79	78
Distribution - Barstow Communication Repeater - Underground Cable Pulling (3)& Transformer Installation	1-Ton Crew Cab, 4x4	1	1	4	Passenger	--	--	--	100	0	79	78
Distribution - Barstow Communication Repeater - Underground Cable Pulling (3)& Transformer Installation	Worker Commute Automobile	1	4	4	Passenger	--	--	--	100	0	79	78
Distribution - Deep Creek T-Line Undercrossing - Overhead Line Work(2)	55-Foot Double Bucket Truck	1	1	6	--	Aerial Lifts	300	7	100	0	39	0
Distribution - Deep Creek T-Line Undercrossing - Overhead Line Work(2)	60-Foot Digger Derrick	1	1	6	--	Bore/Drill Rigs	275	4	100	0	39	0
Distribution - Deep Creek T-Line Undercrossing - Overhead Line Work(2)	1-Ton Crew Cab, 4x4	1	1	6	Passenger	--	--	--	100	0	39	0
Distribution - Deep Creek T-Line Undercrossing - Overhead Line Work(2)	Worker Commute Automobile	1	6	6	Passenger	--	--	--	100	0	39	0
Distribution - Kelbaker Communication Repeater - Overhead Line Work(2)	55-Foot Double Bucket Truck	2	1	6	--	Aerial Lifts	300	7	100	0	79	78
Distribution - Kelbaker Communication Repeater - Overhead Line Work(2)	60-Foot Digger Derrick	2	1	6	--	Bore/Drill Rigs	275	4	100	0	79	78
Distribution - Kelbaker Communication Repeater - Overhead Line Work(2)	1-Ton Crew Cab, 4x4	2	1	6	Passenger	--	--	--	100	0	79	78
Distribution - Kelbaker Communication Repeater - Overhead Line Work(2)	Worker Commute Automobile	2	6	6	Passenger	--	--	--	100	0	79	78
Distribution - Kelbaker Communication Repeater - Pole Installation (5)	55-Foot Double Bucket Truck	4	1	6	--	Aerial Lifts	300	7	100	0	79	78
Distribution - Kelbaker Communication Repeater - Pole Installation (5)	60-Foot Digger Derrick	4	1	6	--	Bore/Drill Rigs	275	4	100	0	79	78
Distribution - Kelbaker Communication Repeater - Pole Installation (5)	1-Ton Crew Cab, 4x4	4	2	6	Passenger	--	--	--	100	0	79	78
Distribution - Kelbaker Communication Repeater - Pole Installation (5)	Worker Commute Automobile	4	6	6	Passenger	--	--	--	100	0	79	78

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Distribution - Kelbaker Communication Repeater - Trenching, Structure Excavation(1)	Backhoe/Front Loader	1	1	4	--	Tractors/Loaders/ Backhoes	200	8	100	0	79	78
Distribution - Kelbaker Communication Repeater - Trenching, Structure Excavation(1)	1-Ton Crew Cab	1	1	4	Passenger	--	--	--	100	0	79	78
Distribution - Kelbaker Communication Repeater - Trenching, Structure Excavation(1)	Dump Truck	1	1	4	HHDT	--	--	--	100	0	79	78
Distribution - Kelbaker Communication Repeater - Trenching, Structure Excavation(1)	Worker Commute Automobile	1	4	4	Passenger	--	--	--	100	0	79	78
Distribution - Kelbaker Communication Repeater - Underground Cable Makeup (4)	55-Foot Double Bucket Truck	1	1	3	--	Aerial Lifts	300	4	100	0	79	78
Distribution - Kelbaker Communication Repeater - Underground Cable Makeup (4)	1-Ton Crew Cab, 4x4	1	1	3	Passenger	--	--	--	100	0	79	78
Distribution - Kelbaker Communication Repeater - Underground Cable Makeup (4)	Worker Commute Automobile	1	3	3	Passenger	--	--	--	100	0	79	78
Distribution - Kelbaker Communication Repeater - Underground Cable Pulling (3)& Transformer Installation	55-Foot Double Bucket Truck	1	1	4	--	Aerial Lifts	300	7	100	0	79	78
