E. Comparison of Alternatives

This section summarizes and compares the environmental advantages and disadvantages of the Proposed Project and the alternatives evaluated in this EIR. This comparison is based on the assessment of environmental impacts of the Proposed Project and each alternative, as identified in Sections D.2 through D.14. Section C introduces and describes the alternatives considered in this EIR.

Section E.1 describes the methodology used for comparing alternatives. Section E.2 defines the Environmentally Superior Alternative, based on comparison of each alternative with the Proposed Project. Section E.3 presents a comparison of the No Project Alternative with the alternative that is determined in Section E.2 to be environmentally superior.

E.1 Comparison Methodology

CEQA does not provide specific direction regarding the methodology of alternatives comparison. Each project must be evaluated for the issues and impacts that are most important; this varies depending on the project type and the environmental setting. Issue areas that are generally given more weight in comparing alternatives are those with long-term environmental impacts (e.g., permanent loss of land, habitat, or scenic resources or permanent loss of use of recreational facilities). Impacts associated with construction (temporary or short-term), or those that are easily mitigable to less than significant levels, are generally given less weight.

This comparison is designed to satisfy the requirements of CEQA Guidelines Section 15126.6(d), Evaluation of Alternatives, which states that:

The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison. If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed.

If the environmentally superior alternative is the No Project Alternative, CEQA requires identification of an environmentally superior alternative among the other alternatives [CEQA Guidelines Section 15126.6(e)(2)].

The following methodology was used to compare alternatives in this EIR:

• Step 1: Identification of Alternatives. An alternatives screening process (in Section C) was used to evaluate various alternatives to the Proposed Project. The screening process was used to analyze all feasible options. PG&E proposed many options to aspects of the Proposed Project and, at the request of the CPUC, identified one preferred option that could serve as the Proposed Project. All of PG&E's proposed options were then evaluated as alternatives. In addition to PG&E's proposed options, the EIR preparation team identified one offsite disposal alternative. A No Project Alternative was also identified and evaluated.

- Step 2: Determination of Environmental Impacts. The environmental impacts of the Proposed Project and the various alternatives were described (in Sections D.2 through D.14), including the potential impacts of the No Project Alternative which could lead to construction and operation of a range of replacement facilities. The impacts have been summarized for each alternative in Tables E-1, E-2, E-3, and E-4 to facilitate comparison of the Proposed Project with alternatives.
- Step 3: Comparison of Proposed Project with Alternatives. The environmental impacts of the Proposed Project were compared to those of each alternative to determine the environmentally superior alternative. The comparison focuses on the most important issue areas (e.g., safety, land use and recreation, biological resources, and geology). The environmentally superior alternative was then compared to the No Project Alternative.

Determining an environmentally superior alternative is difficult because of the many factors that must be balanced. The impact summaries in the detailed comparison tables of Section E.2 provide information on how the issue areas were balanced. Although this EIR identifies one environmentally superior alternative, it is possible that the ultimate decision-makers could balance the importance of each issue area differently and reach a different conclusion.

E.2 Environmentally Superior Alternative

This EIR presents alternatives to the following Proposed Project components: (1) transportation of the replacement steam generators (RSGs); (2) RSG staging and preparation; and (3) original steam generator (OSG) removal, transport, and storage. See Section B.1 and Figure B-2 for a detailed description and map of the Proposed Project. There are various alternatives to the components of the Proposed Project, as well as the No Project Alternative. There is one alternative to the RSG transport phase; three alternatives to the RSG staging and preparation phase; and five alternatives to the OSG removal and storage phase, four of which consist of different locations for the OSG Storage Facility and one that would transport the OSGs offsite for disposal. See Section C for more information on the Proposed Project alternatives.

The following is a discussion of the advantages and disadvantages of each alternative, and a determination of whether the Proposed Project or an alternative is considered to be environmentally superior within each component of the project. Each of the thirteen issue areas was considered during analysis of the alternatives.

E.2.1 Replacement Steam Generator Offloading Alternative

The proposed RSG offloading location would be at Port San Luis with the associated transport route to the temporary staging area (TSA) at DCPP along the seven-mile DCPP Access Road. The RSG Offloading Alternative is at the DCPP Intake Cove, which would allow the steam generators to be delivered directly to the DCPP facility and then moved a short distance on existing facility roads to the TSA (see Figure C-1).

