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. The CPUC approach in comparing alternatives is to generally give more weight to 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 that are 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. SCE proposed three transportation route options and, at the request of the CPUC, identified one preferred option that could serve as the Proposed Project. All of SCE's proposed options were then evaluated as alternatives. In addition, the CPUC evaluated an OSG Disposal Alternative and a No Project Alternative.
- **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 and E-2 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 table 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 routes for the RSGs; and (2) OSG disposal. See Section C for more information on the alternatives that were considered but were eliminated from analysis in this EIR. 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 for the project components of RSG transport and OSG disposal.

Each of the thirteen issue areas was considered during comparison of the alternatives. The comparison focuses on reducing potentially significant impacts (Class II) because the Proposed Project would cause no significant and unavoidable impacts (Class I).

E.2.1 Transportation Route Alternatives

Table E-1 provides a comparison of the impacts that would occur with each of the transportation route alternatives.

The Proposed Project would involve transportation of the RSGs along the Beach and Road Route. The Beach and Road Route would involve temporary effects to the natural areas of the beach, disruption of MCBCP residents and campers at San Onofre State Beach, and brief closures of southbound I-5. This route would result in potentially significant (Class II) impacts to nine issue areas, including air quality, biological resources, geology and soils, water quality, recreation, noise, public services, traffic and circulation, and visual resources. No significant and unavoidable impacts (Class I) would occur. The Beach and Road Route has three potentially significant impacts related to geologic hazards, recreation, and visual resources that could be reduced to less than significant levels by implementing other transport route alternatives. The potentially significant impacts of extremely heavy loads on the San Onofre Bluffs (Impact G-1), disrupting recreational activities (Impact L-2), and removing the landscaping within San Onofre State Beach (Impact V-2) could be reduced, and related mitigation measures would not be necessary if a route avoiding these resources is selected.

The I-5/Old Highway 101 Route Alternative would shift transport activities almost entirely to paved roads requiring short-term closures of a substantial portion of southbound I-5 between the MCBCP Del Mar Boat Basin and SONGS. This alternative would generally avoid impacts to natural areas of the beach but cause substantially increased, although still less than significant, impacts to traffic. The impacts to MCBCP residents and campers at San Onofre State Beach would be similar to the Proposed Project. This route alter-

native would result in potentially significant (Class II) impacts to the same nine issue areas as the Proposed Project. No significant and unavoidable impacts (Class I) would occur. Of the potentially significant impacts that would occur under the Proposed Project, this route alternative would not eliminate any. Although it would eliminate one less than significant biology impact to beach habitats (Impact B-3), this route would also add a Class II impact to biological resources by impacting annual grassland and ruderal habitat with paved transitions (Impact B-8). Because of this additional impact, selection of this route would require implementation of an additional mitigation measure that has been identified for biology.

The MCBCP Inland Route Alternative would shift transport activities almost entirely to paved roads within MCBCP, including brief closures of southbound and northbound I-5 near SONGS. This alternative would generally avoid impacts to natural areas of the beach and to campers at San Onofre State Beach while causing traffic impacts that would be marginally increased over those of the Proposed Project. Of the potentially significant impacts that would occur under the Proposed Project, this alternative would eliminate the three potentially significant impacts of extremely heavy loads on the San Onofre Bluffs (Impact G-1), disrupting recreational activities (Impact L-2), and removing the landscaping within San Onofre State Beach (Impact V-2). Although it would eliminate one less than significant biology impact to beach habitats (Impact B-3), this route would also add a Class II impact to biological resources by impacting possible wetland areas with paved transitions (Impact B-9). It would also create an additional Class II impact to cultural resources, which are abundant along the MCBCP Inland Route (Impact C-1). If it is selected, this route would require implementation of the additional mitigation measures that have been identified for biology and cultural resources, but it would eliminate the need for certain mitigation of geologic hazards, recreational disruption, and visual effects.