Distribution - Kelbaker Communication Repeater - Underground Cable Pulling (3)& Transformer Installation	Hydraulic Rewind Puller	1	1	4	--	Other Construction Equipment	300	6	100	0	79	78
Distribution - Kelbaker Communication Repeater - Underground Cable Pulling (3)& Transformer Installation	1-Ton Crew Cab, 4x4	1	1	4	Passenger	--	--	--	100	0	79	78
Distribution - Kelbaker Communication Repeater - Underground Cable Pulling (3)& Transformer Installation	Worker Commute Automobile	1	4	4	Passenger	--	--	--	100	0	79	78
Distribution - Lanfair Communication Repeater - Overhead Line Work(2)	55-Foot Double Bucket Truck	3	1	6	--	Aerial Lifts	300	7	100	0	79	78
Distribution - Lanfair Communication Repeater - Overhead Line Work(2)	60-Foot Digger Derrick	3	1	6	--	Bore/Drill Rigs	275	4	100	0	79	78
Distribution - Lanfair Communication Repeater - Overhead Line Work(2)	1-Ton Crew Cab, 4x4	3	1	6	Passenger	--	--	--	100	0	79	78

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Distribution - Lanfair Communication Repeater - Overhead Line Work(2)	Worker Commute Automobile	3	6	6	Passenger	--	--	--	100	0	79	78
Distribution - Lanfair Communication Repeater - Pole Installation (5)	55-Foot Double Bucket Truck	9	1	6	--	Aerial Lifts	300	7	100	0	79	78
Distribution - Lanfair Communication Repeater - Pole Installation (5)	60-Foot Digger Derrick	9	1	6	--	Bore/Drill Rigs	275	4	100	0	79	78
Distribution - Lanfair Communication Repeater - Pole Installation (5)	1-Ton Crew Cab, 4x4	9	2	6	Passenger	--	--	--	100	0	79	78
Distribution - Lanfair Communication Repeater - Pole Installation (5)	Worker Commute Automobile	9	6	6	Passenger	--	--	--	100	0	79	78
Distribution - Lanfair Communication Repeater - Trenching, Structure Excavation(1)	Backhoe Front Loader	1	1	4	--	Tractors/Loaders/ Backhoes	300	8	100	0	79	78
Distribution - Lanfair Communication Repeater - Trenching, Structure Excavation(1)	1-Ton Crew Cab	1	1	4	Passenger	--	--	--	100	0	79	78
Distribution - Lanfair Communication Repeater - Trenching, Structure Excavation(1)	Dump Truck	1	1	4	HHDT	--	--	--	100	0	79	78
Distribution - Lanfair Communication Repeater - Trenching, Structure Excavation(1)	Worker Commute Automobile	1	4	4	Passenger	--	--	--	100	0	79	78
Distribution - Lanfair Communication Repeater - Underground Cable Makeup (4)	55-Foot Double Bucket Truck	1	1	3	--	Aerial Lifts	300	4	100	0	79	78
Distribution - Lanfair Communication Repeater - Underground Cable Makeup (4)	1-Ton Crew Cab, 4x4	1	1	3	Passenger	--	--	--	100	0	79	78
Distribution - Lanfair Communication Repeater - Underground Cable Makeup (4)	Worker Commute Automobile	1	3	3	Passenger	--	--	--	100	0	79	78
Distribution - Lanfair Communication Repeater - Underground Cable Pulling (3)& Transformer Installation	55-Foot Double Bucket Truck	1	1	4	--	Aerial Lifts	300	7	100	0	79	78
Distribution - Lanfair Communication Repeater - Underground Cable Pulling (3)& Transformer Installation	Hydraulic Rewind Puller	1	1	4	--	Other Construction Equipment	300	6	100	0	79	78
Distribution - Lanfair Communication Repeater - Underground Cable Pulling (3)& Transformer Installation	1-Ton Crew Cab, 4x4	1	1	4	Passenger	--	--	--	100	0	79	78

