Chapter 3

California Environmental Quality Act (CEQA) Evaluation

SECTION 3
CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) EVALUATION

3.1 DETERMINING SIGNIFICANCE UNDER CEQA

The Gerald Desmond Bridge Replacement Project is a POLB project. The POLB is the lead CEQA agency. Upon completion of the proposed project, if one of the Bridge Replacement Alternatives is constructed, the improvements between the existing SR 710 and SR 47, including the bridge, will be transferred to Caltrans by easement following route adoption and execution of a freeway agreement. It is estimated that the transfer would be completed within 2 years after construction. Additionally, the Port has obtained federal funding from FHWA for the project, and the project is subject to state and federal environmental review requirements. Project documentation has been prepared in compliance with CEQA and NEPA. FHWA's responsibility for environmental review, consultation, and any other action required in accordance with NEPA and other applicable federal laws for this project is being, or has been, carried out by Caltrans under its assumption of responsibility pursuant to 23 U.S.C. 327.

One of the primary differences between NEPA and CEQA is the way significance is determined. Under NEPA, significance is used to determine whether an EIS or some lower level of documentation would be required. NEPA requires that an EIS be prepared when the proposed federal action (project) *as a whole* has the potential to "significantly affect the quality of the human environment." The determination of significance is based on context and intensity. In the case of this project, a decision was made by Caltrans that the proposed project, as a whole, would not have the potential to significantly affect the quality of the human environment; therefore, an EIS was not required. Instead of an EIS, an EA has been prepared to satisfy NEPA requirements.

Some impacts determined to be significant under CEQA may not be of sufficient magnitude to be determined significant under NEPA. Under NEPA, it is the magnitude of the impact that is evaluated, and no judgment of its individual significance is deemed important. NEPA does not require that a determination of significant impacts be stated in environmental documents.

CEQA, on the other hand, does require the lead agency to identify each "significant effect on the environment" resulting from the project and ways to mitigate each significant effect. If the project may have a significant effect on any environmental resource, and the effect cannot be mitigated to a less-than-significant level, then an EIR must be prepared. Each and every significant effect on the environment must be disclosed in the EIR and mitigated if feasible. In addition, the CEQA Guidelines list many mandatory findings of significance, which also require the preparation of an EIR. There are no types of actions under NEPA that parallel the findings of mandatory significance of CEQA. This chapter discusses the effects of this project in terms of CEQA significance.

3.2 DISCUSSION OF SIGNIFICANCE OF IMPACTS

Impacts of the proposed project are discussed in detail in Chapter 2, below in Section 3.3 (Climate Change), and determination of the impact significance, pursuant to CEQA, is declared within Sections 3.2.1 through 3.2.15 (see bullets). However, some topical areas require additional CEQA-specific discussion. Supplemental CEQA discussion is provided within the sections below to support the CEQA significance determinations where required. All topics discussed in Chapter 2 for which no avoidance, minimization, and/or mitigation measures were proposed were determined to be less than significant project effects pursuant to CEQA. All other project effects are either discussed as significant project effects or unavoidable and significant effects, depending on if the project effect is less than significant after mitigation measures are implemented.

Additionally, where applicable, to reduce redundancy within the effect determinations, project alternatives have been grouped where appropriate. When the Build Alternatives are referenced, this refers to all proposed build alternatives as discussed in Chapter 1 (North-side and South-side Alignment Alternatives and the Rehabilitation Alternative). When the Bridge Replacement Alternatives are referenced, this refers to both the North and South-side Alignment Alternatives. The No Project/Rehabilitation Alternative is referenced when the effects associated with the Rehabilitation Alternative would result in the same project effects as the No Project Alternative.

3.2.1 Aesthetics

3.2.1.1 Less than Significant Effects of the Proposed Project

- The Build Alternatives would have a less than significant effect on scenic vistas, scenic resources, and the visual character and quality of the site and its surroundings.
- The Build Alternatives would not substantially contrast with the surrounding industrialized setting of the Port and would not substantially degrade the visual quality or character of the site or surroundings. The Build Alternatives would have a less than significant effect on visual quality and character.
- The Build Alternatives would have a less than significant effect on the creation of new sources of light or glare that would adversely affect day or nighttime views in the area.
- The Bridge Replacement Alternatives would result in a beneficial change in aesthetics and visual resources, and the Rehabilitation Alternative would result in no change in aesthetics or visual resources. The proposed project contribution to cumulative impacts on aesthetics/visual resources is less than significant.

See Sections 2.1.7 (Visual and Aesthetics) and 2.4 (Cumulative Impacts) for more information.

3.2.1.2 Significant Environmental Effects of the Proposed Project

There are no significant environmental effects related to aesthetics associated with construction or operation of the Build Alternatives.

3.2.1.3 Unavoidable Significant Environmental Effects

There are no unavoidable significant environmental effects related to aesthetics associated with construction or operation of the Build Alternatives.

3.2.1.4 Mitigation Measures

No mitigation is required.

3.2.2 Air Quality

Air quality construction and operational impact analysis is provided in Section 2.2.5 (Air Quality). Specific analysis as related to CEQA is provided below.

CEQA Air Quality Significance Criteria: Construction and Operation Thresholds

According to the CEQA Guidelines, the environmental conditions in the vicinity of a project that exist at the time of the revised NOP of the environmental document would be considered the baseline conditions against which the impacts are evaluated; therefore, the CEQA Baseline is established as the year 2005, when the project's NOP was published. The CEQA impact analysis is based on a comparison between the pollutant emissions level changes from the project and alternatives from 2005 through the horizon year 2030.

Project-related air contaminant emissions would have a significant impact under CEQA if they resulted in emissions that either creates a violation of an NAAQS or CAAQS (see Table 2.2.5-1) or exceeds SCAQMD construction or operation thresholds, as shown in Table 3-1.

