

# D.13 Traffic and Circulation

## D.13.1 Environmental Setting for the Proposed Project

### D.13.1.1 Roadway and Intersection Classification

Circulation conditions are often described in terms of levels of service (LOS). LOS is a means of describing the existing amount of traffic on a roadway versus the design capacity of the roadway. The design capacity of a roadway is defined as the maximum rate of vehicle travel (e.g., vehicles per hour) that can reasonably be expected along a section of roadway. Capacity is dependent on a number of variables including road classification and number of lanes, road condition, terrain, weather and driver characteristics. LOS is generally a function of the ratio of traffic volume (V) to the capacity (C) of the roadway or intersection. The LOS rating uses qualitative measures that characterize operational conditions within a traffic stream and their perception by motorists. These measures include freedom of movement, speed and travel time, traffic interruptions, types of vehicle, comfort, and convenience.

Trucks and other large or heavy vehicles (e.g., wider than normal vehicles, slower moving tractors) impact LOS by occupying more roadway space and by having poorer operating qualities than passenger cars. Because heavy vehicles accelerate more slowly than passenger cars, gaps form in traffic flows that affect the efficiency of the roadway. Also, intersections present a number of variables that can influence LOS, including curb parking, transit buses, turn lanes, signal spacing, pedestrians, and signal timing.

The Highway Capacity Manual (HCM) (TRB, 1994 and 2000) is widely used in traffic studies for predicting LOS for a range of roadways and intersections. The HCM established LOS classification depending on roadway volume to capacity (V/C) ratios for different types of roadways and for intersections; these are given in Table D.13-1. The LOS of a roadway is described using a scale ranging from A to F, with A indicating excellent traffic flow quality and F indicating stop-and-go traffic. Level E is normally associated with the maximum design capacity that a roadway or intersection can accommodate. LOS A, B, and C are generally considered satisfactory. LOS D is considered tolerable in urban areas during peak hours due to the high cost of improving roadways to LOS C.

For divided highways, the LOS classifications are based on the vehicle density, which is a measure that quantifies the proximity of vehicles to each other within the traffic stream and indicates the degree of maneuverability within the traffic stream (TRB, 1994).

In addition to traffic volumes, a number of roadway conditions and intersection details influence LOS. Determining a roadway's potential to present a traffic flow problem is a time-consuming process; therefore, a screening approach is often utilized. The screening approach involves comparing the roadway class with a traffic volume level for each LOS. The screening levels are developed by making generic assumptions for the data input in the Highway Capacity Manual calculations. The screening approach, however, is used for roadways and not for intersections.

Table D.13-2 shows the screening levels in terms of average daily traffic (ADT) for classification of roadway LOS as adopted by San Diego County and the San Diego Association of Governments (SANDAG) (SANTEC/ITE, 2000). The roadway capacities listed in Table D.13-2 are "rule of thumb" values. Some factors that affect these capacities are intersections (quantity and configuration), degrees of access control, roadway grades, design geometries (horizontal and vertical alignment standards), sight distance, level of truck and bus traffic, and level of pedestrian and bicycle traffic.

Table D.13-1. LOS vs. Volume to Capacity Ratios for Different Types of Roadways

LOS	Traffic Conditions	V/C Ratio			
		Multi-Lane Freeways <sup>1</sup>	2-Lane Highways <sup>2</sup>	Arterials	Intersections
A	Free-flow conditions with unimpeded maneuverability. Stopped delay at signalized intersections is minimal.	0.30	0.15-0.26	0.00-0.60	<0.60
B	In the range of stable flow, but the presence of other users in the traffic streams begins to be noticeable.	0.50	0.27-0.42	0.61-0.70	0.60-0.69
C	In the range of stable flow, but marks beginning of the flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream.	0.71	0.43-0.63	0.71-0.80	0.70-0.79
D	High-density but stable flow. Speed and freedom to maneuver are severely restricted, and the driver experiences poor level of comfort.	0.89	0.64-0.99	0.81-0.90	0.80-0.89
E	Near capacity. Operations with significant delays and low average speeds.	1.00	1.00 and over	0.91-1.00	0.90-0.99
F	Forced or breakdown flow. Operations with extremely low speeds, high delay.	—	—	>1.00	1.00 and over

Sources: TRB, 1994; and Caltrans, 2002.

<sup>1</sup> V/C for 65 mph vehicle speed.

<sup>2</sup> V/C for level terrain, when passing is allowed.

Table D.13-2. LOS Classification of Roads Depending on Road Classification and Daily Traffic Volumes

Roadway Class	Number of Lanes	LOS Classes vs. ADT				
		A	B	C	D	E
Expressway	6	30,000	42,000	60,000	70,000	80,000
Prime Arterial	6	25,000	35,000	50,000	55,000	60,000
Major Arterial	6	20,000	28,000	40,000	45,000	50,000
Major Arterial	4	15,000	21,000	30,000	35,000	40,000
Secondary Arterial	4	10,000	14,000	20,000	25,000	30,000
Collector, no center lane	4	5,000	7,000	—	13,000	15,000
	2	—	—	10,000	—	—
Collector, no fronting property	2	4,000	5,500	7,500	9,000	10,000
Collector, commercial-industrial fronting	2	2,500	3,500	5,000	6,500	8,000
Collector, multi-family	2	2,500	3,500	5,000	6,500	8,000
Sum-Collector, single family	2	—	—	2,000	—	—

Source: SANTEC/ITE, 2000.