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Distribution - Lanfair Communication Repeater - Underground Cable Pulling (3)& Transformer Installation	Worker Commute Automobile	1	4	4	Passenger	--	--	--	100	0	79	78
Distribution - Ludlow Series Cap- SC5 - Overhead Line Work(2)	100-Foot Bucket Truck	4	1	6	--	Aerial Lifts	350	8	100	0	79	78
Distribution - Ludlow Series Cap- SC5 - Overhead Line Work(2)	40-Ton Crane	4	1	6	--	Cranes	300	8	100	0	79	78
Distribution - Ludlow Series Cap- SC5 - Overhead Line Work(2)	55-Foot Double Bucket Truck	40	1	6	--	Aerial Lifts	300	7	100	0	79	78
Distribution - Ludlow Series Cap- SC5 - Overhead Line Work(2)	60-Foot Digger Derrick	40	1	6	--	Bore/Drill Rigs	275	4	100	0	79	78
Distribution - Ludlow Series Cap- SC5 - Overhead Line Work(2)	1-Ton Crew Cab, 4x4	40	2	6	Passenger	--	--	--	100	0	79	78
Distribution - Ludlow Series Cap- SC5 - Overhead Line Work(2)	Worker Commute Automobile	40	6	6	Passenger	--	--	--	100	0	79	78
Distribution - Ludlow Series Cap- SC5 - Pole Installation (5)	55-Foot Double Bucket Truck	4	1	6	--	Aerial Lifts	300	7	100	0	79	78
Distribution - Ludlow Series Cap- SC5 - Pole Installation (5)	60-Foot Digger Derrick	4	1	6	--	Bore/Drill Rigs	275	4	100	0	79	78
Distribution - Ludlow Series Cap- SC5 - Pole Installation (5)	1-Ton Crew Cab, 4x4	4	2	6	Passenger	--	--	--	100	0	79	78
Distribution - Ludlow Series Cap- SC5 - Pole Installation (5)	Worker Commute Automobile	4	6	6	Passenger	--	--	--	100	0	79	78
Distribution - Ludlow Series Cap- SC5 - Trenching, Structure Excavation(1)	Backhoe Front Loader	1	1	4	--	Tractors/Loaders/ Backhoes	300	8	100	0	79	78
Distribution - Ludlow Series Cap- SC5 - Trenching, Structure Excavation(1)	1-Ton Crew Cab	1	1	4	Passenger	--	--	--	100	0	79	78
Distribution - Ludlow Series Cap- SC5 - Trenching, Structure Excavation(1)	Dump Truck	1	1	4	HHDT	--	--	--	100	0	79	78
Distribution - Ludlow Series Cap- SC5 - Trenching, Structure Excavation(1)	Worker Commute Automobile	1	4	4	Passenger	--	--	--	100	0	79	78
Distribution - Ludlow Series Cap- SC5 - Underground Cable Makeup (4)	55-Foot Double Bucket Truck	1	1	3	--	Aerial Lifts	300	4	100	0	79	78
Distribution - Ludlow Series Cap- SC5 - Underground Cable Makeup (4)	1- Ton Crew Cab, 4x4	1	1	3	Passenger	--	--	--	100	0	79	78

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Distribution - Ludlow Series Cap- SC5 - Underground Cable Makeup (4)	Worker Commute Automobile	1	3	3	Passenger	--	--	--	100	0	79	78
Distribution - Newberry Springs Series Cap- SC2 - Overhead Line Work(2)	100-Foot Bucket Truck	4	1	6	--	Aerial Lifts	350	8	100	0	79	78
Distribution - Newberry Springs Series Cap- SC2 - Overhead Line Work(2)	40-Ton Crane	4	1	6	--	Cranes	300	8	100	0	79	78
Distribution - Newberry Springs Series Cap- SC2 - Overhead Line Work(2)	55-Foot Double Bucket Truck	4	1	6	--	Aerial Lifts	300	7	100	0	79	78
Distribution - Newberry Springs Series Cap- SC2 - Overhead Line Work(2)	60-Foot Digger Derrick	4	1	6	--	Bore/Drill Rigs	275	4	100	0	79	78
Distribution - Newberry Springs Series Cap- SC2 - Overhead Line Work(2)	1-Ton Crew Cab, 4x4	4	2	6	Passenger	--	--	--	100	0	79	78