3.2.2.1 Less than Significant Effects of the Proposed Project

- The Build Alternatives are consistent with the 2008 RTP and have been included in the 2008 RTIP, which was developed in compliance with state and federal requirements. The proposed project implements all feasible measures from the SCAQMD 2007 AQMP; therefore, impacts on the implementation of the applicable air quality plans would be less than significant.
- Construction and operational emissions associated with the Rehabilitation Alternative would not create a violation of NAAQS or CAAQS or cause an exceedance of daily construction or operational emission thresholds set forth by the SCAQMD; thus, the Rehabilitation Alternative would not violate ambient air quality standards (CAAQS and NAAQS) or exceed SCAQMD daily construction or operational emission thresholds, and impacts would be less than significant.
- Construction and operation of the Build Alternative would not exceed CAAQS; therefore, they would not cause any hot-spot or localized impacts at sensitive receptor locations (see Section 2.2.5 and Tables 2.2.5-8, 2.2.5-11, 2.2.5-16, and 2.2.5-17).
- The Build Alternatives would not expose sensitive receptors to substantial pollutant concentration, and impacts would be less than significant as discussed below.

Table 3-1
SCAQMD Air Quality Significance Thresholds

Mass Daily Thresholds [a]		
Pollutant	**Maximum Emission (lbs/day)**	
	Construction	**Operation**
NO_X	100	55
VOC	75	55
PM_{10}	150	150
$PM_{2.5}$	55	55
SO_X	150	150
CO	550	550
Pb	3	3
TACs and Odor Thresholds		
TACs (including carcinogens and noncarcinogens)	Maximum Incremental Cancer Risk ≥ 10 in 1 million Hazard Index ≥ 1.0 (project increment)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
Ambient Air Quality for Criteria Pollutants [b]		
NO_2 1-hour average annual average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (338 μg/m^3) – state 0.030 ppm (56 μg/m^3) – state	
PM_{10} 24-hour average annual geometric average annual arithmetic mean	 10.4 μg/m^3 (construction)[c] & 2.5 μg/m^3 (operation) 1.0 μg/m^3 20 μg/m^3	
$PM_{2.5}$ 24-hour average	 10.4 μg/m^3 (construction)[c] & 2.5 μg/m^3 (operation)	
Sulfate 24-hour average	 25 μg/m^3	
CO 1-hour average 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) 9.0 ppm (state/federal)	

Keys: lbs/day – pounds per day; ppm – parts per million; μg/m3 – microgram per cubic meter; ≥ greater than or equal to

[a] Based on SCAQMD CEQA Handbook (SCAQMD, 1993)

[b] Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated.

[c] Ambient air quality threshold based on SCAQMD Rule 403.

Source: SCAQMD, 2007.

The analysis of health risks associated with the proposed project is provided in Section 2.2.5. The HRA determined the incremental increase in health effects values associated with the proposed project by estimating the net change in impacts between the proposed project and CEQA baseline conditions. For the CEQA baseline scenario, activity levels in the baseline year of 2005 were held constant over the entire 70-year analysis period.

Table 2.2.5-22 shows that the CEQA increment for all of the analyzed health risk values are negative, which indicates that the risk from TACs is decreasing over time; therefore, this impact would be less than significant under CEQA.

None of the Build Alternatives would result in a hazard index or cancer burden that would exceed SCAQMD significance thresholds (see Section 2.2.5 and Table 2.2.5-22).

Additionally, none of the Build Alternatives would result in an exceedance of California CO standards at qualifying intersections and would not significantly impact sensitive receptors (see Section 2.2.5 and Tables 2.2.5-16 and 2.2.5-17).

- The Build Alternatives would have a less than significant impact resulting from the creation of objectionable odors within the project area.

See Section 2.2.5 for more information.

3.2.2.2 Significant Environmental Effects of the Proposed Project

None of the significant impacts on air quality could be mitigated to below the level of significance and are considered unavoidable.

3.2.2.3 Unavoidable Significant Environmental Effects

- Regional construction emissions associated with the Bridge Replacement Alternatives would result in a temporary short-term exceedance of the SCAQMD regional daily thresholds for NO_X during construction Years 1, 2, and 3. All feasible mitigation measures, as discussed in Section 2.2.5, have been proposed to reduce construction NO_X emissions, and impacts have been mitigated to the maximum extent practicable and would cease upon completing the construction and demolition activities. Regional construction NO_X emission impacts would remain significant during 2 years of the 5-year construction period even after implementation of the mitigation measures discussed in Section 2.2.5. Table 3-2 shows that the proposed mitigation measures would reduce regional NO_X emissions by providing a further 5 percent reduction of exhaust emissions (15 percent for NO_X for use of oxidation catalyst) from construction equipment when compared to the unmitigated emissions (see Table 2.2.5-6). Nonetheless, during construction, the project would still exceed the SCAQMD regional daily significance threshold for NO_X during Construction Years 2 and 3 and are considered significant and unavoidable impacts. See Section 2.2.5 for more information.
- Operational emissions for the Bridge Replacement Alternatives would exceed SCAQMD daily operational emission threshold for NO_X in the opening year 2015. As discussed in Section 2.2.5, there are no feasible mitigation measures to reduce operational emissions within the project area. Operational emissions are summarized in Table 2.2.5-10. As shown, operational emissions associated with the Bridge Replacement Alternatives would be substantially reduced from the 2005 CEQA baseline levels in both 2015 and 2030. The emissions reduction is due to future year modeling results that reflect a newer vehicle fleet composition more in compliance with adopted regulations in the AQMP that are aimed at controlling emissions from mobile sources. Table 2.2.5-10 also shows that the net increases of project operational emissions relative to the No Action Baseline emissions would be relatively small, with the exception of NO_X. The net change in NO_X emissions between the proposed project and no action baseline during 2015 is estimated to be approximately 154 pounds per day, which would exceed the SCAQMD threshold. During the horizon year 2030, the net change in daily emissions would be below the SCAQMD thresholds for all criteria pollutants, including NO_X. As described in Section 2.2.5, the Port CTP and the State drayage truck plans would result in a substantial reduction of DPM and NO_X emissions within the Port and the transportation facilities that serve Port area. However, these reductions cannot be quantified at this time; therefore, Bridge Replacement Alternative daily operational impacts for NO_X during the opening year (2015) would be considered significant and unavoidable. See Section 2.2.5 for more information.