### D.13.1.2 Existing Conditions

The SONGS site is located within the boundaries of the MCBCP, under an easement granted by the U.S. government. Interstate Highway 5 (I-5) bisects the facility, and provides the main access to the facility. The SONGS' Owner Controlled Area (OCA) can be entered through either the North or South OCA Gate. These secured gates prevent public traffic from entering the OCA. Both OCA Gates can be accessed from I-5 from the Basilone Road exit and by traveling south on Old Highway 101. The roadways that would be used for transport of the RSGs are shown in Figures B-1 and D.13-1.

State recreational areas and a wetland preserve are within one-half mile of SONGS, including the San Onofre Bluffs Campground, San Mateo Campground, Trestles Beach, San Onofre Surf Beach, and the San Mateo Wetlands Natural Preserve. San Onofre State Beach features three miles of campsites situated on Old Highway 101.

Figure D.13-1. Project Area Roadway System  
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**MCBCP Roadways.** The roads within MCBCP that would be affected by RSG transport are not public; they are operated and maintained by MCBCP. The general public is excluded from most portions of the transport routes on MCBCP because public access prohibited on most of the base. The County of San Diego does not collect traffic data on the roads within MCBCP (Cox, 2005). Traffic volumes on the roads within MCBCP depend on the changeable operations of MCBCP and not on general population trends in the area. Therefore, current traffic data or predictions of future traffic within the base are not available.

**Old Highway 101.** In the vicinity of SONGS, Old Highway 101 is a two-lane roadway parallel to and west of I-5. It is no longer an active highway but is used for camping and access to San Onofre State Beach. Within MCBCP, Old Highway 101 is not open to the public or motor vehicles, except that between Las Pulgas Road and San Clemente there is a bicycle route that is accessible to the general public via Las Pulgas Road. The public vehicle-accessible portion of Old Highway 101 stretches from the State Beach entrance less than one-half mile south of SONGS to the north and the boundary with Orange County. This portion of Old Highway 101 provides access to the recreational areas near SONGS. In the State Beach, a three-mile section is used for the campground. Traffic on Old Highway 101 in the vicinity of SONGS is mostly related to SONGS operations and the recreational areas. The County of San Diego does not collect traffic data on Old Highway 101, but consultation with Caltrans indicates that traffic on Old Highway 101 is quite limited and this road probably operates at LOS A (Cox, 2005).

**Interstate Highway 5 (I-5).** In the vicinity of SONGS, I-5 runs in a general north-south direction and has 8 lanes, 4 in each direction. Estimated future traffic conditions for 2009, the first year of anticipated RSG transport, and assumptions are discussed below. Current and future traffic conditions on I-5 in the vicinity of SONGS are given in Table D.13-3.

Table D.13-3. Current and Future Traffic Conditions on I-5 in the Vicinity of SONGS

Location on I-5	Current Traffic Conditions				Future Traffic Conditions (2009)			
	Peak Hour	Peak Month ADT	Off-Peak ADT	LOS Peak Hr, Off-Peak	Peak Hour	Peak Month ADT	Off-Peak ADT	LOS Peak Hr, Off-Peak
Oceanside, Jct. Rte. 78 East, Vista Way	15,200	221,000	206,000	D, C	16,522	240,226	223,921	D, C
Oceanside, Cassidy St.	14,900	216,000	202,000	D, C	16,196	234,791	219,573	D, C
Oceanside, California St.	14,700	213,000	199,000	D, C	15,979	231,530	216,312	D, C
Oceanside, Oceanside Blvd.	14,000	202,000	189,000	D, C	15,218	219,573	205,442	D, C
Oceanside, Mission Ave.	12,300	179,000	167,000	C, B	13,370	194,572	181,528	C, B
Oceanside, Jct. Rte. 76, Hills St.	12,600	183,000	171,000	C, B	13,696	198,920	185,876	D, B
Camp Pendleton; Harbor Dr.	11,600	174,000	157,000	C, B	12,609	189,137	170,658	C, B
Las Pulgas Rd.	10,600	160,000	144,000	C, B	11,522	173,919	156,527	C, B
Basilone Rd. Interchange	10,500	159,000	143,000	C, B	11,413	172,832	155,440	C, B
SD-Orange Co Line at Christianitos Rd.	10,500	159,000	143,000	C, B	11,413	172,832	155,440	C, B
San Clemente, Avenida Califia	12,000	164,000	150,000	C, B	13,044	178,267	163,049	C, B
San Clemente, El Camino Real	11,700	167,000	158,000	C, B	12,718	181,528	171,745	C, B
San Clemente, Avenida Presidio	11,800	167,000	158,000	C, B	12,827	181,528	171,745	C, B
San Clemente, Avenida Palizada	13,400	189,000	179,000	C, B	14,566	205,442	194,572	D, C
San Clemente, Avenida Pico	15,300	216,000	196,000	D, C	16,631	234,791	213,051	D, C

Source: Caltrans, 2003a.

Notes: ADT = Average Daily Traffic, LOS = level of service. LOS and Peak LOS values are calculated using Highway Capacity Manual method. Off-peak LOS is calculated using 5% of off-peak daily traffic values.

Portions of I-5 in the vicinity of SONGS that could be affected by the project currently operate at LOS B and C during peak hours. The sections of I-5 with the heaviest traffic in the area are in the southern part of Oceanside and the northern part of San Clemente, where the highway operates at LOS D during peak hours. These portions of I-5 could operate at LOS E in 2009 (see Table D.13-3).

The non-summer weekday traffic volumes on I-5 are consistently lower than summer weekday and weekend volumes due to the fact that San Onofre State Beach and other recreational areas are tourist attractions. Between 7 to 11 percent more vehicle trips occur during the peak summer months (Caltrans, 2003a).