The RSG Offloading Alternative would eliminate potential land use and recreation, system and transportation safety, and visual resources (Class II) impacts associated with the Proposed Project. Offloading the RSGs at the Intake Cove would avoid conflicts with land- and water-based traffic near Port San Luis associated with commercial and recreational vessel moorings, local restaurant and shop traffic near Harford Pier, and DCPP employee traffic along the Access Road. The Intake Cove would also reduce the visual impacts from nighttime lighting in Port San Luis during the RSG offloading and transporting activities. The navigational and transportation safety impacts to the general public would be removed because of the isolated location of the DCPP Intake Cove. The Intake Cove Alternative would also eliminate potential land use conflicts with the San Luis Obispo County local coastal policies that dictate coastal and recreational resource access. In addition, the Intake Cove Alternative would not impede emergency vehicle access to the DCPP facility because the RSG transport equipment would not utilize the DCPP Access Road or pass through the Access Gate.

Air quality and noise impacts could be reduced by avoiding offloading and transport activities in the vicinity of the publicly-accessible Port San Luis and the community of Avila Beach. Emissions of air pollutants from offloading and transport activities under the Intake Cove Alternative would be less than the Proposed Project because of the shorter distance between the offloading location and the TSA. With regard to noise, the Intake Cove alternative would impact fewer individuals during transport activities because the Intake Cove is isolated from the general public.

Issue Area	Proposed Project (Port San Luis)	RSG Offloading Alternative (Intake Cove)
Air Quality	Greater exposure to public and residences and longer transport route	Preferred because of reduced level of emissions due to shorter distance. Limited exposure to the public
Biological Resources	Slightly more severe impacts due to longer transport route and presence of native vegetation along route	Slightly Preferred because of slight reduction in impacts due to shorter transport route with limited native vegeta- tion in the area
Cultural Resources	No Preference	No Preference
Geology, Soils and Paleontology	Greater likelihood of instabilities and exceeding weight capacity along transport route	Preferred because of reduced likelihood of encountering unstable locations along transport route
Hazardous Materials	No Preference	No Preference
Hydrology and Water Quality	No Preference	No Preference
Land Use and Recreation	Requires limiting access to Port San Luis public facilities and recreational resources	Preferred because of elimination of land use and recreation access restriction impacts
Noise and Vibration	Closer proximity to general public and community creating greater exposure of sensitive receptors to noise impacts	Preferred because of reduced exposure of sensitive receptors and general public to noise impacts
Public Services and Utilities	Greater likelihood of impeding emergency vehicle access to DCPP. RSG would need to be transported along the DCPP Access Road	Preferred because of reduced impediments to emergency vehicle access to DCPP
Socioeconomics	Potential temporary displacement or disruption of Port San Luis businesses or fishermen	Slightly Preferred because of avoidance of any potential displacement or disruption impacts to Port San Luis businesses or fishermen
System and Transportation Safety	Navigational hazard in Port San Luis and impedi- ment to emergency vehicles during transport. RSGS would need to be transported along the DCPP Access Road	Preferred because of elimination of navigational hazards and reduced obstruction to emergency vehicles
Traffic and Circulation	Disruption of traffic flow and restricted access to public roadway and parking areas	Preferred because of elimination of traffic impacts due to offloading activities. Reduction in traffic impacts along DCPP Access Road
Visual Resources	Short-term visual impacts to viewers at Port San Luis	Preferred because of elimination of visual impacts to general public from offloading activities

E.2.2 Temporary Staging Area Alternatives

The Proposed Project and the three TSA Alternatives would all be located in the southwestern portion of the DCPP facility site (see Figure C-1). The TSA location for the Proposed Project would be in Parking Lot 1. Each TSA alternative would be located between approximately 100 and 1,500 feet northwest of the Proposed Project in Parking Lots 7 and 8, or within an existing warehouse north of Parking Lot 1. Due to the close proximity of the Proposed Project and the TSA Alternatives, most impacts would be similar for all locations. There would be a slight preference for TSA Alternatives B and C over the Proposed Project because some native vegetation exists adjacent to Parking Lot 1, outside of the proposed TSA area where construction may take place for the Proposed Project. TSA Alternative B would also be slightly preferred over the Proposed Project and the other TSA Alternatives because it would be located the furthest from Patton Cove, which has experienced previous landslide issues.

