

**ENVIRONMENTAL ASSESSMENT OF THE DIABLO CANYON
STEAM GENERATOR REPLACEMENT PROJECTS**

**Job No. 27653071.00030
January 9, 2004**

**ENVIRONMENTAL ASSESSMENT
OF THE DIABLO CANYON
STEAM GENERATOR
REPLACEMENT PROJECTS**

TABLE OF CONTENTS

	Page
1.0 EXECUTIVE SUMMARY	1-1
2.0 PURPOSE AND NEED FOR THE PROPOSED ACTION.....	2-1
2.1 STATEMENT OF OBJECTIVES	2-1
2.2 PROJECT PURPOSE AND NEED.....	2-1
3.0 DESCRIPTION OF THE PROPOSED PROJECTS	3-1
3.1 PROJECT DESCRIPTION.....	3-1
3.2 PROJECT EXECUTION TEAM	3-4
3.3 CONSTRUCTION AND DELIVERY OF REPLACEMENT STEAM GENERATORS	3-4
3.3.1 Project Feasibility Study	3-4
3.3.2 Preliminary Assessment and Approval.....	3-5
3.3.3 SG Manufacturing Contracts	3-5
3.3.4 Design of RSGs.....	3-6
3.3.5 Licensing of RSGs	3-6
3.3.6 Replacement Steam Generator Construction	3-6
3.3.7 Delivery of RSGs to Diablo Canyon Power Plant.....	3-7
3.4 REPLACEMENT STEAM GENERATOR TRANSPORT OPTIONS	3-8
3.4.1 Port San Luis Transport Option	3-8
3.4.2 Intake Cove Transport Options.....	3-13
3.5 REPLACEMENT STEAM GENERATOR PREPARATION (STAGING).....	3-16
3.5.1 Replacement Steam Generator Storage Facility	3-16
3.5.2 Temporary Warehouse and Laydown Area	3-17
3.5.3 Mock-Up Facilities	3-17
3.5.4 Fabrication and Weld Test Shops	3-18
3.5.5 Replacement Team Office Space.....	3-18
3.5.6 Containment Access Facility	3-18
3.5.7 Security Processing Facility.....	3-19
3.5.8 Decontamination Facilities	3-19
3.5.9 Parking	3-19
3.6 ORIGINAL STEAM GENERATOR REMOVAL, TRANSPORTATION, AND STORAGE	3-19
3.6.1 Steam Generator Removal and Replacement	3-20
3.6.2 Storage of OSGs	3-21
3.7 REPLACEMENT STEAM GENERATOR INSTALLATION.....	3-22
3.8 NO PROJECT ALTERNATIVE	3-23
3.9 NO ACTION ALTERNATIVE.....	3-24

	Page
3.10 OTHER ALTERNATIVES CONSIDERED BUT NOT CARRIED FORWARD.....	3-24
4.0 ENVIRONMENTAL SETTING	4-1
4.1 AESTHETICS.....	4-1
4.1.1 Proposed Projects.....	4-1
4.1.2 No Project Alternative	4-2
4.2 AGRICULTURAL RESOURCES	4-3
4.2.1 Proposed Projects.....	4-3
4.2.2 No Project Alternative	4-5
4.3 AIR QUALITY	4-6
4.3.1 Proposed Projects.....	4-6
4.3.2 No Project Alternative	4-13
4.4 BIOLOGICAL RESOURCES	4-17
4.4.1 Proposed Projects.....	4-17
4.4.2 No Project	4-20
4.5 CULTURAL RESOURCES	4-31
4.5.1 Proposed Projects.....	4-31
4.5.2 No Project Alternative	4-37
4.6 GEOLOGY	4-39
4.6.1 Proposed Projects.....	4-39
4.6.2 No Project Alternative	4-48
4.7 HAZARDS AND HAZARDOUS MATERIALS	4-51
4.7.1 Proposed Projects.....	4-51
4.7.2 No Project Alternative	4-53
4.8 HYDROLOGY/WATER QUALITY	4-54
4.8.1 Proposed Projects.....	4-54
4.8.2 No Project Alternative	4-55
4.9 LAND USE AND PLANNING.....	4-59
4.9.1 Proposed Projects.....	4-59
4.9.2 No Project Alternative	4-62
4.10 MINERAL RESOURCES	4-67
4.10.1 Proposed Projects.....	4-67
4.10.2 No Project Alternative	4-67
4.11 NOISE.....	4-68
4.11.1 Proposed Projects.....	4-68
4.11.2 No Project Alternative	4-72
4.12 POPULATION AND HOUSING.....	4-73
4.12.1 Proposed Projects.....	4-73
4.12.2 No Project Alternative	4-74
4.13 PUBLIC SERVICES	4-75
4.13.1 Proposed Projects.....	4-75
4.13.2 No Project Alternative	4-78
4.14 RECREATION	4-79
4.14.1 Proposed Projects.....	4-79
4.14.2 No Project Alternative	4-80