Table E-1. Proposed Project vs. Transportation Route Alternatives

Issue Area	Proposed Project (Beach and Road Route)	I-5/Old Highway 101 Route Alternative	MCBCP Inland Route Alternative
Air Quality	**Less Preferred** because total emissions per trip would be higher than the other route alternatives	**Slightly Preferred** because the total emissions per trip would be reduced	**Slightly Preferred** because the total emissions per trip would be reduced
Biological Resources	**Slightly Preferred** because paved transition ramps would not be needed, and impacts to waters of the U.S. or wetlands would be avoided	**Less Preferred** because of impacts from temporary paved transition ramps	**Less Preferred** because of potential temporary impacts to waters of the U.S. or wetlands
Cultural Resources	**Slightly Preferred** because of likelihood of avoiding cultural resources impacts	**Slightly Preferred** because of likelihood of avoiding cultural resources impacts	**Not Preferred** because of potential damage to known cultural resources
Geology, Soils, and Paleontology	**Less Preferred** because of proximity to potentially unstable ground along the San Onofre Bluffs	**Less Preferred** because of proximity to potentially unstable ground along the San Onofre Bluffs	**Clearly Preferred** because this route would avoid transport along the potentially unstable San Onofre Bluffs
Hazardous Materials	No Preference	No Preference	No Preference
Hydrology and Water Quality	No Preference	No Preference	No Preference
Land Use and Recreation	**Less Preferred** because of temporary disruption to recreational facilities at San Onofre State Beach and Camp Del Mar	**Less Preferred** because of temporary disruption to recreational facilities at San Onofre State Beach and Camp Del Mar	**Clearly Preferred** because of reduced disruption to recreational facilities at San Onofre State Beach and Camp Del Mar

Table E-1. Proposed Project vs. Transportation Route Alternatives

Issue Area	Proposed Project (Beach and Road Route)	I-5/Old Highway 101 Route Alternative	MCBCP Inland Route Alternative
Noise and Vibration	**Less Preferred** because of impact to sensitive receptors at San Onofre State Beach	**Less Preferred** because of impact to sensitive receptors at San Onofre State Beach	**Slightly Preferred** because this route would avoid impacts to receptors at San Onofre State Beach
Public Services and Utilities	**Slightly Preferred** because of least potential for restricting emergency vehicle access	**Less Preferred**; however, less potential for wildfire hazards	**Less Preferred**; however, less potential for wildfire hazards
Socioeconomics	No Preference	No Preference	No Preference
System and Transportation Safety	**Slightly Preferred** because of least potential for restricting emergency vehicle access	**Less Preferred** because of potential for temporarily restricting emergency vehicle access	**Less Preferred** because of potential for temporarily restricting emergency vehicle access
Traffic and Circulation	**Slightly Preferred** because of least potential for restricting emergency vehicle access or disrupting I-5	**Less Preferred** because of potential for restricting emergency vehicle access or disrupting I-5	**Less Preferred** because of potential for restricting emergency vehicle access or disrupting I-5
Visual Resources	**Less Preferred** because of visibility of staging and preparation activities, and landscape/roadway impacts at San Onofre State Beach	**Less Preferred** because of landscape/roadway impacts at San Onofre State Beach	**Clearly Preferred** because of least likelihood to disrupt use of San Onofre State Beach

Clearly Preferred means this alternative eliminates the need for mitigation that would otherwise occur.
Not Preferred means this alternative creates a need for mitigation that would not otherwise occur.

E.2.2 OSG Disposal Alternative

Table E-2 provides a comparison of the impacts of the Proposed Project (offsite OSG disposal) and the OSG Onsite Storage Alternative.

The Proposed Project would involve transport of the OSGs to a low level radioactive waste facility out of state for disposal. Offsite transport of the OSGs would occur by rail. No unique potentially significant (Class II) impacts would be caused by the proposed activity of offsite disposal activity.

The OSG Onsite Storage Alternative would involve siting and construction of an OSG Storage Facility within either the SONGS OCA or the Mesa east of I-5. The OSG Storage Facility would contain the OSGs until decommissioning of the SONGS site. None of the project-related impacts would be reduced or eliminated by selecting the OSG Onsite Storage Alternative, and project impacts related to RSG transport, RSG staging and preparation, OSG removal, and RSG installation activities would not be changed under this alternative. Construction of an onsite OSG Storage Facility would involve construction-related impacts that would not occur with the Proposed Project, including additional short-term impacts related to air quality, soil erosion, contaminant spills, and construction traffic. Longer-term effects would include increased safety risks and the need to modify emergency response procedures to accommodate the onsite OSG Storage Facility. The OSG Onsite Storage Alternative would cause additional potentially significant impacts related to soil erosion (Impact G-4) and geologic hazards (Impacts G-5 and G-6) (Class II). Other additional impacts related to system safety, including an increased likelihood of accidents with adverse consequences (Impact S-2) or terrorist attacks (Impact S-3), would also occur but would be less than significant (Class III). If selected, the OSG Onsite Storage Alternative would require implementation of the additional mitigation measures that have been identified related to geology.