Table E-2. Proposed Project vs. Temporary Staging Area Alternatives				
Issue Area	Proposed Project	TSA Alternative A	TSA Alternative B	TSA Alternative C
Air Quality	No Preference	No Preference	No Preference	No Preference
Biological Resources	Construction activities may disturb adjacent native vegetation	Slightly Preferred because of slight reduc- tion of impacts by locat- ing alternative further from native vegetation	Slightly Preferred because of slight reduc- tion of impacts by locat- ing alternative further from native vegetation	Impacts would be similar to Proposed Project
Cultural Resources	No Preference	No Preference	No Preference	No Preference
Geology, Soils and Paleontology	Closest to potential landslide area at Patton Cove	Close to potential landslide area at Patton Cove	Slightly Preferred because of greater distance from potential landslide area at Patton Cove	Close to potential landslide area at Patton Cove
Hazardous Materials	No Preference	No Preference	No Preference	No Preference
Hydrology and Water Quality	No Preference	No Preference	No Preference	No Preference
Land Use and Recreation	No Preference	No Preference	No Preference	No Preference
Noise and Vibration	No Preference	No Preference	No Preference	No Preference
Public Services and Utilities	No Preference	No Preference	No Preference	No Preference
Socioeconomics	No Preference	No Preference	No Preference	No Preference
System and Transportation Safety	No Preference	No Preference	No Preference	No Preference
Traffic and Circulation	No Preference	No Preference	No Preference	No Preference
Visual Resources	No Preference	No Preference	No Preference	No Preference

E.2.3 Original Steam Generator Storage Facility Location Alternatives

The Proposed Project and all the OSG Storage Facility Location Alternatives would be located in the same general area in the northeastern section of the DCPP facility site near the 500 kV switchyard (see Figure C-1). The Proposed Project would place the OSG Storage Facility northeast of the intersection of Oak Tree Lane and Reservoir Road adjacent to the 500 kV switchyard (see Figure B-2). OSG Storage Facility Location Alternative A would be located in the northeast corner of the switchyard, and the other three alternatives would be located east of the Proposed Project. The Proposed Project and the OSG Storage Facility Location Alternatives would all be located within approximately 600 to 700 feet of one another.

The Proposed Project and the OSG Storage Facility Location Alternatives would be very similar to one another and therefore would have many of the same impacts. Hydrologic and water quality impacts such as contamination of stormwater runoff due to sedimentation or leaks from construction activities, or water quality degradation due to potential damage to the OSG Storage Facility from Diablo Creek flow overtopping its banks could be reduced with Alternatives C and D. Table E-3 compares the Proposed Project to each OSG Storage Facility Location Alternative.

Issue Area	Proposed Project	OSG Storage Facility Location Alternative A	OSG Storage Facility Location Alternative B	OSG Storage Facility Location Alternative C	OSG Storage Facility Location Alternative D
Air Quality	No Preference	No Preference	No Preference	No Preference	No Preference
Biological Resources	Slightly Preferred because of greater distance from Diablo Creek and native vegetation	Greater likelihood of impacts due to proximity to Diablo Creek	Slightly Preferred because of greater distance from native vegetation	Greater likelihood of impacts due to proximity to native vegetation	Greater likelihood of impacts due to prox- imity to native vegetation
Cultural Resources	No Preference	No Preference	No Preference	No Preference	No Preference
Geology, Soils and Paleontology	Greater likelihood of being affected by potential bluff insta- bilities over Diablo Creek	Greater likelihood of being affected by potential bluff insta- bilities over Diablo Creek	Greater likelihood of being affected by potential bluff insta- bilities over Diablo Creek	Preferred because of reduced likelihood of effects from bluff instabilities	Preferred because of reduced likelihood of effects from bluff instabilities
Hazardous Materials	No Preference	No Preference	No Preference	No Preference	No Preference
Hydrology and Water Quality	Outside main flow path, but more likely to be affected by overflow Diablo Creek	Within main flow path of Diablo Creek, greater likelihood of effects from Creek overflow	Outside main flow path, but more likely to be affected by overflow Diablo Creek	Preferred because of reduced likelihood of effects from Diablo Creek overflow	Preferred because of reduced likelihood of effects from Diablo Creek overflow
Land Use and Recreation	No Preference	No Preference	No Preference	No Preference	No Preference
Noise and Vibration	No Preference	No Preference	No Preference	No Preference	No Preference
Public Services and Utilities	No Preference	No Preference	No Preference	No Preference	No Preference
Socioeconomics	No Preference	No Preference	No Preference	No Preference	No Preference
System and Transportation Safety	No Preference	No Preference	No Preference	No Preference	No Preference
Traffic and Circulation	No Preference	No Preference	No Preference	No Preference	No Preference
Visual Resources	No Preference	No Preference	No Preference	No Preference	No Preference