Table 3-2
Estimated Mitigated Peak Daily Construction Emissions [a]
(pounds/day)

Construction Year – Stage	CO	NO_X	VOC	PM_{10}	$PM_{2.5}$
Peak Daily Construction Emissions					
YEAR 1					
Onsite	31	75	7.1	63	16
Offsite [b]	29	20	3.6	1	1
Total	60	95	11	64	17
Regional Daily Significance Threshold	550	100	75	150	55
Exceed Threshold?	No	No	No	No	No
YEAR 2					
Onsite	289	622	64	89	42
Offsite [b]	36	19	4	1	1
Total	325	641	68	90	43
Regional Daily Significance Threshold	550	100	75	150	55
Exceed Threshold?	No	Yes	No	No	No
YEAR 3					
Onsite	178	362	38	76	29
Offsite [b]	32	16	4	1	1
Total	209	378	42	77	30
Regional Daily Significance Threshold	550	100	75	150	55
Exceed Threshold?	No	Yes	No	No	No
Peak Daily Onsite Construction Emissions					
Localized Daily Significance Threshold at Nearest Sensitive Receptors [c]	10,198	— [d]	—	191	120
Year 1	29	— [d]	—	63	16
Year 2	273	— [d]	—	89	42
Year 3	178	— [d]	—	76	29

Note: Exceedances from thresholds are shown in bold type.

[a] Compiled using the CEQA Air Quality Handbook and the emissions inventory from OFFROAD model. The equipment mix and use assumption for each phase is provided by the construction engineer; a list of equipment and assumptions is included in the project Air Quality Technical Study Report and Appendix A.

[b] Offsite emissions include motor vehicle emissions associated with construction equipment transport to site, worker commutes, and debris hauling activities.

[c] The nearest sensitive receptors include Cesar Chavez Elementary School and the multi-family residences that are located approximately 0.3-mi (483 m) east of the construction site boundary. It was estimated that the project's maximum daily disturbed area during any construction phase would be 4 to 5 acres (1.5 to 2 ha) (see Appendix A). The localized significance thresholds (LST) in the table are from the lookup tables for a 5-acre (2-ha) site at a 0.3-mi (500-m) distance in the SRA No. 4, South Coastal LA County; Tables C-2, C-4, and C-5 of the 2005-2007 lookup tables were used for LSTs of CO, PM_{10}, and $PM_{2.5}$, respectively.

[d] Localized impact of NO_2 emissions were estimated using dispersion modeling of the unmitigated NO_X emissions. The results, which are presented in Section 2.2.5, Table 2.2.5-8, indicate that no significant local impacts from construction NO_X emissions would occur.

Source: Parsons, 2007a.

- As discussed in Chapter 2.4 (Cumulative Impacts) NO_X is a precursor for O_3, and the SCAB is in nonattainment status for O_3. When considered with other related projects, the Bridge Replacement Alternatives exceedance of the SCAQMD NO_X construction and operational thresholds would be a cumulatively considerable significant and unavoidable impact. NO_X impacts have been mitigated to the maximum extent practicable; however, they would be considered cumulatively significant during construction Years 2 and 3 and in the opening year (2015). To partially offset project-related localized cumulative air quality effects, the Port will require the project to contribute $2 million to the Port's Cumulative Air Quality Impact Reduction Program ($1 million each to the Schools and Related Sites and Healthcare and Seniors Facility Grant Programs). The methodology for CEQA (AQ)-1 for determining the funding amount associated with the project has been adjusted to better take into account many factors, including the Ports' progress in reducing emissions through implementation of the CAAP, as a measure of cumulative impacts, and project-specific impacts when compared to established significance thresholds. The net result of this revision is an increase in total funding for the programs, although the nature of the projects and activities that would be funded by the contributions to the programs is unchanged. Methodology for this calculation is provided below, as described in the refined Mitigation Measure CEQA (AQ)-1. The project contribution will be distributed consistent with the Schools and Related Sites Guidelines and Healthcare and Seniors Facility Program Guidelines for the Port of Long Beach Grant Programs. As previously discussed, all unavoidable air quality effects are considered cumulatively significant and unavoidable, even after mitigation. Implementation of CEQA (AQ)-1 below would help partially offset cumulative air quality effects on those most directly affected by construction and operation of the proposed project. See Section 2.4 for more information
- As discussed in Section 3.3, the Build Alternatives would result in significant unavoidable project-related increases of GHGs associated with construction and operational emissions. The increase is primarily due to increased traffic during operations within the project area (i.e., more cars/trucks within the project area results in more GHG emissions when compared to the CEQA baseline). Vehicle emissions are regulated at the federal and state levels, and outside of additional regulation or other improvements in fuel or engine technology, there are no feasible mitigation measures to reduce GHG emissions from vehicles. However, as discussed in Section 3.3 (Climate Change), new legislation was recently passed at the federal level that mandates increased fuel economy standards that will reduce future GHGs from all passenger vehicles and light-duty trucks. In addition to the Port's CTP, the Port is developing the Climate Change/Greenhouse Gas Strategic Plan (CC/GHG Plan) to reduce Port-wide GHG. The new federal regulation and CTP would reduce project operational GHG emissions. However, these reductions cannot be quantified at this time; therefore, GHG impacts would be considered significant and unavoidable. See Section 3.3 for more information.
- As discussed in Section 3.3, the Build Alternatives would result in a project-related increase in GHGs. This increase would contribute to a cumulative regional increase in GHG. The Port is addressing GHG through their GHG programs and the CC/GHG Plan at regional, Port, and terminal levels; however, as discussed in Section 3.3, there are no project-specific feasible mitigation measures to address GHG for transportation projects. GHG transportation emission reductions will come from three overarching strategies: more efficient vehicles, lower-carbon fuels, and reduction of vehicle use or VMT. The GHG emission reductions in the transportation sector will be achieved through regulations, market mechanisms, incentives, and land use policy; however, these reductions cannot be quantified at this time. To partially offset the project-related significant and unavoidable cumulative increase in GHG emissions within the project area, the Port will require the project to contribute $400,000 to the Port's Greenhouse Gas Emissions Reduction Program. The project contribution will be distributed consistent with the Port's Greenhouse Gas Reduction Program Guidelines. Contributions to the GHG Emission Reduction Program will be used to fund projects or activities that could provide additional emission reductions in the communities surrounding the Port beyond what can be achieved through incorporation of all feasible mitigation measures. The types of