Distribution - Newberry Springs Series Cap- SC2 - Overhead Line Work(2)	Worker Commute Automobile	4	6	6	Passenger	--	--	--	100	0	79	78
Distribution - Newberry Springs Series Cap- SC2 - Pole Installation (5)	55-Foot Double Bucket Truck	4	1	6	--	Aerial Lifts	300	7	100	0	79	78
Distribution - Newberry Springs Series Cap- SC2 - Pole Installation (5)	60-Foot Digger Derrick	4	1	6	--	Bore/Drill Rigs	275	4	100	0	79	78
Distribution - Newberry Springs Series Cap- SC2 - Pole Installation (5)	1-Ton Crew Cab, 4x4	4	2	6	Passenger	--	--	--	100	0	79	78
Distribution - Newberry Springs Series Cap- SC2 - Pole Installation (5)	Worker Commute Automobile	4	6	6	Passenger	--	--	--	100	0	79	78
Distribution - Newberry Springs Series Cap- SC2 - Trenching, Structure Excavation(1)	Backhoe Front Loader	1	1	4	--	Tractors/Loaders/ Backhoes	300	8	100	0	79	78
Distribution - Newberry Springs Series Cap- SC2 - Trenching, Structure Excavation(1)	1-Ton Crew Cab	1	1	4	Passenger	--	--	--	100	0	79	78
Distribution - Newberry Springs Series Cap- SC2 - Trenching, Structure Excavation(1)	Dump Truck	1	1	4	HHDT	--	--	--	100	0	79	78
Distribution - Newberry Springs Series Cap- SC2 - Trenching, Structure Excavation(1)	Worker Commute Automobile	1	4	4	Passenger	--	--	--	100	0	79	78
Distribution - Newberry Springs Series Cap- SC2 - Underground Cable Makeup (4)	55-Foot Double Bucket Truck	1	1	3	--	Aerial Lifts	300	4	100	0	79	78
Distribution - Newberry Springs Series Cap- SC2 - Underground Cable Makeup (4)	1-Ton Crew Cab, 4x4	1	1	3	Passenger	--	--	--	100	0	79	78
Distribution - Newberry Springs Series Cap- SC2 - Underground Cable Makeup (4)	Worker Commute Automobile	1	3	3	Passenger	--	--	--	100	0	79	78

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Distribution - Newberry Springs Series Cap-SC2 - Underground Cable Pulling (3)& Transformer Installation	55-Foot Double Bucket Truck	1	1	4	--	Aerial Lifts	300	7	100	0	79	78
Distribution - Newberry Springs Series Cap-SC2 - Underground Cable Pulling (3)& Transformer Installation	Hydraulic Rewind Puller	1	1	4	--	Other Construction Equipment	300	6	100	0	79	78
Distribution - Newberry Springs Series Cap-SC2 - Underground Cable Pulling (3)& Transformer Installation	1-Ton Crew Cab, 4x4	1	1	4	Passenger	--	--	--	100	0	79	78
Distribution - Newberry Springs Series Cap-SC2 - Underground Cable Pulling (3)& Transformer Installation	Worker Commute Automobile	1	4	4	Passenger	--	--	--	100	0	79	78
Substations												
Substation - ELD Sub-Line Pos - Electrical (Phase 1)	Bobcat	85	2	15	--	Skid Steer Loaders	200	5	0	100	0	30
Substation - ELD Sub-Line Pos - Electrical (Phase 1)	Crane	85	1	15	--	Cranes	350	4	0	100	0	30
Substation - ELD Sub-Line Pos - Electrical (Phase 1)	Forklift	85	2	15	--	Forklifts	200	5	0	100	0	30
Substation - ELD Sub-Line Pos - Electrical (Phase 1)	Generator	85	2	15	--	Generator Sets	50	8	0	100	0	30
Substation - ELD Sub-Line Pos - Electrical (Phase 1)	Manlift	85	2	15	--	Aerial Lifts	150	5	0	100	0	30
Substation - ELD Sub-Line Pos - Electrical (Phase 1)	Foreman's Truck	85	1	15	Passenger	--	--	--	0	100	0	30
Substation - ELD Sub-Line Pos - Electrical (Phase 1)	Job Site Utility Cart	85	4	15	Passenger	--	--	--	0	100	0	30