Table E.2. Dropogod Drojective OSC Storage Eacility Location Alternatives

E.2.4 Original Steam Generator Offsite Disposal Alternative

The alternative to storing the OSGs onsite at an OSG Storage Facility would be to transport the OSGs offsite for permanent disposal at a facility that accepts low-level radioactive waste. This approach would be similar to that proposed by Southern California Edison (SCE) for the Steam Generator Replacement Project at San Onofre Nuclear Generating Station (SONGS). Under this alternative, the most logical approach would be to transport the OSGs by barge from either the Intake Cove or Port San Luis to the disposal facility, or to a transfer point where they would be shifted to a different mode of transportation such as railway for ultimate delivery to the facility. Currently, disposal facilities for this type of waste exist in Washington, Utah, and South Carolina.

Detailed information on the potential impacts and their severity is not currently available due to the lack of specific details for the offsite disposal method. This alternative would eliminate or reduce potential construction impacts of the Proposed Project because construction of the OSG Storage Facility would not occur. However, offsite disposal would involve similar or possibly more severe impacts at the disposal site. There would also be impacts due to the transportation of the low-level radioactive OSGs offsite, which could bring safety hazards closer to the general public. In addition, this alternative may create new impacts at the selected disposal facility.

The primary area of concern for offsite disposal would be system and transportation safety. Offsite transport of the OSGs would increase the navigational hazard caused by transport barges and would introduce a new, but mitigable, impact of potential residual contamination radiation exposure to the public near the disposal transport route. The NRC and federal Department of Transportation (DOT) regulate the use and transport of nuclear materials and protection of public safety, and would therefore regulate the transport of OSGs offsite. Generally, this Table E-4 compares onsite OSG storage to the OSG Offsite Disposal Alternative.

Issue Area	Onsite Storage	Disposal of OSG Offsite Disposal Alternative
Air Quality	Slightly Preferred over the OSG Offsite Disposal Alterna- tive. Short term air quality from construction, no potential impacts to general public	Greater likelihood of impacts to sensitive receptors form transport of the OSGs offsite
Biological Resources	Slightly Preferred (Proposed Project or Alternative B) potential to impact local native vegetation, however, no potential marine resource issues would be impacted	Less impacts to native vegetation at DCPP facility; potential impacts at disposal facility and greater poten- tial marine impacts with barge transport of the OSGs
Cultural Resources	No Preference	No Preference
Geology, Soils and Paleontology	Potential bluff instabilities associated with Proposed Project and alternatives	Slightly Preferred because less potential impacts at DCPP facility; potential impacts at disposal facility
Hazardous Materials	Preferred over the OSG Offsite Disposal Alternative. Less likely of a hazardous material spill during trans- portation – shorter distance to OSG Storage Facility	More potential impacts due to long transport distance and exposure to general public.
Hydrology and Water Quality	Slightly Preferred (Alternatives C or D) because of reduced likelihood of effects from Diablo Creek overflow	Potential impacts from an accident during transport of the OSGs
Land Use and Recreation	Preferred over the OSG Offsite Disposal Alternative	Requires limiting public access to public facilities (e.g., Port San Luis) and recreational resources during transport of OSGs

Table E-4. Onsite OSG Storage Facility Locations vs. OSG Offsite Disposal Alternative