projects that will be funded through this program are described in detail in the guidelines for the GHG Emission Reduction Grant Program, which are available by request from the Director of Environmental Planning or on the Port's Web site at http://www.polb.com/grants. While the guidelines identify the projects that can be funded from contributions to the programs, the project takes no specific credit for any emission reductions that may result from any funded projects because it is not possible to quantify any emission reductions until such time as grants are awarded. It should be noted that there was a mathematical error in the Draft EIR/EA, which previously stated that the contribution would be $647,000. While the methodology described was presented correctly, the mathematical error resulted in a misstatement of the proposed funding amount, which should have been presented as $400,000. An explanation as to how the funding amounts for the project contribution to the GHG Emission Reduction Program were calculated utilizes the same methodology from the Draft EIR/EA as described below for CEQA (GHG)-1. Implementation of CEQA (GHG)-1 below would help partially offset the project-related increase in GHG; however, cumulative GHG impacts would be significant and unavoidable. See Section 3.3 for more information.

3.2.2.4 Mitigation Measures

In addition to the mitigation measures discussed in Section 2.2.5, the Port will also implement and fund mitigation measures CEQA (AQ)-1 and CEQA (GHG-1) below:

CEQA (AQ)-1: Cumulative Air Quality Impact Reduction Program. To help reduce air quality impacts associated with the project, the Port will require the project to make a contribution to the Schools and Related Sites Guidelines for the Port of Long Beach Grant Programs and to the Healthcare and Seniors Facility Program Guidelines for the Port of Long Beach Grant Programs. Although all feasible mitigation measures that would lessen significant environmental effects have been incorporated into the project, contributions to these grant programs are intended to fund projects or activities that could provide additional emission or exposure reductions in the communities surrounding the Port beyond what can be achieved through incorporation of all feasible mitigation measures. The types of projects that will be funded through these programs are described in detail in the guidelines for the Schools and Related Sites Program and the guidelines for the Healthcare and Seniors Facility Program, which are available by request from the Director of Environmental Planning or on the Port's Web site at http://www.polb.com/grants. While the guidelines identify the projects that can be funded from contributions to the programs, the project takes no specific credit for any emission reductions that may result from any funded projects because it is not possible to quantify any emission reductions until such time as grants are awarded. Instead, the EIR/EA analyzes all environmental impacts, identifies all feasible mitigation measures, and reaches conclusions regarding unavoidable significant effects of the project without taking into account any specific benefits that may result from contributions to the programs.

Project Air Quality Impacts. As discussed in previous sections of this document, the project would contribute to local and regional air quality impacts in the following ways: First, it would produce emissions of criteria pollutants during the project's 5-year project construction period, which includes demolition of the existing bridge. Such emissions have been estimated to exceed the SCAQMD threshold of significance for only one pollutant – NO_X. That exceedance has been estimated to occur on a peak daily basis during years 2 and 3 of the construction period.

Second, operation of the new bridge would result in daily operational emissions that would be expected to be below the SCAQMD significance threshold for all but one criteria pollutant – NO_X. Based on the analysis presented in Section 2.2.5 of this document, operation of the project would yield an estimated daily exceedance of the SCAQMD significance threshold for NO_X in the opening year (2015), but it would not show an exceedance of that threshold by the year 2030. Assuming that a straight line decline in emissions would occur over the intervening time, the SCAQMD significance threshold would be reached approximately 13 years after opening of the new bridge, or by 2028. When compared with CEQA Baseline (year 2005) conditions, years 2015 and 2030 show substantial declines in NO_X emissions under both the No Project and Project scenarios. It is only when compared to the NEPA Baseline (i.e., against No Project) conditions that the project shows an estimated small increase in NO_X emissions. Because the bridge carries a combination of Port-related and regional traffic, it is a conservative assumption to associate all of the increased NO_X emissions with the proposed project.

Third, the project would have a very small contribution to MSAT production. Again, when comparing against the CEQA Baseline, both the 2015 and 2030 No Project and Project conditions show substantial estimated reductions; however, when compared with the NEPA Baseline/No Project conditions, the project would result in additional daily contributions of total MSATs on the order of 1.4 pounds per day and 0.9 pounds per day, in 2015 and 2030, respectively. $PM_{2.5}$ production, compared to the NEPA Baseline/No Project Alternative, is estimated to be 11 pounds per day in 2015 and 6 pounds per day in 2030.

Fourth, while all CEQA estimates for cancer risk, chronic hazard indices, and acute hazard indices for residential, occupational, and sensitive receptor exposure show decreases when compared to the CEQA Baseline, there are small estimated increases, none of which rise above established thresholds of significance, when the project is compared to the NEPA Baseline/No Project conditions.