Conditions on I-5 ramps in the vicinity of SONGS are given in Table D.13-4. The Basilone Road exit would be used by project-related personnel to access the SONGS site. The Vandergrift Drive and Las Pulgas Road exits would be used by workers assisting transport of the RSGs through MCBCP. Christianitos Road could be used by project-related personnel to access lodging in San Clemente, and the Mission Road and Oceanside Boulevard exits could be used to access lodging in Oceanside. Future traffic conditions on I-5 exit ramps within MCBCP were estimated using a conservative 1 percent annual growth rate, and an annual growth rate of 1.4 percent was assumed within San Clemente and Oceanside.

The County of San Diego does not collect traffic data on Basilone Road, Las Pulgas Road, or Vandergrift Drive (Cox, 2005), Caltrans however has traffic counts for the on- and off-ramps for these roads at the interchanges with I-5 (shown in Table D.13-4). Traffic estimates are based on the Caltrans traffic counts at the I-5 interchange ramps.

**Table D.13-4. Current and Future Traffic Conditions on I-5 Ramps in the Vicinity of SONGS**

	2002 Data				2009 Estimates			
	NB off I-5	NB on I-5	SB off I-5	SB on I-5	NB off I-5	NB on I-5	SB off I-5	SB on I-5
Interstate 5 Exit								
Oceanside Blvd.	13,000	6,500	5,700	12,100	14,329	7,164	6,283	13,337
Mission Ave.	11,400	2,850	5,100	4,750	12,417	3,104	5,555	5,174
Rte. 76/Hill St.	9,900	13,700	3,050	10,300	10,783	14,922	3,322	11,219
Vandergrift Blvd.	1,650	3,550	3,950	9,400	1,769	3,806	4,235	10,078
Las Pulgas Rd.	2,950	610	620	2,550	3,163	654	665	2,734
Basilone Rd.	4,250	3,350	3,450	4,100	4,557	3,592	3,699	4,396
Christianitos Rd.	3,650	1,550	1,400	3,350	4,023	1,708	1,543	3,692

Source: Caltrans, 2003b.

Note: NB = north-bound; SB = south-bound. "NB off I-5" = for traffic traveling north on I-5 exists I-5 at the specified ramp; "NB on I-5" = for traffic entering I-5 at the specified ramp and traveling north on I-5. The same abbreviations are true for south bound traffic.

### D.13.1.3 Traffic Related to SONGS Operations

SONGS employees and service vehicles use the Basilone Road exit and North OCA gate. The South OCA gate is mostly used as an alternative evacuation route.

SONGS employs 1,950 permanent workers that work in three shifts. Typical non-outage traffic in and out of the facility may involve as many as 600 vehicles per day for a total of 1,200 one-way trips. During scheduled refueling outages (RFOs), another 1,000 workers per day work at SONGS also on a three-shift basis. A portion of the RFO workforce is housed within SONGS; however, a portion of these workers live offsite, mainly in Oceanside or San Clemente temporary lodging (e.g., hotels). Because some of the workers reside onsite and others carpool, an additional 400 to 500 vehicles per day (for a total of up to 1,000 additional

one-way trips) may access the facility during RFOs. Other traffic related to SONGS operations is from approximately 30 or less annual shipments of waste to offsite treatment or disposal facilities. On average, this equates to no more than two or three shipments per month.

#### D.13.1.4 Future Conditions

The anticipated future conditions of the roadways are described here because the Proposed Project would not take place immediately, and steam generator replacement activities would not begin to peak until 2009.

Future conditions of the roadways are important in understanding the potential impacts of the proposed project. However, these projections are difficult to assess because they are influenced by a number of factors. The U.S. Census Bureau estimates annual population growth in San Diego County at 1.2 to 1.4 percent per year based on the years 1990-2003 (U.S. Census Bureau, 2004a and 2004b). Various sources predict the growth of population in San Diego County at between 1.2 and 1.6 percent per year (San Diego Regional Economic Development Corporation, 2000; SANDAG, 2003). Based on these predictions, a conservative estimate of 1.4 percent per year is used in this traffic analysis.

Future traffic conditions for I-5 exit ramps within MCBCP are not directly related to the general population growth, but rather depend on SONGS employment levels and MCBCP operations, both of which are independent of general population growth. Visits to local recreational areas, however, would be a function of population growth. Using a combination of these factors, an estimated growth of 1 percent per year was used in prediction of future conditions at the I-5 exit ramps in the project area. Future traffic conditions on I-5 and its ramps are reflected in Tables D.13-3 and D.13-4 above.

#### D.13.1.5 Rail Facilities

A main line for the San Diego Northern Railroad runs through MCBCP and SONGS parallel to I-5. The railway carries both passenger and freight traffic. There are two to three Amtrak trains per day in each direction, twelve Metrolink trains on weekdays, and seven regularly scheduled freight trains per day. In addition, there may be other scheduled freight trains on the line during peak demand periods.

#### D.13.1.6 Proposed Roadway Projects

According to Caltrans there are several projects proposed that would affect I-5, but all would be far from the project site. No projects are planned or under development for I-5 in the immediate vicinity of SONGS in northern San Diego County (Caltrans, 2004).

According to SANDAG, an I-5 widening project south of Vandergrift Boulevard and an interchange with Highway 76 will start by the end of 2007. This work is planned to be completed in 2015. Currently environmental review is in progress for this project. In conjunction with this project, construction of noise barriers along I-5 in Oceanside is planned to start at the end of 2006 (SANDAG, 2004).

Road projects within MCBCP would be localized and not large in scale. Because they would not affect public roads, they are not discussed further.

