2.2.7 Energy

This section addresses the potential impacts to energy resources, including fossil fuels, associated with implementation of the proposed project.

2.2.7.1 Regulatory Setting

The CEQA Guidelines, Appendix F, Energy Conservation, states that EIRs are required to include a discussion of potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy.

NEPA (42 U.S.C. Part 4332) requires consideration of all potentially significant impacts to the environment, including energy impacts.

2.2.7.2 Affected Environment

Southern California has had the benefit of sufficient energy supplies to serve the rapid growth that has taken place over the past 50 years. Much of the energy consumed in the region is for residential, commercial, and transportation purposes. SCAG tracks and forecasts energy use in the southern California area. Transportation energy for motor vehicles is primarily by direct combustion of petroleum fuels (i.e., gasoline and diesel), with smaller contributions from compressed natural gas. Electricity is used in a relatively small number of electric-powered vehicles.

According to the California Energy Commission (CEC), in addition to hydrocarbon energy sources, 300 operational power plants are located in the counties of Los Angeles, Orange, Riverside, and San Bernardino that produce at least 100 kW (0.1-MW) of electricity each (CEC, 2007a). Electric energy in the region is provided primarily through SCE and LADWP distribution networks, along with 3 municipalities that have their own power plants located in the region (i.e., Glendale, Burbank, and Pasadena). Imperial Irrigation District and San Diego Gas & Electric provide service to the extreme southern areas of Riverside and Orange counties, respectively. Because of the recent restructuring of the electric energy industry throughout California, many of the facilities owned by investor-owned utilities have been divested. Twenty-three (23) new power-generating facilities are planned for the Los Angeles region, and they are currently going through the permitting process (CEC, 2007a).

Most of the electric energy used in southern California is imported to the region from coal-fired and hydroelectric generating facilities located elsewhere in California and out of state. Utilities in southern California participate in power-sharing arrangements with many other entities throughout the western United States. In 2005, the SCAG region consumed almost 128,000 gigawatt-hours (GWh) of electricity, which was approximately 48 percent of the total consumption in the state. Electricity consumption has been increasing approximately 1.3 percent per year (SCAG, 2007).

In 2005, the region consumed approximately 8.8 billion gallons of vehicle fuels, which was an increase of more than 20 percent from 1995 (SCAG, 2007). CEC predicts that the natural gas demand in on-road vehicles will increase from 75 million therms in 2003 to 200 million therms in 2025. Transportation electricity will grow from 600 million kilowatt-hours (kWh) in 2003 to 1,800 kWh in 2025.

2.2.7.3 Environmental Consequences

Evaluation Criteria

Potential energy consumption of the Build Alternatives is compared to the No Action Alternative to assess the project's potential energy impacts within the vicinity of the Port (as defined by I-110 to the west, I-405 to the north, I-/SR 710 to the east, and the Pacific Ocean to the south). The proposed project may result in substantial impacts if it would:

- Use fuel, water, or energy in a wasteful manner; or
- Result in the loss of availability of a known mineral resource that would be of future value to the region and residents of the state.

No Action Alternative

The No Action Alternative would not cause any immediate increase in demands on energy and fuel consumption in the project area.

Construction and Demolition Impacts

<u>North- and South-side Alignment Alternatives</u>

Construction equipment and construction worker vehicles operated during project construction of the Bridge Replacement Alternatives and during demolition of the Gerald Desmond Bridge and supporting structures would use fossil fuels. This increased fuel consumption would be temporary and cease at the end of the construction activities, and it would not have a residual requirement for additional energy input. The marginal increases in fossil fuel use resulting from project construction are not expected to have appreciable impacts on energy resources.

Bridge demolition would also result in the accumulation of large amounts of scrap bridge materials. These materials may be reused if disposed of properly (see Section 2.1.4 [Utilities and Service Systems] for further discussion of waste disposal and recycling).

Rehabilitation Alternative

Construction equipment and construction worker vehicles operated during rehabilitation of the existing bridge and supporting structures would use fossil fuels. This increased fuel consumption would be temporary and cease at the end of the rehabilitation activities, and it would not have a residual requirement for additional energy input. The marginal increase in fossil fuel use resulting from the bridge rehabilitation is not expected to have appreciable impacts on energy resources.

Operational Impacts

Operational energy impacts of the proposed project are primarily related to fuel consumption. The anticipated effects on energy use associated with the operation of the proposed alternatives are discussed below.