Grant Funding Level Methodology and Formulas: This section describes the methodology and related formulas that will be used to establish the project's contribution to the two grant programs. There are three steps in calculating the grant funding level, each of which is explained in more detail below:

1. Using the Middle Harbor Redevelopment Project funding levels as a baseline, calculate a base funding level that reflects ports-wide air quality and health risk impacts at the start of project construction.
2. Using project-specific $PM_{2.5}$ incremental emission impacts, adjust the amount from Step 1 to account for project-specific contributions to cumulative air quality impacts.
3. As appropriate and justified based on other factors that have not been captured in Steps 1 and 2, adjust grant funding levels.

Step 1: The baseline funding is the $10 million contributed by the Middle Harbor Redevelopment Project for both the Schools Grant Program and the Healthcare and Seniors Grant Program. This baseline is appropriate because, as additional CAAP measures are implemented over time that result in emission reductions, it is anticipated that a project that begins construction in a future year will result in lower cumulative air emission impacts than the Middle Harbor project, which began construction in 2009. While cumulative air quality impacts are traditionally evaluated qualitatively as part of most CEQA/NEPA project evaluations, the CAAP allows the ports to comprehensively look at current and future expected port-related projects and their expected air quality impacts. By forecasting emissions and taking into account pre-recession Ports' growth estimates, future terminal development, implementation of CAAP emission reduction strategies, and adopted regulations, the CAAP allows the Ports' to quantitatively assess risk from future port-related operations and establish long-term goals that reduce long-term cancer risk and "achieve an appropriate 'fair share' of necessary pollutant emission reductions" to achieve regional attainment of federal ambient air quality standards (CAAP Technical Report, page 11). While other non-port-related sources contribute to air pollution and the cumulative burden, Port-related sources contribute a significant portion of local air quality impacts; therefore, changes in Port-related emissions directly affect the cumulative burden experienced by communities surrounding the Ports.

This baseline funding amount is therefore adjusted to account for the forecasted reductions in DPM emissions at the anticipated construction start date for the project. Because DPM has been identified as a TAC by the State of California and is the primary driver of Port-related cancer risk, the Ports use changes in Port-related DPM inventories to assess changes in risk, as described in the draft 2010 CAAP update. The Ports have DPM emission inventories for 2005 through 2009 and have forecasted DPM emissions for 2020. Based on recent updates to the CAAP, the following cumulative emission reductions have been achieved as of 2009 compared to the 2005 baseline: 52 percent reduction in DPM, 35 percent reduction in NO_X, and 46 percent reduction in SO_X (CAAP, 2006; Draft 2010 CAAP Update; 2009 Emissions Inventory).

Table 3-3 summarizes the percent reduction in DPM emissions achieved as of 2009 compared to the 2005 baseline year. In addition, the forecasted reductions in DPM emissions from the 2005 baseline were estimated in the 2010 CAAP Update for 2009 through 2014 and for 2023, as summarized in Table 3-3.

This step of the grant contribution calculation is designed to address the amount of Port-related DPM emission reductions not yet achieved as of the project construction start date (i.e., 1-% CAAP DPM Reduction Achieved/100). When the DPM reduction factor is applied to the base funding amount, the calculation for Step 1 is $10 million x (1-% CAAP DPM Reduction for Project Construction Year/100).

Table 3-3
Anticipated CAAP Diesel Particulate Matter Emission Reductions

Emission Reductions Compared to 2005 Baseline	Actual	CAAP Forecast						
	2008	2009	2010	2011	2012	2013	2014	2023
DPM	22%	25%	60%	60%	68%	68%	72%	75%

Using the construction start date for the Gerald Desmond Bridge Replacement Project, the following forecasted CAAP DPM emissions compared to the 2005 baseline are applicable.

Project	Construction Start Date	CAAP DPM Reduction (%) Compared to 2005 at Construction Start Date
Gerald Desmond Bridge	2011 (see Table 3-3)	60

Table 3-4
Project-Specific Adjustment Factors Relative to DPM Emission Increases

Project-Specific $PM_{2.5}$ Emissions Increase (pounds per day)*	Project-Specific Adjustment (A_{PS})
< 55	50%
55 - 100	100%
101 – 150	150%
> 150	200%

* As compared to the No-Build or No Project Alternative.

Using these figures in the Step 1, the calculation is

$10 million × (1 – 60/100) = $4 million

Step 2: To account for the varying contributions by different types of projects to cumulative impacts, the Step 1 funding amount determined above is adjusted for project-specific impacts. The project-specific adjustment is based on the project-specific impacts compared to the CEQA Baseline and the No Build/No Project Alternative. The purpose of this step is to require greater funding from projects with significant project emissions and to require less funding from projects that do not exceed SCAQMD significance thresholds. Consistent with Step 1 and the discussions above, $PM_{2.5}$ emissions, which are typically DPM for Port-related projects, are used as a surrogate. The project-specific adjustment is then determined by comparing the operational DPM emissions increase relative to the CEQA Baseline and the No-Build/No Project Alternative to the values included in Table 3-4. These factors account for projects in which the incremental $PM_{2.5}$ emissions (compared to the CEQA Baseline and/or the future No-Project Alternative) are below or significantly above SCAQMD's CEQA significance threshold (55 pounds per day). Under this scenario, the project-specific funding amount would be decreased by 50 percent for projects with $PM_{2.5}$ emissions relative to the NEPA No Project baseline that are less than the SCAQMD significance threshold.