## D.13.2 Applicable Regulations, Plans, and Standards

Transportation system requirements relevant to the Proposed Project are derived from policies and plans of San Diego County and Caltrans. Proposed Project activities could temporarily affect access, traffic flow, and parking on public streets within unincorporated San Diego County, San Onofre State Beach, and one of the roads that access MCBCP. The Applicant and/or the construction contractor would need to obtain encroachment permits or similar legal agreements from these agencies before commencing project activities. Such permits are needed where project activities could require the use of the public right-of-way. For the Proposed Project or any of the alternatives, these closure or encroachment permits would likely be issued by San Diego County, the California Department of Parks and Recreation, or Caltrans.

### Federal and State Standards

Caltrans operates and maintains the State highway system, including I-5, which provides the main vehicle access to the project area. Maximum load limits for trucks and safety requirements for oversized vehicles are generally regulated by Caltrans for operation on the highways. Because the Proposed Project would encroach upon traveled lanes of a State highway (i.e., I-5), Caltrans would be responsible for issuing permits to allow such activities.

Caltrans endeavors to maintain a target LOS at the transition between LOS C and D for State facilities. The Caltrans guidelines indicate that if a State facility operates at better than the target LOS, then the existing measures of effectiveness should be maintained.

### Local Ordinances and Policies

San Diego County regulates vehicle weight and speed limits, safety, parking and other traffic issues through Traffic Guidelines (2001), and traffic from new projects is governed by Public Road Standards (San Diego County, 1999).

SANDAG has developed a Congestion Management Plan (CMP) (SANDAG, 2003). The purpose of the CMP is to monitor the performance of the San Diego region's transportation system, develop programs to address short- and long-term congestion, and better integrate transportation and land use planning. LOS standards for roadways, intersection, and freeways are provided in the CMP. According to the CMP, the region-wide goal and minimum acceptable LOS is generally D for all facilities. Per the CMP, if the existing LOS is D or worse, then existing LOS must be maintained or mitigation must be identified.

## D.13.3 Environmental Impacts and Mitigation Measures for the Proposed Project

### D.13.3.1 Definition and Use of Significance Criteria

Based on the CEQA Guidelines adopted by SANDAG, Caltrans Guidelines, and consultation with the County and Caltrans officials (Hurst, 2005; Goralka, 2004), transportation and circulation impacts from the Proposed Project would be considered significant if they:

- Cause a substantial increase in traffic in relation to the existing load and capacity of the street system.
- Cause an exceedance, either individually or cumulatively, of LOS standard established by the county congestion management agency (SANDAG) or Caltrans for designated roads or highways. For I-5 threshold is LOS C.
- Substantially increase hazards because of a design feature or incompatible uses.
- Result in inadequate emergency access (police, fire trucks, ambulances, etc.).
- Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnarounds).
- Increase roadway wear in the project vicinity occurs as a result of heavy truck or construction equipment movements or trenching operations, resulting in noticeable deterioration of pavement or roadway surfaces.

### Applicant-Proposed Mitigation

SCE has proposed to include the following measures as part of the Proposed Project in order to control avoid traffic delays caused by the project on I-5 (SCE, 2004b):

- **Traffic-1:** Submission and approval of a detailed traffic control plan indicating required lane closures, hours of operation, appropriate signage and warning devices, and required work areas will be required by Caltrans for transport of equipment.
- **Traffic-2:** Trained vehicle operators to ensure the safe operations of equipment transport vehicles or vehicles associated with the equipment transportation.
- **Traffic-3:** Necessary cones, barricades, signs, and additional warning devices as specified by the traffic control plan.
- **Traffic-4:** Trained flaggers and other workers to direct traffic around the equipment transport vehicles, and necessary communication equipment, signs, signals, safety vests, and hard hats.
- **Traffic-5:** Inland Transport Options may require detours.

### D.13.3.2 Replacement Steam Generator Transport

#### Impact T-1: Transport of RSGs would result in public road closures and cause traffic delays

Potential transportation impacts for offloading and transport along the proposed Beach and Road Route would be due to additional daily project worker vehicle trips on public roads (e.g., transport support personnel, service vehicles, etc.) and due to the transporter and convoy trips on the proposed route.

There would be 60 to 70 personnel assisting the transport. These personnel could create up to 120 to 140 one-way trips daily. There would also be approximately 48 vehicles and various large pieces of equipment/machinery for supporting RSG transport. This equipment would either be delivered or driven to Del Mar Boat Basin, or to various portions on the proposed route as needed for RSG transport. Travel or delivery of these vehicles or equipment would create up to 96 one-way trips daily. However, equipment would also be delivered before RSG transport starts, and would either remain at the boat basin, or travel along the route as part of the transporter convoy. Several trips per day would be generated by vehicles carrying chemical toilets, lubricants, fuel, drinking water and spill prevention materials. In total, the RSG transport phase would generate approximately 200 one-way trips per day, which would affect I-5, Old High-

way 101, Basilone Road, Las Pulgas Road, and Vandergrift Boulevard. These roads currently operate, and will operate in 2009, at an acceptable LOS. The addition of 200 one-way trips per day is considered a less than significant impact (Class III).

RSG transport would also entail a maximum of seven one-way transporter trips between Del Mar Boat Basin at Camp Pendleton and the SONGS site, with each trip taking eight to 12 days. The transporter and transport support/service vehicles would travel mostly on the beach, paved, and dirt roads within MCBCP where the public is not normally allowed. Roads along the Beach and Road Route that can be accessed by the public are the northern three-mile portion of Old Highway 101 and approximately 0.2 miles of I-5 where it the route would cross Skull Canyon.