Table E-2. Proposed Project vs. OSG Disposal Alternative

Issue Area	Proposed Project (Offsite OSG Disposal)	OSG Onsite Storage Alternative
Air Quality	**Slightly Preferred** because avoiding excavation and construction emissions for storage facility	**Less Preferred**
Biological Resources	**Slightly Preferred** because of least potential for sediment runoff or contaminant spills	**Less Preferred**
Cultural Resources	**Slightly Preferred** because of likelihood of avoiding cultural resources impacts	**Less Preferred**
Geology, Soils, and Paleontology	**Clearly Preferred** because of least potential for soil erosion during storage facility construction or exposing storage facility to seismic hazards	**Not Preferred**
Hazardous Materials	No Preference	No Preference
Hydrology and Water Quality	**Slightly Preferred** because of least potential for sediment runoff or contaminant spills affecting water quality	**Less Preferred**
Land Use and Recreation	No Preference	No Preference
Noise and Vibration	No Preference	No Preference
Public Services and Utilities	**Slightly Preferred** because emergency response procedures would not need to be changed to accommodate storage facility	**Less Preferred**
Socioeconomics	No Preference	No Preference
System and Transportation Safety	**Slightly Preferred** because of potential for accidents or terrorist attack involving storage facility	**Less Preferred**
Traffic and Circulation	**Slightly Preferred** because disposal by rail transport would not involve moving OSGs onsite or storage facility construction traffic	**Less Preferred**
Visual Resources	**Slightly Preferred** because offsite disposal would avoid addition of new storage facility to site	**Less Preferred**

Clearly Preferred means this alternative eliminates the need for mitigation that would otherwise occur.
Not Preferred means this alternative creates a need for mitigation that would not otherwise occur.

E.2.3 Definition of Environmentally Superior Alternative

Table E-3 defines the environmentally superior alternatives for the SONGS Steam Generator Replacement Project. Compared to the Proposed Project, the MCBCP Inland Route Alternative is preferred. The conclusions for each phase of the project are summarized below.

Table E-3. Environmentally Superior Alternative

Phase	Environmentally Superior Alternative
Transportation Route Alternatives	MCBCP Inland Route Alternative
OSG Disposal Alternatives	Proposed Project (Offsite OSG Disposal)

Conclusion for Transportation Route Alternatives

The MCBCP Inland Route Alternative is slightly preferred by a plurality of issue areas (see Table E-1). This alternative would avoid potentially significant impacts related to geologic hazards, recreation disruption, and visual effects because it would avoid traveling on the San Onofre Bluffs and through San Onofre State Beach. The MCBCP Inland Route would cause additional potentially significant impacts to biological and cultural resources, but with mitigation to protect and restore possible wetlands at the transition areas across I-5 and to clearly flag cultural resources adjacent to the MCBCP roads, these impacts would be reduced to less than significant levels.

Conclusion for OSG Disposal Alternative

The OSG Onsite Storage Alternative is not preferred over the proposed approach of offsite OSG disposal (see Table E-2). It would not eliminate or reduce any of the potentially significant impacts of the Proposed Project, and it would create a range of additional impacts related to both construction activities (air quality, soil erosion, contaminant spills, and construction traffic) and long-term presence of an OSG Storage Facility (exposure to geologic hazards and risks of accidents or terrorist attacks). Because it would avoid these effects, the Proposed Project with offsite OSG disposal is preferred.

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 SONGS OSGs until the OSGs reach the end of their useful lives some time in the next decade, possibly as soon as 2009. At that time, approximately 2,150 MW of base-load system generation capacity for SCE 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 combined cycle natural-gas fired turbine power plants could be built around southern California or Arizona with transmission connections to SCE customers. 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 SONGS, 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 transport along the MCBCP Inland Route and offsite disposal of the OSGs.

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.