	Page
4.15	TRANSPORTATION/TRAFFIC 4-81
4.15.1	Proposed Projects..... 4-81
4.15.2	No Project Alternative 4-84
4.16	UTILITIES AND SERVICES 4-87
4.16.1	Proposed Projects..... 4-87
4.16.2	No Project Alternative 4-88
5.0	ENVIRONMENTAL IMPACTS AND MITIGATION 5-1
5.1	AESTHETICS..... 5-1
5.1.1	Proposed Projects..... 5-1
5.1.2	Mitigation Measures 5-7
5.1.3	No Project Alternative 5-7
5.2	AGRICULTURAL RESOURCES 5-8
5.2.1	Proposed Projects..... 5-8
5.2.2	Mitigation Measures 5-9
5.2.3	No Project Alternative 5-10
5.3	AIR QUALITY..... 5-11
5.3.1	Proposed Projects..... 5-11
5.3.2	Mitigation Measures 5-19
5.3.3	No Project Alternative 5-19
5.4	BIOLOGICAL RESOURCES 5-25
5.4.1	Proposed Projects..... 5-25
5.4.2	Mitigation Measures 5-28
5.4.3	No Project Alternative 5-28
5.5	CULTURAL RESOURCES 5-29
5.5.1	Proposed Projects..... 5-29
5.5.2	Mitigation Measures 5-32
5.5.3	No Project Alternative 5-32
5.6	GEOLOGY 5-33
5.6.1	Proposed Projects..... 5-33
5.6.2	Mitigation Measures 5-35
5.6.3	No Project Alternative 5-35
5.7	HAZARDS AND HAZARDOUS MATERIALS 5-36
5.7.1	Proposed Projects..... 5-36
5.7.2	Mitigation Measures 5-40
5.7.3	No Project Alternative 5-40
5.8	HYDROLOGY/WATER QUALITY 5-41
5.8.1	Proposed Projects..... 5-41
5.8.2	Mitigation Measures 5-43
5.8.3	No Project Alternative 5-44
5.9	LAND USE AND PLANNING 5-45
5.9.1	Proposed Projects..... 5-45
5.9.2	Mitigation Measures 5-47
5.9.3	No Project Alternative 5-47
5.10	MINERAL RESOURCES 5-48
5.10.1	Proposed Projects..... 5-48

	Page
5.10.2 Mitigation Measures	5-49
5.10.3 No Project Alternative	5-49
5.11 NOISE.....	5-50
5.11.1 Proposed Projects.....	5-50
5.11.2 Mitigation Measures	5-54
5.11.3 No Project Alternative	5-54
5.12 POPULATION AND HOUSING.....	5-56
5.12.1 Proposed Projects.....	5-56
5.12.2 Mitigation Measures	5-58
5.12.3 No Project Alternative	5-58
5.13 PUBLIC SERVICES	5-59
5.13.1 Proposed Projects.....	5-59
5.13.2 Mitigation Measures	5-60
5.13.3 No Project Alternative	5-60
5.14 RECREATION	5-61
5.14.1 Proposed Projects.....	5-61
5.14.2 Mitigation Measures	5-63
5.14.3 No Project Alternative	5-63
5.15 TRANSPORTATION/TRAFFIC	5-64
5.15.1 Proposed Projects.....	5-64
5.15.2 Mitigation Measures	5-68
5.15.3 No Project Alternative	5-68
5.16 UTILITIES AND PUBLIC SERVICES.....	5-69
5.16.1 Proposed Projects.....	5-69
5.16.2 Mitigation Measures	5-70
5.16.3 No Project Alternative	5-70
6.0 IMPACT SUMMARY	6-1
7.0 CUMULATIVE IMPACTS.....	7-1
8.0 GROWTH INDUCING IMPACTS.....	8-1
9.0 INDIRECT EFFECTS	9-1
10.0 REFERENCES	10-1
11.0 LIST OF PREPARERS.....	11-1