Transporter access to and from the southbound lanes of I-5 would require removing fences and building temporary transitions, which would be removed following transit. All southbound lanes of I-5 would be closed for approximately one hour during each transporter passage. There would be a maximum of seven closures to accommodate seven one-way transporter trips.

Transport on I-5 would be accomplished with assistance from Caltrans, the California Highway Patrol, and implementation of appropriate traffic control measures, including Applicant-Proposed Measures identified above (SCE, 2004b). Transport would take place sometime between October and February, which is off-peak season for the recreational areas that are accessed through Old Highway 101. The Applicant proposes to conduct transport on I-5 during non-peak hours, as directed by Caltrans, to reduce traffic delays. Non-peak hours are generally expected to be at night; however, specific hours would be determined at a later time in coordination with, and at the direction of Caltrans and could include transport at any time during the day.

In the project area during off-peak time, I-5 will operate at LOS B or C in 2009, as shown in Table D.13-3. Old Highway 101 also operates at an acceptable LOS. Caltrans indicates that coordinated temporary off-peak time closures of I-5 in this area would not present traffic delay problems (Hurst, 2005). The Applicant-Proposed Measures include a detailed traffic control plan that must be developed with Caltrans' assistance and approved by Caltrans. Given that the closures would be coordinated with Caltrans and that the appropriate traffic control measures would be implemented, impacts due to temporary closures of I-5 and Old Highway 101 would be considered less than significant (Class III).

It is not anticipated that the transporter would damage I-5 road surfaces. However, if this occurs, repairs would be scheduled as per the encroachment permit that the Applicant would be required to obtain from Caltrans. All changes that would be done to the I-5 road surfaces, fencing, road separators, shoulders, etc., would also be repaired as required by the encroachment permits. Thus, impacts due to road damage would be less than significant (Class III).

Closure of all southbound I-5 lanes would temporarily restrict passage of emergency vehicles (ambulances, border patrol, fire trucks, etc.) between Orange and San Diego Counties in a southerly direction for an hour. This disruption could lead to adverse impacts to public services (described in Section D.10, Public Services and Utilities), and it would be necessary to preserving adequate public services by implementing Mitigation Measure U-2a (maintain adequate emergency vehicle access). Restriction of emergency vehicle passage would also constitute a potentially significant traffic impact. However, this impact could be reduced to a less than significant level (Class II) with implementation of Mitigation Measure T-1a below.

***Mitigation Measure for Impact T-1, Transport of RSGs would result in public road closures and cause traffic delays***

**T-1a Provide emergency vehicle access.** SCE shall provide the traffic control plan to CPUC, Caltrans, and the California Highway Patrol for review and approval, and the plan shall have provisions for either: (1) uninterrupted emergency vehicle passage on Interstate Highway 5 during highway closures caused by transport activities; or (2) alternative arrangements for emergency response to assure uninterrupted emergency service.

### D.13.3.3 Staging and Preparation

**Impact T-2: Staging and preparation activities would result in increased traffic on public roads**

Staging and preparation activities would involve an additional 1,000 workers entering the SONGS site every day in addition to the permanent 1,950 facility employees. The Applicant anticipates that this phase of the project would occur during a non-outage period, and that there would be two shifts staggered over three periods, resulting in six vehicular shifts each day. A portion of the project workers would arrive in vehicles with occupancy of one to two persons, the other portion of the workers would arrive via carpool or vanpool. Based on these assumptions, the Applicant anticipates about 200 vehicles accessing the SONGS site for each shift change. Construction materials and machinery to support steam generator replacement would be delivered during this project phase. However, these deliveries would be done outside of shift changes. An additional 200 vehicles per shift and deliveries of materials and equipment during the non-outage period are anticipated to create a less than significant transportation impact (Class III).

### D.13.3.4 Original Steam Generator Removal, Staging, and Disposal

**Impact T-3: OSG removal and staging activities would result in increased traffic on public roads**

OSG removal, staging and disposal would involve 1,000 project-related workers entering the SONGS site every day in addition to the permanent 1,950 facility employees and the 1,000 RFO employees. The Applicant proposes that there would be two shifts staggered over three periods, resulting in six vehicular shifts each day. Parking and traffic control at the site would be provided by SCE. During the combined RFO and OSG removal activities, the workforce required at SONGS 2 & 3 would cause up to 1,000 workers accessing the site during peak times.

A portion of the project workers would arrive in vehicles with occupancy of one to two persons, the other portion of the workers would arrive via carpool or vanpool. Based on these assumptions, the Applicant anticipates an additional 200 vehicles accessing the SONGS site for each shift change, resulting in 400 one-way trips per hour during shift changes. Construction materials and machinery to support steam generator replacement would be delivered during this project phase. However, these deliveries would be done outside of shift changes.

During shift changes, vehicle queues may develop before or at the security checkpoints on Old Highway 101 and associated vehicle delays may result; however, impacts on roadway operations on Old Highway 101 should not be significant because currently this road operates as an estimated LOS A, and this phase of the project would likely occur during non-peak summer periods, outside of the main tourist season.

Table D.13-5 shows the effect of OSG removal activities on I-5 peak and off-peak LOS. An additional 200 vehicles per shift and deliveries of materials and equipment during RFO period would cause a change of LOS from C to D or from D to E during peak hours on four segments of I-5. No LOS changes would occur if shift changes occur during off-peak hours. The potential deterioration of peak-hour LOS would be a significant impact that could be avoided with additional mitigation. By staggering shift changes outside the peak hours, project traffic would cause a less than significant transportation impact to I-5 (Class II).