No Action/Rehabilitation Alternative

Forecasts by CEC indicate that statewide VMT for all on-road vehicles will increase annually by an average of 1.7 percent between 2005 and 2030 (CEC, 2007b). Even though VMT is predicted to increase, forecasted gasoline consumption is variable for the period and ranges from an annual average decrease of 0.5 percent to an increase of 0.6 percent. Diesel fuel average annual consumption would increase from 2.1 to 3.0 percent. The variability is primarily related to modeling variables related to price and implementation of greenhouse gas (GHG) standards.

Statewide gasoline use for 2030 would be 14 to 18.6 billion gallons; forecast diesel use would be 6.7 to 8.3 billion gallons CEC, 2007b).

Daily VMT within the vicinity of the Port from the traffic study was used in combination with the average fuel efficiencies to estimate the energy use for the opening and horizon years. The VMT data and associated fuel consumption is provided below in Table 2.2.7-1.

Determining the future (2015 and 2030) fuel consumption requires estimation of future fuel efficiencies for gasoline and diesel vehicles. It is assumed that fuel efficiency would improve with advances in alternative fuel and engine technology. This forecast in future fuel efficiency is difficult to accurately predict, so this analysis will consider the “worst-case scenario,” which utilizes the current fuel efficiencies and assumes that there are no improvements in alternative fuel or engine technology or increases in alternative fuel use.

Consumption was calculated by dividing future auto VMT by the average gasoline (20.75 miles per gallon [mpg]) fuel efficiency and future truck

Table 2.2.7-1
Daily VMT and Fuel Consumption in Project Vicinity

	No Action/ Rehabilitation Alternative	Bridge Replacement Alternative	Increase/ (Decrease)	No Action/ Rehabilitation Alternative	Bridge Replacement Alternative	Increase/ (Decrease)
	2015 Daily VMT Project Vicinity			**2015 Daily Fuel Consumption**		
Total Autos - Gasoline	4,475,415	4,466,876	(8,539)	215,683	215,271	(412)
Total Trucks - Diesel	850,846	847,881	(2,964)	167,820	167,235	(585)
Total All Vehicles-Gallons	5,326,260	5,314,757	(11,503)	383,503	382,506	(997)
	2030 Daily VMT Project Vicinity			**2030 Daily Fuel Consumption**		
Total Autos - Gasoline	4,950,124	4,937,966	(12,157)	238,560	237,974	(586)
Total Trucks - Diesel	1,144,522	1,138,963	(5,560)	225,744	224,647	(1,097)
Total All Vehicles-Gallons	6,094,646	6,076,929	(17,717)	464,304	462,621	(1,683)

Source: Iteris, 2009.

VMT by the average diesel (5.07 mpg) fuel efficiency. Gasoline and diesel use associated with the No Action/Rehabilitation Alternative in 2015 yields a daily use estimate of 215,683 gallons and 167,820 gallons, respectively. Estimates for 2030 gasoline and diesel consumption yield a total daily use estimate of 238,560 gallons and 225,744 gallons, respectively. Operation of the Rehabilitation Alternative would be identical to the No Action Alternative. No adverse effects on energy supplies resulting from operation of the Rehabilitation Alternative are anticipated.

North- and South-side Alignment Alternatives

Energy use (fuel consumption) for the Bridge Replacement Alternatives was also calculated as previously discussed utilizing the VMT data shown in Table 2.2.7-1 and average fuel efficiencies. Gasoline and diesel use associated with the Bridge Replacement Alternatives in 2015 yields a daily use estimate of 215,271 gallons and 167,235 gallons, respectively. In 2030, the daily use estimate of gasoline and diesel yields 237,974 gallons and 224,647 gallons, respectively. Overall daily VMT and energy use associated with operation of the Bridge Replacement Alternatives would decrease compared to the No Action/ Rehabilitation Alternative. The decrease in energy use is due to the associated decrease in VMT resulting from the redistribution of traffic as motorists modify their travel paths to take advantage of the congestion-relief benefits of these alternatives (see Section 2.1.5 [Traffic and Circulation]).

Total daily VMT in 2015 and 2030 would decrease by 11,503 and 17,717 miles traveled, respectively. This corresponds to a reduction of total daily energy use in 2015 and 2030 of 996 and 1,683 gallons of fuel, respectively.

The Bridge Replacement Alternatives are expected to result in a net daily decrease in energy use. Fossil fuels will continue to have future value to the region and residents of the state. Although the estimated energy savings associated with these alternatives may be considered minor, the reduced energy use would have a beneficial affect on energy supplies.

2.2.7.4 Avoidance, Minimization and/or Mitigation Measures

No measures are required.