TABLES

Project Description

Table 3-1 DCPP Plant and Steam Generator Parameters

Environmental Setting

Agricultural Resources

Table 4.2-1 Leading Commodities of Agricultural Production, San Luis Obispo County

Table 4.2-2 DCPP Project Site Soil Types

Air Quality

Table 4.3-1 Federal and California Ambient Air Quality Standards

Table 4.3-2 Maximum Measured Pollutant Concentrations at Grover City–Lesage Drive Monitoring Station

Table 4.3-3 Maximum Measured Pollutant Concentrations at Morro Bay Monitoring Station

Table 4.3-4 Maximum Measured Pollutant Concentrations at San Luis Obispo–Marsh Street Monitoring Station

Table 4.3-5 Regional Emissions in the County in 2002

Biological Resources

Table 4.4-1 Special Status or Sensitive Species Potentially Occurring on the Diablo Canyon Property

Table 4.4-2 Predominant Marine Species Observed at the Proposed Offloading Sites

Noise

Table 4.11-1 Sound Levels of Typical Noise Sources and Noise Environments

Table 4.11-2 San Luis Obispo County Maximum Allowable Noise Exposure Stationary Noise Sources

Transportation/Traffic

Table 4.15-1 Current Level of Service Classifications

Environmental Impacts and Mitigation

Air Quality

Table 5.3-1 Equipment and Vehicle Usage Used in the Port San Luis Analysis

Table 5.3-2 Maximum Daily Emissions During Port San Luis Transport

Table 5.3-3 Quarterly Emissions During Port San Luis Transport

Table 5.3-4 Equipment and Vehicle Usage Used in the Intake Cove Analysis

Table 5.3-5 Maximum Daily Emissions During Intake Cove Transport Option

Table 5.3-6 Quarterly Emissions During Intake Cove Transport Option

Table 5.3-7 Expected Equipment Usage During OSG Removal and RSG Installation

Table 5.3-8 Daily Emissions from Commuter Vehicles During OSG Removal

Table 5.3-9 Quarterly Emissions from Commuter Vehicles During OSG Removal

- Table 5.3-10 Current Best Available Control Technology Requirements for Combined Cycle Power Plants in Selected Replacement Site Areas
- Table 5.3-11 Assumed Best Available Control Technology Requirements for Combined Cycle Power Plants to replace DCPD Units 1 and 2
- Table 5.3-12 Estimated MW-hours Generated by Combined Cycle Plants with and without Duct Firing
- Table 5.3-13 Estimated Annual Pollutant Emissions for DCPD 1 and 2 Replacement Combined Cycle Power Plants¹

Noise

- Table 5.11-1 San Luis Obispo County Maximum Allowable Noise Exposure Stationary Noise Sources

Transportation/Traffic

- Table 5.15-1 Current and Future LOS Classifications

Impact Summary

- Table 6-1 Impact Summary

FIGURES

Executive Summary

- Figure 1-1 Site Vicinity Map
- Figure 1-2 SGRP Temporary Facilities
- Figure 1-3 Nuclear Steam Supply System
- Figure 1-4 Four Steam Generator Configuration

Project Description

- Figure 3-1 Diablo Canyon Unit 1 and 2 Replacement Implementation Schedule
- Figure 3-2 Typical Steam Generator Cutaway Section
- Figure 3-3 Barge Transport/Offload Options
- Figure 3-4 View Toward Port San Luis – Potential Offloading Area
- Figure 3-5 View Toward Intake Cove – Potential Offloading Area
- Figure 3-6 Barge Transport Route to Port San Luis
- Figure 3-7 Potential Port San Luis Docking/Staging Areas
- Figure 3-8 Typical RSG Barge Offload Plan and Elevation
- Figure 3-9 Potential Intake Cove Docking/Staging Areas
- Figure 3-10 Additional Workforce During SGRP
- Figure 3-11 SG on Runway through Equipment Hatch Handling in Containment: Plan View
- Figure 3-12 SG on Runway and Lifted into Place Handling Process in Containment: Elevation
- Figure 3-13 Passing SG through Auxiliary Building to Equipment Hatch: Plan View
- Figure 3-14 Plan View – SG on Runway and Rotated Auxiliary Building
- Figure 3-15 SG Lifting from Transporter Outside Auxiliary Building: Elevation