***Mitigation Measure for Impact T-3, OSG removal and staging activities would result in increased traffic on public roads***

**T-3a Schedule SONGS shift changes outside of peak hours.** SCE shall provide the traffic control plan to CPUC, Caltrans, and the California Highway Patrol for review and approval, and the plan shall have provisions for SONGS shift changes outside of peak hours, from 4:30 p.m. to 6:30 p.m.

**Impact T-4: Transport of OSGs by rail could produce rail traffic delays**

After removal from containment and packaging for safe shipment, the OSGs would be transported offsite via rail. The Applicant proposes to make arrangements with the railroad operators and owners as discussed in the Project Description (Section B). Through the proposed coordination with railroad operators, potential impacts to railroad traffic are expected to be less than significant (Class III).

### D.13.3.5 Steam Generator Installation and Return to Service

**Impact T-5: Steam generator installation activities could produce traffic delays**

Transportation impacts during activities for steam generator installation would be similar to those during the OSG removal. However, in addition to the RFO traffic and project-related traffic, a considerable number of material delivery trucks can be anticipated. These materials would be for restoration of the removed section of the containment dome, and would include one-time deliveries of cement for the batch concrete plant that would be maintained onsite. It is estimated that if deliveries of materials result in 80 or more one-way trips per hour, then the LOS of the I-5 section between Las Pulgas and Basilone Roads exits would change from C to D during peak hour, which would constitute a potentially significant impact.

Implementation of Mitigation Measure T-3a is recommended for this phase of work and, additionally, implementation of Mitigation Measure T-5a below would further reduce this impact to a less than significant level (Class II).

***Mitigation Measure for Impact T-5, Steam generator installation activities could produce traffic delays***

**T-5a Schedule material deliveries outside of peak hours.** SCE shall provide the traffic control plan to CPUC, Caltrans, and the California Highway Patrol for review and approval, and the plan shall have provisions for avoiding peak hour traffic if materials or equipment deliveries and any other service trips need to occur at a total rate of 80 or more trips per hour.

**Table D.13-5. Current, Future, and Project Traffic Conditions on I-5 in the Vicinity of SONGS**

Location on I-5	Current Traffic Conditions				Future Traffic Conditions (2009)				Project Traffic* Per Hr	Future Traffic Conditions w/Project			
	Peak Hour	Peak Month ADT	Off-Peak ADT	LOS Peak Hr, Off-Peak	Peak Hour	Peak Month ADT	Off-Peak ADT	LOS Peak Hr, Off-Peak		Peak Hour	Peak Month ADT	Off-Peak ADT	LOS Peak Hr, Off-Peak
Oceanside, Jct. Rte. 78 East, Vista Way	15,200	221,000	206,000	D, C	16,522	240,226	223,921	D, C	400	16,922	242,226	225,921	E, C
Oceanside, Cassidy St.	14,900	216,000	202,000	D, C	16,196	234,791	219,573	D, C	400	16,596	236,791	221,573	D, C
Oceanside, California St.	14,700	213,000	199,000	D, C	15,979	231,530	216,312	D, C	400	16,379	233,530	218,312	D, C
Oceanside, Oceanside Blvd.	14,000	202,000	189,000	D, C	15,218	219,573	205,442	D, C	400	15,618	221,573	207,442	D, C
Oceanside, Mission Ave.	12,300	179,000	167,000	C, B	13,370	194,572	181,528	C, B	400	13,770	196,572	183,528	D, C
Oceanside, Jct. Rte. 76	12,600	183,000	171,000	C, B	13,696	198,920	185,876	D, B	400	14,096	200,920	187,876	D, C
Camp Pendleton; Harbor Dr.	11,600	174,000	157,000	C, B	12,609	189,137	170,658	C, B	400	13,009	191,137	172,658	C, B
Las Pulgas Rd.	10,600	160,000	144,000	C, B	11,522	173,919	156,527	C, B	400	11,922	175,919	158,527	C, B
Basilone Rd. Interchange	10,500	159,000	143,000	C, B	11,413	172,832	155,440	C, B	400	11,813	174,832	157,440	C, B
Camp Pendleton; Harbor Dr.*	11,600	174,000	157,000	C, B	12,609	189,137	170,658	C, B	480	13,089	191,137	172,658	C, B
Las Pulgas Rd.*	10,600	160,000	144,000	C, B	11,522	173,919	156,527	C, B	480	12,002	175,919	158,527	D, C
Basilone Rd. Interchange*	10,500	159,000	143,000	C, B	11,413	172,832	155,440	C, B	480	11,893	174,832	157,440	C, C
SD-Orange Co Line at Christianitos Rd.	10,500	159,000	143,000	C, B	11,413	172,832	155,440	C, B	400	11,813	174,832	157,440	C, B
San Clemente, Avenida Califia	12,000	164,000	150,000	C, B	13,044	178,267	163,049	C, B	400	13,444	180,267	165,049	D, B
San Clemente, El Camino Real	11,700	167,000	158,000	C, B	12,718	181,528	171,745	C, B	400	13,118	183,528	173,745	C, B
San Clemente, Avenida Presidio	11,800	167,000	158,000	C, B	12,827	181,528	171,745	C, B	400	13,227	183,528	173,745	C, B
San Clemente, Avenida Palizada	13,400	189,000	179,000	C, B	14,566	205,442	194,572	D, C	400	14,966	207,442	196,572	D, C
San Clemente, Avenida Pico	15,300	216,000	196,000	D, C	16,631	234,791	213,051	D, C	400	17,031	236,791	215,051	E, C
Dana Point, Camino Estrella	16,900	237,000	215,000	E, C	18,370	257,618	233,704	E, C	400	18,770	259,618	235,704	E, C
San Juan Capistrano, Jct. Rte. 1	16,800	235,000	213,000	E, C	18,262	255,444	231,530	E, C	400	18,662	257,444	233,530	E, C

Source: Caltrans, 2003b.