Substation - ELD Sub-Line Pos - Electrical (Phase 1)	Tool Truck	85	2	15	Delivery	--	--	--	0	100	0	30
Substation - ELD Sub-Line Pos - Electrical (Phase 1)	Worker Commute Automobile	85	15	15	Passenger	--	--	--	0	100	0	30
Substation - ELD Sub-Line Pos - Grading/Civil (Phase 1)	Backhoe	70	2	15	--	Tractors/Loaders/ Backhoes	200	4	0	100	0	39
Substation - ELD Sub-Line Pos - Grading/Civil (Phase 1)	Bobcat	70	2	15	--	Skid Steer Loaders	200	5	0	100	0	39
Substation - ELD Sub-Line Pos - Grading/Civil (Phase 1)	Compactor	70	1	15	--	Rollers	300	5	0	100	0	39

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Substation - ELD Sub-Line Pos - Grading/Civil (Phase 1)	Excavator	70	2	15	--	Excavators	160	5	0	100	0	39
Substation - ELD Sub-Line Pos - Grading/Civil (Phase 1)	Generator	70	2	15	--	Generator Sets	50	8	0	100	0	39
Substation - ELD Sub-Line Pos - Grading/Civil (Phase 1)	Grader	70	2	15	--	Graders	290	8	0	100	0	39
Substation - ELD Sub-Line Pos - Grading/Civil (Phase 1)	LoDrill	70	1	15	--	Bore/Drill Rigs	200	5	0	100	0	39
Substation - ELD Sub-Line Pos - Grading/Civil (Phase 1)	Skip Loader	70	1	15	--	Tractors/Loaders/ Backhoes	150	4	0	100	0	39
Substation - ELD Sub-Line Pos - Grading/Civil (Phase 1)	Trencher	70	1	15	--	Trenchers	175	5	0	100	0	39
Substation - ELD Sub-Line Pos - Grading/Civil (Phase 1)	Dump Truck	70	1	15	HHDT	--	--	--	0	100	0	39
Substation - ELD Sub-Line Pos - Grading/Civil (Phase 1)	Foreman's Truck	70	1	15	Passenger	--	--	--	0	100	0	39
Substation - ELD Sub-Line Pos - Grading/Civil (Phase 1)	Fuel Truck	70	1	15	HHDT	--	--	--	0	100	0	39
Substation - ELD Sub-Line Pos - Grading/Civil (Phase 1)	Job site Utility Cart	70	4	15	Passenger	--	--	--	0	100	0	39
Substation - ELD Sub-Line Pos - Grading/Civil (Phase 1)	Low Bed Hauler	70	1	15	HHDT	--	--	--	0	100	0	39
Substation - ELD Sub-Line Pos - Grading/Civil (Phase 1)	Tool Truck	70	2	15	Delivery	--	--	--	0	100	0	39
Substation - ELD Sub-Line Pos - Grading/Civil (Phase 1)	Water Truck	70	2	15	HHDT	--	--	--	0	100	0	39
Substation - ELD Sub-Line Pos - Grading/Civil (Phase 1)	Worker Commute Automobile	70	15	15	Passenger	--	--	--	0	100	0	39
Substation - ELD Sub-Line Pos - Survey (Phase 1 - Lugo)	Foreman's Truck	15	1	2	Passenger	--	--	--	0	100	184	156
Substation - ELD Sub-Line Pos - Survey (Phase 1 - Lugo)	Job site Utility Cart	15	1	2	Passenger	--	--	--	0	100	184	156
Substation - ELD Sub-Line Pos - Survey (Phase 1 - Lugo)	Tool Truck	15	1	2	Delivery	--	--	--	0	100	184	156
Substation - ELD Sub-Line Pos - Survey (Phase 1 - Lugo)	Worker Commute Automobile	15	2	2	Passenger	--	--	--	0	100	184	156

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Substation - ELD Sub-Line Pos - Survey (Phase 2 - Mohave)	Foreman's Truck	15	1	2	Passenger	--	--	--	0	100	236	78
Substation - ELD Sub-Line Pos - Survey (Phase 2 - Mohave)	Job site Utility Cart	15	1	2	Passenger	--	--	--	0	100	236	78
Substation - ELD Sub-Line Pos - Survey (Phase 2 - Mohave)	Tool Truck	15	1	2	Delivery	--	--	--	0	100	236	78
Substation - ELD Sub-Line Pos - Survey (Phase 2 - Mohave)	Worker Commute Automobile	15	2	2	Passenger	--	--	--	0	100	236	78
Substation - ELD Sub-Line Pos - Testing	Test Truck	140	2	5	Delivery	--	--	--	0	100	0	66