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Issue Area	Onsite Storage	Disposal of OSG Offsite Disposal Alternative
Noise and Vibration	Preferred over the OSG Offsite Disposal Alternative Short term noise from construction, no potential impacts to general public	Greater likelihood of impacts to sensitive receptors during transport of OSGs
Public Services and Utilities	Preferred over the OSG Offsite Disposal Alternative. Less likely to impact services and utilities	Greater likelihood of impeding emergency vehicle access to DCPP, particularly if OSGs are removed via the Access Road
Socio- economics	No Preference	No Preference
System and Transportation Safety	Preferred over the OSG Offsite Disposal Alternative. Less likely for exposure to general public	More potential impacts due to long transport distance and exposure to general public
Traffic and Circulation	Preferred over the OSG Offsite Disposal Alternative No traffic issues associated with the OSG Storage Facility	Greater likelihood of impacts in public roadways and boating areas during transport of OSG
Visual Resources	Preferred over the OSG Offsite Disposal Alternative. Limited visual resource issues associated with OSG Storage Facility	Greater likelihood of impacts to sensitive viewers during loading activities

Table E-4. Onsite OSG Storage Facility Locations vs. OSG Offsite Disposal Alternative

E.2.4 Definition of Environmentally Superior Alternative

Table E-5 defines the environmentally superior alternatives for the DCPP Steam Generator Replacement Project. The only clearly superior alternative would be the Intake Cove Offloading Alternative. Except for a few minor beneficial differences, there would be no preferred alternative for the other phases of the project. The conclusions for each phase of the project are summarized below.

Conclusion for Replacement Steam Generator Offloading Alternatives

The RSG Offloading Alternative at the Intake Cove is the preferred alternative because it would substantially reduce various impacts to land use and recreation, system and transportation safety, and visual resources. Because the RSGs would be offloaded directly at the DCPP site, use of Port San Luis and the DCPP Access Road would be avoided thereby eliminating a number of potentially significant (Class II) impacts in these areas. Additionally, the Intake Cove alternative may reduce the severity of

impacts to air quality, noise, public services, system and transportation safety, traffic and circulation, and biological resources.

This comparative analysis balances the issues by placing a heavier weight on impacts related to the health, safety, traffic and circulation, and convenience of the general public. This weighting is used based on the comments received from the public during the scoping process, which focused on these issues. Table E-5. Environmentally Superior Alternative

Phase/Alternative	Environmentally Superior Alternative	
RSG Offloading Alternatives	Intake Cove	
TSA Alternatives	No preference, only minor differences between alternatives; Alternative B could reduce some minor environmental and safety concerns	
OSG Storage Facility Location Alternatives	Any OSG Storage Facility location is preferred over Offsite Disposal; Alternatives C and D may reduce some minor environmental and safety concerns	

Conclusion for Temporary Staging Area Alternatives

There is no overall preferred alternative for the TSA location. The Proposed Project and alternatives would all cause similar impacts with equal classifications because of the close proximity of all locations. However in some issues areas there were minor differences between the alternatives which would make one or two alternatives preferable over the others. TSA Alternatives A and B would reduce the minor potential impacts of disturbing adjacent native vegetation by locating the site away from areas with native vegetation. TSA Alternative B would also be located furthest from the Patton Cove land-slide area, a geological hazard at the DCPP facility.

This comparative analysis provided above does not designate an environmentally superior alternative, although it does show that Alternative B could reduce some minor environmental and safety concerns.

Conclusion for Original Steam Generator Storage Facility Location Alternatives

There is no preferred alternative for the OSG Storage Facility, however onsite storage of the OSGs is preferred over offsite disposal. The Proposed Project and the OSG Storage Facility Alternatives would all cause similar impacts with equal classifications because of the close proximity of all the locations. However, in some issues areas there were minor differences between these alternatives, which would make one or two alternatives preferable over the others. Alternative B would reduce the minor potential impacts of disturbing adjacent native vegetation by locating the site away from areas with native vegetation. However, Alternative B would be located closest to Diablo Creek resulting in greater hydrological impacts. Alternatives C and D would reduce potential hydrological and water quality, and geological concerns by locating the OSG Storage Facility furthest from Diablo Creek.