Environmental Setting

- Figure 4.4-1 Special Status Species within a 10-Mile Radius
- Figure 4.6-1 Diablo Canyon Regional Geologic Map
- Figure 4.9-1 Diablo Canyon Property Map
- Figure 4.9-2 Land Use Designations
- Figure 4.15-1 Existing Circulation System

Environmental Impacts and Mitigation

- Figure 5.11-1 Typical Construction Equipment Noise Generation Levels

ACRONYMS

ALARA	As Low as Reasonably Achievable
APCDs	Air Pollution Control Districts
APE	Area of Potential Effects
AQMDs	Air Quality Management Districts
BAAQMD	Bay Area Air Quality Management District
BMP	Best Management Practice
BMPs	Best Management Practices
BTEX	benzene, toluene, ethylbenzene, and xylenes
CAAQS	California Ambient Air Quality Standards
CAF	Containment Access Facility
CAO	corrective action objective
CARB	California Air Resources Board
CCGT	combined gas cycle gas turbine
CCR	California Code of Regulations
CDF	California Department of Forestry
CDS	Certified Design Specification
CFR	Code of Federal Regulations
CHRIS	California Historical Research Information System
CO	carbon monoxide
CPDEP	Chevron Project Development and Execution Plan
D/T	detectability
dB	decibels
DCPP	Diablo Canyon Power Plant
DQO	Data Quality Objectives
EBS	Emergency Broadcast System
EPA	U.S. Environmental Protection Agency
EPA	U.S. Environmental Protection Agency
ERA	ecological risk assessment
EWS	early warning system
FCC	Fluid Catalyzation Cracker (Plant)
FEMA	Federal Emergency Management Agency
FSAR	Final Safety Evaluation Report
GPS	groundwater protection system
H ₂ S	hydrogen sulfide
HASP	Health and Safety Plan
HP	horsepower
Hz	Hertz
km ²	square kilometers
LCS	Low Slope Cap
LOS	Level of Service
m ³ /s	cubic meters per second
MLLW	mean lower low water
MWe	megawatts electric
MWth	megawatts thermal
µg/m ³	micrograms per cubic meter

NAAQS	National Ambient Air Quality Standards
NO ₂	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollution Discharge Elimination System
NPDES	National Pollution Discharge Elimination System
NPS	National Park Service
NRC	Nuclear Regulatory Commission
NSSS	nuclear steam supply system
O ₃	ozone
OCA	owner-controlled area
OES	Office of Emergency Services
OES	Office of Emergency Services
°F	degrees Fahrenheit
OSGs	old steam generators; also referred to as original steam generators
OSGSF	Old Steam Generator Storage Facility; also referred to as Original Steam Generator Storage Facility
OSHA	Occupational Safety and Health Administration
PAHs	polycyclic aromatic hydrocarbons
Pb	lead
PG&E	Pacific Gas and Electric Company
PID	Photo Ionization Detector
PM ₁₀	particulate matter less than 10 microns in diameter
PM _{2.5}	particulate matter less than 2.5 microns in diameter
PPE	personal protective equipment
ppm	parts per million
psf	pounds per square foot
PSL	Port San Luis
PUF	polyurethane foam
RCA	Radiation Controls Area
RCS	reactor coolant system
RFP	Request for Proposals
ROG	reactive organic gases
RRD	Richmond Refinery Datum
RSGs	new steam generators; also referred to as replacement steam generators
RSGSF	Replacement Steam Generator Storage Facility; also referred to as New Steam Generator Storage Facility
RWQCB	Regional Water Quality Control Board
RWQCB	Regional Water Quality Control Board
RWQCB	Regional Water Quality Control Board
SCC	stress corrosion cracking
SF	square feet
SG	steam generator
SGRP	Steam Generator Replacement Project
SLBCAP	San Luis Bay Area Coastal Plan
SLOAPCD	San Luis Obispo County Air Pollution Control District
SO ₂	sulfur dioxide
SSCs	Structures, Systems, and Components

SUV	sports utility vehicles
SWPPP	Stormwater Pollution Prevention Plan
TLD	temporary lifting device
TPHg	total petroleum hydrocarbons as gasoline
TSA	temporary staging area
TSDF	treatment, storage, and disposal facility
TSP	Tube Support Plate
TXUU	triaxial compressive strength test
v/c	volume to capacity
VOCs	volatile organic compounds