Substation - ELD Sub-Line Pos - Testing	Worker Commute Automobile	140	4	5	Passenger	--	--	--	0	100	0	66
Substation - ELD Sub-Line Pos - Wiring	Manlift	60	1	5	--	Aerial Lifts	150	5	0	100	0	30
Substation - ELD Sub-Line Pos - Wiring	Foreman's Truck	60	1	5	Passenger	--	--	--	0	100	0	30
Substation - ELD Sub-Line Pos - Wiring	Job Site Utility Cart	60	2	5	Passenger	--	--	--	0	100	0	30
Substation - ELD Sub-Line Pos - Wiring	Tool Truck	60	2	5	Delivery	--	--	--	0	100	0	30
Substation - ELD Sub-Line Pos - Wiring	Worker Commute Automobile	60	5	5	Passenger	--	--	--	0	100	0	30
Substation - Lugo-Line Pos - Electrical (SC1)	Bobcat	35	2	15	--	Skid Steer Loaders	200	5	100	0	0	95
Substation - Lugo-Line Pos - Electrical (SC1)	Crane	35	1	15	--	Cranes	350	4	100	0	0	95
Substation - Lugo-Line Pos - Electrical (SC1)	Forklift	35	2	15	--	Forklifts	200	5	100	0	0	95
Substation - Lugo-Line Pos - Electrical (SC1)	Generator	35	2	15	--	Generator Sets	50	8	100	0	0	95
Substation - Lugo-Line Pos - Electrical (SC1)	Manlift	35	2	15	--	Aerial Lifts	150	5	100	0	0	95
Substation - Lugo-Line Pos - Electrical (SC1)	Foreman's Truck	35	1	15	Passenger	--	--	--	100	0	0	95
Substation - Lugo-Line Pos - Electrical (SC1)	Job Site Utility Cart	35	4	15	Passenger	--	--	--	100	0	0	95
Substation - Lugo-Line Pos - Electrical (SC1)	Tool Truck	35	2	15	Delivery	--	--	--	100	0	0	95
Substation - Lugo-Line Pos - Electrical (SC1)	Worker Commute Automobile	35	15	15	Passenger	--	--	--	100	0	0	95

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Substation - Lugo-Line Pos - Electrical (SC4)	Bobcat	35	2	15	--	Skid Steer Loaders	200	5	100	0	0	28
Substation - Lugo-Line Pos - Electrical (SC4)	Crane	35	1	15	--	Cranes	350	4	100	0	0	28
Substation - Lugo-Line Pos - Electrical (SC4)	Forklift	35	2	15	--	Forklifts	200	5	100	0	0	28
Substation - Lugo-Line Pos - Electrical (SC4)	Generator	35	2	15	--	Generator Sets	50	8	100	0	0	28
Substation - Lugo-Line Pos - Electrical (SC4)	Manlift	35	2	15	--	Aerial Lifts	150	5	100	0	0	28
Substation - Lugo-Line Pos - Electrical (SC4)	Foreman's Truck	35	1	15	Passenger	--	--	--	100	0	0	28
Substation - Lugo-Line Pos - Electrical (SC4)	Job Site Utility Cart	35	4	15	Passenger	--	--	--	100	0	0	28
Substation - Lugo-Line Pos - Electrical (SC4)	Tool Truck	35	2	15	Delivery	--	--	--	100	0	0	28
Substation - Lugo-Line Pos - Electrical (SC4)	Worker Commute Automobile	35	15	15	Passenger	--	--	--	100	0	0	28
Substation - Lugo-Line Pos - Grading/Civil	Backhoe	45	2	15	--	Tractors/Loaders/ Backhoes	200	4	100	0	53	27
Substation - Lugo-Line Pos - Grading/Civil	Bobcat	45	2	15	--	Skid Steer Loaders	200	5	100	0	53	27
Substation - Lugo-Line Pos - Grading/Civil	Compactor	45	1	15	--	Rollers	300	5	100	0	53	27
Substation - Lugo-Line Pos - Grading/Civil	Excavator	45	2	15	--	Excavators	160	5	100	0	53	27
Substation - Lugo-Line Pos - Grading/Civil	Generator	45	2	15	--	Generator Sets	50	8	100	0	53	27
Substation - Lugo-Line Pos - Grading/Civil	Grader	45	2	15	--	Graders	290	5	100	0	53	27
Substation - Lugo-Line Pos - Grading/Civil	LoDrill	45	1	15	--	Bore/Drill Rigs	200	5	100	0	53	27
Substation - Lugo-Line Pos - Grading/Civil	Skip Loader	45	1	15	--	Tractors/Loaders/ Backhoes	150	4	100	0	53	27