This adjustment is then applied to the Step 1 amount. Overall, the combined Schools Grant Program and the Healthcare and Seniors Grant Program funding contribution methodology entails the following calculation:

Total (Schools and Healthcare/Seniors Programs) ($) = Step 1 amount x Step 2 percentage

As discussed above, the project-specific $PM_{2.5}$ emissions increase relative to the No Project Alternative (NEPA baseline) for the Gerald Desmond Bridge Replacement Project is 11 pounds per day (2015) and 6 pounds per /day (2030); there is a net decrease compared to the CEQA Baseline. Comparing this number to Table 3-4 provides a project-specific adjustment factor of 50 percent. This adjustment is then applied to the Step 1 amount to give a final combined funding contribution amount for the Schools Grant Program and the Healthcare and Seniors Grant Program.

Gerald Desmond Bridge potential combined funding contribution

= $4 million × 50%

= $2 million total ($1 million each to the Schools and Healthcare/Seniors Programs)

Step 3:

The Board may also want to consider other unique factors, which may cause the calculation above to not reflect project circumstances, in determining the final amount of the contribution to the grants programs; however, no adjustments to the calculated amounts appear to be needed for purposes of the project, so the $2 million set forth at the end of Step 2 remains the appropriate recommendation.

Distribution of Funding Contributions

The distribution of the funds being contributed to the Schools and Related Sites and Healthcare and Seniors Facility Programs to potential applicants and projects will be determined in accordance with guidelines for the two programs. The process includes evaluation by an advisory committee established to make recommendations to Port staff and then approved by the BHC. The timing of the payments pursuant to this mitigation measure shall be made by the latter of the following two dates: (1) the date that the Port issues a Notice to Proceed or otherwise authorizes commencement of construction on the project; or (2) the date that the Gerald Desmond Bridge Replacement Project Final EIR/EA is conclusively determined to be valid, either by operation of PRC Section 21167.2 or by final judgment or final adjudication.

CEQA (GHG)-1: Greenhouse Gas Emission Reduction Program Guidelines (GHG Program). To address the cumulative GHG impacts of the Gerald Desmond Bridge Replacement Project, the Port will require the project to provide funding for the GHG Program. The Gerald Desmond Bridge Replacement Project is estimated to result in 47,169 metric tons per year of CO_{2e} in 2015 and 55,999 tons per year of CO_{2e} in 2030. When compared with the CEQA Baseline (year 2005) condition, these estimates show increases of 14,291 metric tons per year (2015) and 23,121 metric tons per year, respectively. When compared with the NEPA Baseline (i.e., No Project) condition, the estimated increases are smaller, namely 5,618 metric tons per year (2015) and 6,383 metric tons per year (2030), respectively. These increases are considered by the Port to be cumulatively considerable, although specific thresholds to establish significance have not been adopted for transportation projects. It should be noted that, similar to the discussion under Mitigation Measure AQ-1, the new bridge will carry both Port-related and regional trips, as are being carried on the existing bridge. Because the above figures include Port-related and regional trips, they represent conservative estimates of potential impacts.

The calculation of the contribution to be made to the GHG Emission Reduction Program is based upon a consideration of the contribution to daily cumulative emissions occurring from the project, as compared with the CEQA Baseline condition. This is consistent with the approach used for the Middle Harbor Redevelopment EIS/EIR. Research has indicated that the cost of verified emission reductions from established mitigation measures ranges between $5 and $14 per ton of CO_{2e} reduced. SCAQMD has taken this research and, in Rule 2702 (adopted February 6, 2009), has established a “fair upper range” fee of $15 per ton of CO_{2e} produced. This conservative rate has been applied to GHG emissions associated with the Gerald Desmond Bridge Replacement Project. Using the difference between year 2030 Project versus CEQA Baseline quantity calculations yields the following:

> GHG Mitigation Contribution = Gerald Desmond total annual contribution (year 2030) – CEQA Baseline (2005) value $15 per metric ton
>
> = (55,999 metric tons per year - 32,878 metric tons per year) x $15 per metric ton
>
> = 23,121 metric tons per year x $15 metric tons per year - $346,816, → $400,000

This contribution will be used to pay for measures pursuant to the GHG Emission Reduction Program Guidelines, which include, but are not limited to, generation of green power from renewable energy sources, ship electrification, goods movement efficiency measures, cool roofs to reduce building cooling loads and the urban heat island effect, building upgrades for operational efficiency, tree planting for biological sequestration of CO_2, energy-saving lighting, and purchase of renewable energy certificates (RECs).

The timing of the payments pursuant to this mitigation measure shall be made by the latter of the following two dates: (1) the date that the Port issues a Notice to Proceed or otherwise authorizes commencement of construction on the project; or (2) the date that the Gerald Desmond Bridge Replacement Final EIR/EA is conclusively determined to be valid, either by operation of PRC Section 21167.2 or by final judgment or final adjudication. At the project level, there are common measures that have the potential to reduce GHG emissions. These measures include

using reclaimed water, landscaping, energy-efficient lighting, and idling restrictions.

3.2.3 Biological Resources

3.2.3.1 Less than Significant Effects of the Proposed Project

- There are no riparian habitats or sensitive natural communities within the project footprint; therefore, the Build Alternatives would have no impact on riparian habitats or sensitive natural communities.
- There are no federally protected or other wetlands within the project area; therefore, the Build Alternatives would have no impact on wetland resources.
- The Build Alternatives would have no impact on local plans or policies protecting biological resources or on approved Habitat Conservation Plans, Natural Community Conservation Plans, or other approved conservation plans as there are none within the project impact area.
- As discussed in Section 2.4, no cumulatively considerable significant impacts on biological resources are anticipated.

See Sections 2.3 (Biological Resources) and 2.4 (Cumulative Impacts) for more information.

3.2.3.2 Significant Environmental Effects of the Proposed Project

- Construction and operational lighting could affect migratory bird species. Impacts on migratory bird species would be less than significant with incorporated mitigation measures in Section 2.3.5The peregrine falcon and several species of bats frequently nest/roost on or around the Gerald Desmond Bridge. Build Alternative construction impacts on falcons and bats would be less than significant with incorporated mitigation measures in Section 2.3.5.
- The potential for the spread or introduction of invasive species would be less than significant with incorporated mitigation measures in Section 2.3.6.