This comparative analysis provided above does not designate an environmentally superior alternative, although it does show that each OSG Storage Facility location alternative is preferred over the OSG Offsite Disposal Alternative. Among the potential OSG Storage Facility optional locations, Alternatives C and D may reduce some environmental and safety concerns.

E.3 No Project Alternative vs. the Environmentally Superior Alternative

Summary of the No Project Alternative and Its Impacts. The No Project Alternative is described in Section C.6. It would include the continued use of the DCPP OSGs through 2013 or 2014 at which time the OSGs are anticipated to reach the end of their useful lives, and approximately 2,200 MW of base-load system generation capacity for PG&E customers would need to be replaced. The No Project Alternative consists of the following options:

• **Replacement Generation Facilities:** In the future, environmental and safety concerns will most likely preclude the construction of new nuclear, hydroelectric, and coal- and oil-fired power plants as replacement generation, therefore PG&E has stated that it would need to construct 4 or 5 combined cycle gas turbine power plants in northern California and southern Central Valley. At this time, the details of such projects are unknown, and therefore it would be difficult to determine any definite impacts. However, it is known approximately how much land would be required to construct a combined cycle power plant, how much water would be needed to provide sufficient cooling, and how much natural gas would be used to operate the new facilities. This information could be used to determine potential impacts to areas such as biological resources, hydrology and water quality, and air quality.

- **Replacement Transmission Facilities:** New transmission facilities would need to be built for any new generation capacity constructed, but new transmission facilities could also be used as a substitute for some in-State generation if access to generation in the Pacific Northwest and the Southwest is improved. Currently the details of potential transmission projects are not known; however, in general these projects produce short-term impacts during construction and long-term impacts during operation of the transmission line. Short-term impacts include air and noise emissions, loss of biological habitat, traffic disruption, and potential disruption of utility service. Long-term impacts include visibility of transmission infrastructure, corona noise, permanent loss of biological habitat or cultural resources, and potential changes in electric and magnetic fields.
- Alternative Energy Technologies: Options for replacement generation include principal renewable and other alternative energy technologies such as solar thermal, photovoltaics, wind, geothermal, hydropower, fuel cells, and biomass. The main benefit of these technologies is that they do not rely on fossil fuel, consume little water, and generate either zero or reduced levels of air pollutants and hazardous wastes. However these technologies do create some environmental impacts such as permanent disturbance or destruction of habitat, visual changes, generation of hazardous waste, noise production, endangerment of wildlife and fish, poor water quality due sedimentation and turbidity, change of land uses, and some air emissions.
- System Enhancement Options: This option would not require the construction of new major generation or transmission facilities, but rather reduce the need for additional base-load energy. This would be accomplished through energy conservation or demand-side management, and distributed generation or generation through facilities providing less than 50 MW in capacity. While this option would not provide for full replacement of the energy lost due to shutdown of DCPP, it would allow for offset of a small percentage of the lost energy supply. This option is the most uncertain and unreliable in terms of generation capacity or savings, opportunity for growth, and specific potential uses.

Comparison of Environmentally Superior Alternative with No Project Alternative. The Environmentally Superior Alternative as defined in Section E.2 would consist of replacement steam generator delivery and offloading to the Intake Cove, any of the TSA locations, and any of the onsite OSG Storage Facility locations as there are no substantial differences among the TSA locations or the onsite OSG Storage Facility locations. As noted above, OSG Storage Facility Location Alternatives C and D would have minor benefits as compared to the Proposed Project with regard to hydrology and water quality, while TSA Alternative B could reduce some minor environmental and safety concerns. Offloading the steam generators at the Intake Cove would eliminate some short-term project-related impacts to land use and recreation, public services and utilities, system transportation safety, traffic and circulation, and visual resources. The Environmentally Superior Alternative would be located entirely within DCPP property, which is isolated from the general public due to regulation, distance, and geography.

In comparison, long-term impacts for many environmental issue areas could occur under the No Project Alternative. Construction of new power plants, including alternative energy technologies, under the No Project Alternative would likely result in some level of short-term (construction) and long-term (operation) regional impacts to air quality, biological resources, water quality, noise, hazardous waste, public health, and visual resources. Overall, the Environmentally Superior Alternative is preferred over the No Project Alternative.