Notes: V/C = the volume to capacity ratio, capacity is based on roadway class with LOS of E; ADT = Average Daily Traffic.

LOS calculated using Highway Capacity Manual method.

Highlighted in bold font are LOS changes due to the project traffic.

\* Values are for project-related traffic of 480 peak hour one way trips.

Assumption: the project-related traffic would affect one lane (right lane) south and north of Basilone Road, as the project-related vehicles would be exiting or entering the highway using the slow lane.

## D.13.4 Environmental Impacts and Mitigation Measures for the Alternatives

### D.13.4.1 Transportation Route Alternatives

As with the proposed Beach and Road Route, each of the alternative transport routes would cross I-5 causing temporary closures. The Applicant-Proposed Measures, including a traffic control plan approved by Caltrans, would be implemented under the alternatives. Impact T-1 would remain under each alternative, and implementation of Mitigation Measure T-1a, along with Mitigation Measure U-2a (Maintain adequate emergency vehicle access) in Section D.10 (Public Services and Utilities), would be necessary to avoid a significant impact (Class II). Details of traffic and circulation impacts caused by each alternative route are provided below.

#### I-5/Old Highway 101 Route Alternative

The I-5/Old Highway 101 Route would involve similar numbers of transporter trips, numbers of employees, and types and numbers of support vehicles/equipment as would be used under the proposed Beach and Road Route, except the transporter would be especially configured for paved-road operation. This alternative route would involve closure of I-5 in several places, and the closures would be longer, as described below. Transport on Old Highway 101 would be identical to that under the proposed Beach and Road Route.

Transporter access to the southbound lanes of I-5 may require installation of a temporary on-ramp (see Figure C-1b, Section C), which would be removed following transit. The anticipated construction may include an approximately 220-foot-by-50-foot asphalt pathway that would be placed over a compacted road base.

The transporter would travel 2.1 miles northbound in the southbound lanes of I-5 (Segment M), at a speed not exceeding 10 mph. The southbound lanes of I-5 would likely be closed for about two hours. To maintain the structural integrity of the I-5 bridge over the Santa Margarita River, RSG transporter load would be spread over up to four traffic lanes. No other vehicular traffic in the southbound lanes of I-5 would be possible.

The transporter would avoid passing under the Cockleburr and Cook Road overpasses on I-5 (Segment N) because of the insufficient overpass heights. This would necessitate crossing the highway with the transporter from the southbound lanes to the northbound lanes on I-5, which would require full closure of I-5. Crossing the San Diego Northern Railroad tracks would also require temporary closure of the railroad.

Directly east of the Camp Pendleton Navy Landing Craft Assault Center facility (Segment Q), the transporter would return over the San Diego Northern Railroad tracks and across the northbound lanes of I-5 to the southbound lanes. This again would require full closure of the railroad and I-5 as the transporter would cross the northbound lanes. Each of the railroad crossings would take less than one hour. The Applicant proposes to coordinate the project with the railroad operators to avoid disruption of rail traffic.

Near the Camp Pendleton Uniform Training Area and Las Flores Creek (Segment S) the transporter would travel 3.7 miles northbound in the southbound lanes of I-5. As with Segment M above, no other traffic would be possible in the southbound lanes of I-5. The southbound lanes of I-5 would likely be closed for about two hours.

Transporter access to various parts of I-5 would require demolition and removal of parts of the highway appurtenances (e.g., dividers, railing, fences). All removed parts would need to be restored following transporter transit, and all road damage would need to be repaired. These commitments would be enforced through Caltrans' oversight of the transport.

As with the proposed Beach and Road Route, RSG transport via this alternative route would cause a less than significant impact on transportation because the closures would be temporary and the closures would be coordinated with Caltrans (Class III).

As with the Proposed Project, because temporary closures of I-5 would constrain access of emergency vehicles, Impact T-1 would be potentially significant, and implementation of Mitigation Measures U-2a (from Section D.10) and T-1a would be necessary to reduce the impact to a less than significant level (Class II).

### MCBCP Inland Route Alternative

The MCBCP Inland Route would involve impacts similar to those described for the Proposed Project. This alternative would also require temporary closures of I-5, but only for brief times near the immigration checkpoint. All other transport activities would be confined to MCBCP, which would avoid many less than significant effects of Impact T-1. To ensure that access of emergency vehicles is not restricted during the I-5 closures implementation of Mitigation Measures U-2a (from Section D.10) and T-1a would be necessary to reduce Impact T-1 to a less than significant level (Class II).

## D.13.4.2 OSG Disposal Alternative

### OSG Onsite Storage Alternative

Storage of the OSGs onsite would have transportation impacts related to deliveries of equipment and materials to SONGS to construct the onsite storage facility. This would probably occur during the staging and preparation phase of activities or during OSG removal. Impacts T-2 and T-3 could be made slightly more severe by the OSG Storage Facility construction activities.

A batch concrete plant would likely need to be maintained onsite to manufacture concrete required for construction of the OSG Storage Facility. At this time, it is unknown how many additional employees would be required to support construction of the onsite storage structure. Material deliveries for the concrete foundation of the structure would cause impacts similar to Impact T-5. To avoid the potentially significant effects of traffic delays from worker traffic and material deliveries, Mitigation Measures T-3a and T-5a would need to be implemented. These measures would reduce potential transportation impacts of OSG Storage Facility construction to less than significant levels (Class II).