See Sections 2.3.5 and 2.3.6 for more information.

3.2.3.3 Unavoidable Significant Environmental Effects

There are no unavoidable significant environmental effects related to biological resources associated with the Build Alternatives. All impacts are less than significant with implementation of the mitigation measures discussed in Section 2.3.5.

3.2.3.4 Mitigation Measures

Mitigation measures for the Build Alternatives under CEQA would be the same as those discussed in Section 2.3.5.

3.2.4 Cultural Resources

3.2.4.1 Less than Significant Effects of the Proposed Project

- The Build Alternatives do not have the potential to directly or indirectly impact a known unique paleontological resource or site or unique geologic feature. Impacts are considered less than significant.
- The proposed project area does not lie within an area where human remains are known to occur. Potential impacts from the disturbance of unanticipated human remains during construction of the Build Alternatives are considered less than significant.
- No archaeological resources within the project area were identified in record searches or during surveys completed for the project. Impacts from the disturbance of unanticipated archaeological resources during construction of the Build Alternatives are considered less than significant.
- The LBGS and the SCE transmission towers were the only historic resources identified within the APE for the project. The Build Alternatives would not result in a substantial adverse change in the significance of a historical resource. Impacts on historic resources are considered less than significant.
- As discussed in Section 2.4, no cumulatively considerable significant impacts on cultural resources are anticipated.

See Section 2.1.8 (Cultural Resources) for more information.

3.2.4.2 Significant Environmental Effects of the Proposed Project

There are no significant environmental effects related to cultural resources associated with construction or operation of the Build Alternatives.

3.2.4.3 Unavoidable Significant Environmental Effects

There are no unavoidable significant environmental effects related to cultural resources associated with construction or operation of the Build Alternatives.

3.2.4.4 Mitigation Measures

No mitigation is required.

3.2.5 Geology and Soils

3.2.5.1 Less than Significant Effects of the Proposed Project

- Construction or operation of the Build Alternatives would not expose people or structures to substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, or landslides. This impact is considered less than significant.
- The project site could experience strong seismic ground shaking that could result in seismic-related ground failure, including liquefaction. However, the project area has been well studied, and engineering and design measures would account for onsite soil conditions and the Build Alternatives would withstand an MCE without collapse. Project engineering and design measures would minimize the potential for substantial adverse effects on people or structures, and impacts would be less than significant.
- Soil erosion and loss because of project grading and other construction activities are expected to be minimal. This impact is considered less than significant (see Section 2.2.1 [Water Resources and Hydrology]).
- None of the structures included in the Build Alternatives would increase the current risk of loss, injury, or death because of landslides, ground shaking, and other seismically induced effects. This impact is considered less than significant.
- The proposed project is located in an existing transportation corridor and is not located on an unstable geologic unit; however, due to the makeup of the project site (imported fill), soil would be considered unstable during seismic events but would not become unstable as a result of the project. Engineering and design measures would be incorporated into the Build Alternatives to ensure structure stability during seismic events; therefore, the project would result in a less than significant impact as a result of unstable or expansive soils.
- As discussed in Section 2.4, no cumulatively considerable significant impacts on geology and soils are anticipated.

See Sections 2.2.2 (Geologic Resources) and 2.4 (Cumulative Impacts) for more information.

3.2.5.2 Significant Environmental Effects of the Proposed Project

There are no significant environmental effects related to geology and soils associated with construction or operation of the Build Alternatives.

3.2.5.3 Unavoidable Significant Environmental Effects

There are no unavoidable significant environmental effects related to geology and soils associated with construction or operation of the Build Alternatives

3.2.5.4 Mitigation Measures

No mitigation is required.

3.2.6 Hazards and Hazardous Materials

3.2.6.1 Less than Significant Effects of the Proposed Project

- Construction and operation of the Build Alternatives would have less than significant impacts relating to hazards to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment or through routine transport, use, or disposal of hazardous materials.
- As discussed in Section 2.4, no cumulatively considerable significant impacts on geology and soils are anticipated.

See Sections 2.2.4 (Public Health and Safety), 2.2.3 (Hazardous Materials/Waste), and 2.4 (Cumulative Impacts) for more information.

3.2.6.2 Significant Environmental Effects of the Proposed Project

- Soil areas disturbed during construction may contain ADL. Impacts would be less than significant with incorporated mitigation measures.
- ACMs and LBP are present on the Gerald Desmond Bridge and could also be present in building structures that would be demolished.

The materials could be released to the environment due to construction disturbance. Impacts related to the potential release of asbestos and LBP would be less than significant with incorporated mitigation measures.

- The Gerald Desmond Bridge is used as an emergency access route; consequently, emergency response plans and emergency evacuation plans are likely to be impacted by project construction. This impact is considered less than significant with incorporated mitigation. Close coordination with Port and Long Beach officials and emergency service providers would occur prior to and regularly during construction.
- Disturbance of areas containing unknown contaminated soil and/or groundwater associated with Port oil development, military use, USTs, or sites or areas on or adjacent to sites listed pursuant to Government Code Section 65962.5 could result in potential hazards to the public, construction workers, or the environment. Impacts would be less than significant with incorporated mitigation measures.

See Section 2.2.3 (Hazardous Materials/Waste) for more information.

3.2.6.3 Unavoidable Significant Environmental Effects

There are no unavoidable significant environmental effects associated with construction or operation of the Build Alternatives related to hazards and hazardous materials assuming implementation of the mitigation measures discussed in Sections 2.1.5, 2.2.3, and 2.2.4.

3.2.6.4 Mitigation Measures

Mitigation of impacts related to hazards and hazardous materials and wastes under CEQA would be the same as those discussed in Sections 2.1.5, 2.2.3 and 2.2.4.