Substation - Lugo-Line Pos - Grading/Civil	Trencher	45	1	15	--	Trenchers	175	5	100	0	53	27
Substation - Lugo-Line Pos - Grading/Civil	Dump Truck	45	1	15	HHDT	--	--	--	100	0	53	27
Substation - Lugo-Line Pos - Grading/Civil	Foreman's Truck	45	1	15	Passenger	--	--	--	100	0	53	27
Substation - Lugo-Line Pos - Grading/Civil	Fuel Truck	45	1	15	HHDT	--	--	--	100	0	53	27
Substation - Lugo-Line Pos - Grading/Civil	Job Site Utility Cart	45	4	15	Passenger	--	--	--	100	0	53	27
Substation - Lugo-Line Pos - Grading/Civil	Low Bed Hauler	45	1	15	HHDT	--	--	--	100	0	53	27
Substation - Lugo-Line Pos - Grading/Civil	Tool Truck	45	2	15	Delivery	--	--	--	100	0	53	27

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Substation - Lugo-Line Pos - Grading/Civil	Water Truck	45	2	15	HHDT	--	--	--	100	0	53	27
Substation - Lugo-Line Pos - Grading/Civil	Worker Commute Automobile	45	15	15	Passenger	--	--	--	100	0	53	27
Substation - Lugo-Line Pos - Survey	Foreman's Truck	15	1	2	Passenger	--	--	--	100	0	67	156
Substation - Lugo-Line Pos - Survey	Job Site Utility Cart	15	1	2	Passenger	--	--	--	100	0	67	156
Substation - Lugo-Line Pos - Survey	Tool Truck	15	1	2	Delivery	--	--	--	100	0	67	156
Substation - Lugo-Line Pos - Survey	Worker Commute Automobile	15	2	2	Passenger	--	--	--	100	0	67	156
Substation - Lugo-Line Pos - Testing (SC1)	Test Truck	60	2	4	Delivery	--	--	--	100	0	0	130
Substation - Lugo-Line Pos - Testing (SC1)	Worker Commute Automobile	60	4	4	Passenger	--	--	--	100	0	0	130
Substation - Lugo-Line Pos - Testing (SC4)	Test Truck	60	2	4	Delivery	--	--	--	100	0	0	26
Substation - Lugo-Line Pos - Testing (SC4)	Worker Commute Automobile	60	4	4	Passenger	--	--	--	100	0	0	26
Substation - Lugo-Line Pos - Wiring (SC1)	Manlift	45	1	5	--	Aerial Lifts	150	5	100	0	0	95
Substation - Lugo-Line Pos - Wiring (SC1)	Foreman's Truck	45	1	5	Passenger	--	--	--	100	0	0	95
Substation - Lugo-Line Pos - Wiring (SC1)	Job Site Utility Cart	45	2	5	Passenger	--	--	--	100	0	0	95
Substation - Lugo-Line Pos - Wiring (SC1)	Tool Truck	45	2	5	Delivery	--	--	--	100	0	0	95
Substation - Lugo-Line Pos - Wiring (SC1)	Worker Commute Automobile	45	5	5	Passenger	--	--	--	100	0	0	95
Substation - Mohave-Line Pos - Electrical	Bobcat	45	2	15	--	Skid Steer Loaders	200	5	0	100	0	30
Substation - Mohave-Line Pos - Electrical	Crane	45	1	15	--	Cranes	350	4	0	100	0	30
Substation - Mohave-Line Pos - Electrical	Forklift	45	2	15	--	Forklifts	200	5	0	100	0	30
Substation - Mohave-Line Pos - Electrical	Generator	45	2	15	--	Generator Sets	50	8	0	100	0	30
Substation - Mohave-Line Pos - Electrical	Manlift	45	2	15	--	Aerial Lifts	150	5	0	100	0	30
Substation - Mohave-Line Pos - Electrical	Foreman's Truck	45	1	15	Passenger	--	--	--	0	100	0	30
Substation - Mohave-Line Pos - Electrical	Job Site Utility Cart	45	4	15	Passenger	--	--	--	0	100	0	30
Substation - Mohave-Line Pos - Electrical	Tool Truck	45	2	15	Delivery	--	--	--	0	100	0	30
Substation - Mohave-Line Pos - Electrical	Worker Commute Automobile	45	15	15	Passenger	--	--	--	0	100	0	30
Substation - Mohave-Line Pos - Grading/Civil (Phase 1)	Backhoe	45	2	15	--	Tractors/Loaders/ Backhoes	200	4	0	100	0	40