At present, it is unknown which location would be selected for the onsite OSGs storage structure: near the decommissioned Unit 1 or at the Mesa site. If the Mesa site is selected, the OSGs would be transported to the east side of I-5. It is unknown at this point, if the Basilone Road overpass can structurally support the OSG transporter, or if the I-5 underpass south of Basilone Road is wide and tall enough to allow passage of the OSG transporter. If due to the structural limitations, the OSGs transport would use I-5 and highway lanes would require closure. This would cause a potentially significant impact due to the emergency vehicle passage restrictions (Impact T-1), and implementation of Mitigation Measures T-1a and U-2a (identified in Section D.10) would be necessary (Class II). However, it is possible that the OSGs could be cut into smaller pieces that would allow conventional truck transport of the OSG pieces to the Mesa, thereby avoiding temporary closure of I-5.

## D.13.5 Environmental Impacts of the No Project Alternative

Existing traffic in the vicinity of SONGS on Old Highway 101, and to a lesser extent I-5, would be reduced under the No Project Alternative due to the shutdown of routine SONGS operations prior to the NRC license expiration dates. This would cause a beneficial impact to local roadway performance (Class IV).

The No Project Alternative would also involve construction of new generation and transmission facilities elsewhere. The exact location, technology, or design is not known at this time. However, this alternative is likely to have significant circulation impacts. Construction of the new facilities would occur over several years, and would involve a large number of construction personnel that would likely affect the roads in the area where the new facilities would be sited. Transmission and generation system enhancement options would not have substantial circulation impacts because there would be little, if any, new construction, and long-term operation of replacement facilities would not normally lead to permanently large increases in vehicle trips. Impacts associated with the construction and operation of new generation facilities would likely be significant in the absence of mitigation, but could likely be mitigated to a less than significant level because of the short-term duration of construction and limited size of operational workforces. Additional environmental review would be required with the siting and construction of new generation facilities.

## D.13.6 Mitigation Monitoring, Compliance, and Reporting Table

Table D.13-6 shows the mitigation monitoring, compliance, and reporting program for Traffic and Circulation.

**Table D.13-6. Mitigation Monitoring Program – Traffic and Circulation**

<b>IMPACT T-1</b>	<b>Transport of RSGs would result in public road closures and cause traffic delays (Class II)</b>
<b>MITIGATION MEASURE</b>	<b>T-1a: Provide emergency vehicle access.</b> SCE shall provide the traffic control plan to CPUC, Caltrans, and the California Highway Patrol for review and approval, and the plan shall have provisions for either (1) uninterrupted emergency vehicle passage on Interstate Highway 5 during highway closures caused by transport activities; or (2) alternative arrangements for emergency response to assure uninterrupted emergency service.
<b>Location</b>	Implementation of the measure would affect I-5. Monitoring shall occur on I-5 on the stretch where closures occur.
<b>Monitoring / Reporting Action</b>	Review and approval of the traffic control plan by CPUC, MCBCP, Caltrans, and the California Highway Patrol. Conduct site visits during the Project implementation to ensure compliance.
<b>Effectiveness Criteria</b>	If an emergency vehicle can pass through the closed section of I-5 during closure, the measure is effective.
<b>Responsible Agency</b>	CPUC, MCBCP, Caltrans, California Highway Patrol
<b>Timing</b>	Review before commencing RSG transport activities, conduct site visits during I-5 closures.
<b>IMPACT T-3</b>	<b>OSG removal and staging activities would result in increased traffic on public roads (Class II)</b>
<b>MITIGATION MEASURE</b>	<b>T-3a: Schedule SONGS shift changes outside of peak hours.</b> SCE shall provide the traffic control plan to CPUC, Caltrans, and the California Highway Patrol for review and approval, and the plan shall have provisions for SONGS shift changes outside of peak hours, from 4:30 p.m. to 6:30 p.m.
<b>Location</b>	Implementation of the measure would affect Interstate Highway 5 in SONGS vicinity. Monitoring shall occur at the SONGS access gate on Old Highway 101.
<b>Monitoring / Reporting Action</b>	Review and approval of the traffic control plan by CPUC, Caltrans, and the California Highway Patrol. Conduct site visits during the Project implementation to ensure compliance.
<b>Effectiveness Criteria</b>	If no project vehicles access the site during peak hours, the measure is effective.
<b>Responsible Agency</b>	CPUC, Caltrans, California Highway Patrol
<b>Timing</b>	Review the traffic control plan before commencing staging and preparation, conduct site visits during OSGs removal, staging, and disposal.
<b>IMPACT T-5</b>	<b>Steam generator installation activities could produce traffic delays (Class II)</b>
<b>MITIGATION MEASURE</b>	<b>T-5a: Schedule material deliveries outside of peak hours.</b> SCE shall provide the traffic control plan to CPUC, Caltrans, and the California Highway Patrol for review and approval, and the plan shall have provisions for avoiding peak hour traffic if materials or equipment deliveries and any other service trips need to occur at a total rate of 80 or more trips per hour.
<b>Location</b>	Implementation of the measure would affect Interstate Highway 5 in SONGS vicinity. Monitoring shall occur at the SONGS access gate on Old Highway 101.
<b>Monitoring / Reporting Action</b>	Review and approval of the traffic control plan by CPUC. Site visits during the Project implementation to ensure compliance.
<b>Effectiveness Criteria</b>	If fewer than 80 project-related heavy vehicles (trucks, concrete trucks, etc.) pass through the access gate during any peak hour, the measure is effective.
<b>Responsible Agency</b>	CPUC, Caltrans, California Highway Patrol
<b>Timing</b>	Review before steam generator installation activities, conduct site visits during Project implementation.

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