Substation - Mohave-Line Pos - Grading/Civil (Phase 1)	Bobcat	45	2	15	--	Skid Steer Loaders	200	5	0	100	0	40

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Substation - Mohave-Line Pos - Grading/Civil (Phase 1)	Compactor	45	1	15	--	Rollers	300	5	0	100	0	40
Substation - Mohave-Line Pos - Grading/Civil (Phase 1)	Excavator	45	2	15	--	Excavators	160	5	0	100	0	40
Substation - Mohave-Line Pos - Grading/Civil (Phase 1)	Generator	45	2	15	--	Generator Sets	50	8	0	100	0	40
Substation - Mohave-Line Pos - Grading/Civil (Phase 1)	Grader	45	2	15	--	Graders	290	5	0	100	0	40
Substation - Mohave-Line Pos - Grading/Civil (Phase 1)	LoDrill	45	1	15	--	Bore/Drill Rigs	200	5	0	100	0	40
Substation - Mohave-Line Pos - Grading/Civil (Phase 1)	Skip Loader	45	1	15	--	Tractors/Loaders/ Backhoes	150	4	0	100	0	40
Substation - Mohave-Line Pos - Grading/Civil (Phase 1)	Trencher	45	1	15	--	Trenchers	175	5	0	100	0	40
Substation - Mohave-Line Pos - Grading/Civil (Phase 1)	Dump Truck	45	1	15	HHDT	--	--	--	0	100	0	40
Substation - Mohave-Line Pos - Grading/Civil (Phase 1)	Foreman's Truck	45	1	15	Passenger	--	--	--	0	100	0	40
Substation - Mohave-Line Pos - Grading/Civil (Phase 1)	Fuel Truck	45	1	15	HHDT	--	--	--	0	100	0	40
Substation - Mohave-Line Pos - Grading/Civil (Phase 1)	Job site Utility Cart	45	4	15	Passenger	--	--	--	0	100	0	40
Substation - Mohave-Line Pos - Grading/Civil (Phase 1)	Low Bed Hauler	45	1	15	HHDT	--	--	--	0	100	0	40
Substation - Mohave-Line Pos - Grading/Civil (Phase 1)	Tool Truck	45	2	15	Delivery	--	--	--	0	100	0	40
Substation - Mohave-Line Pos - Grading/Civil (Phase 1)	Water Truck	45	2	15	HHDT	--	--	--	0	100	0	40
Substation - Mohave-Line Pos - Grading/Civil (Phase 1)	Worker Commute Automobile	45	15	15	Passenger	--	--	--	0	100	0	40
Substation - Mohave-Line Pos - Survey (Phase 1 - Eldorado)	Foreman's Truck	10	1	2	Passenger	--	--	--	0	100	236	78
Substation - Mohave-Line Pos - Survey (Phase 1 - Eldorado)	Job site Utility Cart	10	1	2	Passenger	--	--	--	0	100	236	78
Substation - Mohave-Line Pos - Survey (Phase 1 - Eldorado)	Tool Truck	10	1	2	Delivery	--	--	--	0	100	236	78

Activity	Equipment Type	Approx. Total Days Used	Approx. Quantity	Approximate Number of Workers	On-Road Type	Off-Road Type	Output (Hp)	Approx. Use (hours per day)	Approx. Use by State (percent)		Maximum Days Used	
									CA	NV	2019	2020
Substation - Mohave-Line Pos - Survey (Phase 1 - Eldorado)	Worker Commute Automobile	10	2	2	Passenger	--	--	--	0	100	236	78
Substation - Mohave-Line Pos - Testing	Test Truck	75	2	4	Delivery	--	--	--	0	100	0	39
Substation - Mohave-Line Pos - Testing	Worker Commute Automobile	75	4	4	Passenger	--	--	--	0	100	0	39
Substation - Mohave-Line Pos - Wiring	Manlift	25	1	5	--	Aerial Lifts	150	5	0	100	0	30
Substation - Mohave-Line Pos - Wiring	Foreman's Truck	60	1	5	Passenger	--	--	--	0	100	0	30
Substation - Mohave-Line Pos - Wiring	Job Site Utility Cart	60	2	5	Passenger	--	--	--	0	100	0	30
Substation - Mohave-Line Pos - Wiring	Tool Truck	60	2	5	Delivery	--	--	--	0	100	0	30
Substation - Mohave-Line Pos - Wiring	Worker Commute Automobile	60	5	5	Passenger	--	--	--	0	100	0	30

Notes: "--" = Not Applicable