3.2.7 Hydrology and Water Quality

3.2.7.1 Less than Significant Effects of the Proposed Project

- The proposed project would not substantially degrade water quality, or violate any water quality standards or waste discharge requirements, or otherwise degrade water quality. Impacts to water quality are considered less than significant.

The Build Alternatives would incorporate all standard BMPs that the Port and Caltrans adhere to, including SWPPP and NPDES requirements. Additionally, these alternatives would include treatment of all associated storm water runoff prior to discharge into the bay, potentially resulting in improved water quality during operations, and impacts would be less than significant.

- Project impacts due to the placement of structures within a 100-year flood hazard area would be less than significant.

Only the North-side Alignment Alternative would result in structures within the 100-year flood hazard area. This would not be considered a significant encroachment and would not impact flood flow.

- Impacts from construction and operation of the Build Alternatives on existing drainage patterns would be less than significant.

The Build Alternatives would utilize existing drainage patterns to transport runoff to treatment BMPs. All runoff would be captured and treated prior to discharge and would not result in substantial erosion, siltation or flooding on- or offsite.

- The Build Alternatives would have no impact on groundwater supplies or recharge.
- Project impacts on water drainage systems and or the potential to create new sources of polluted runoff would be less than significant.

The Bridge Replacement Alternatives would result in increased storm water runoff containing typical highway pollutants; however, all of the Build Alternatives would capture and treat runoff prior to discharging to existing storm water facilities at current discharge rates. No new drainage capacity would be required. Storm water would be treated prior to discharge, and no additional sources of polluted runoff are anticipated.

- Construction and operation of the Build Alternatives would not change the risk of loss, injury, or death resulting from flood, and impacts would be less than significant.
- The Build Alternatives would not increase risk to people or structures as a result of inundation by seiche, tsunami, or mudflow. Impacts would be less than significant.
- As discussed in Section 2.4, no cumulatively considerable significant impacts on hydrology and water quality are anticipated.

See Sections 2.2.1 (Water Resources and Hydrology), 2.2.2 (Geologic Resources [tsunami

and seiche]), and 2.4 (Cumulative Impacts) for more information.

3.2.7.2 Significant Environmental Effects of the Proposed Project

There are no significant effects related to hydrology and water quality associated with construction and operation of the Build Alternatives.

3.2.7.3 Unavoidable Significant Environmental Effects

There are no unavoidable significant environmental effects related to water quality and hydrology associated with construction and operation of the Build Alternatives.

3.2.7.4 Mitigation Measures

No mitigation is required.

3.2.8 Land Use and Planning

3.2.8.1 Less than Significant Effects of the Proposed Project

- The proposed project is located within the Harbor District and would have no impact related to the physical division of an established community or the implementation of any applicable habitat conservation or natural community conservation plan.
- The proposed project would be constructed within or adjacent to an existing transportation corridor and would have a less than significant effect on applicable land use plans, policies, and regulations of agencies with jurisdiction over the project.

Construction and operation of the Build Alternatives would not divide any established communities or conflict with any land use plans or policies; however, the North-side Alignment Alternative would require conversion of 0.7 acres (0.3-ha) of privately held Port-related industrial to public transportation. Also, the South-side Alignment Alternative would reduce areas on Pier T for container terminal use and Port lease land by 2.4 acres (1-ha). This reduction in land and associated terminal reconfiguration on Piers T, D, and E would not be considered a significant land use conflict and is consistent with the PMP.

- As discussed in Section 2.4, no cumulatively considerable significant impacts on land use and planning are anticipated.

See Sections 2.1.1 (Land Use, Recreation, and Coastal Zone) and 2.4 (Cumulative Impacts) for more information.

3.2.8.2 Significant Environmental Effects of the Proposed Project

There are no significant environmental effects related to land use associated with construction or operation of the Build Alternatives.

3.2.8.3 Unavoidable Significant Environmental Effects

There are no unavoidable significant environmental effects related to land use associated with construction or operation of the Build Alternatives.

3.2.8.4 Mitigation Measures

No mitigation is required.

3.2.9 Mineral Resources

3.2.9.1 Less than Significant Effects of the Proposed Project

- The proposed project is located in the Wilmington Oil Field. The Build Alternatives would impact existing and abandoned oil wells within the project area; however, construction and operation of these alternatives would not result in the loss of mineral or oil deposits or the recovery area (Wilmington Oil Field). Relocation/reconfiguration of existing extraction sites and re-abandonment of former well sites would be completed in accordance with the guidelines set forth by the DOGGR, as required. Impacts to mineral resources associated with the Build Alternatives would be considered less than significant.
- The proposed project would not result in the loss of any mineral resources or recovery area. There is no potential for cumulatively considerable significant impacts on mineral resources.

See Section 2.1.4 (Utilities and Service Systems) for more information.

3.2.9.2 Significant Environmental Effects of the Proposed Project

There are no significant environmental effects related to mineral resources associated with construction and operation of the Build Alternatives.

3.2.9.3 Unavoidable Significant Environmental Effects

There are no unavoidable significant environmental effects related to mineral resources associated with construction or operation of the proposed Build Alternatives.

3.2.9.4 Mitigation Measures

Mitigation is not required.

3.2.10 Noise

Noise impact analysis for CEQA is independent from NEPA analysis as defined in 23 CFR 772 and as discussed in Chapter 2. CEQA looks at the existing noise setting and how large or perceptible a noise increase would be within the context of the noise setting. NEPA looks at noise impacts in relation to the NAC.

3.2.10.1 Less than Significant Effects of the Proposed Project

- Build Alternative construction activities would not increase ambient noise levels at the location of sensitive receptors by more than 3 dBA, and construction noise impacts would be considered less than significant.

Measured ambient noise levels were 62 dBA at both of the nearest sensitive noise receptors located approximately 1,300 ft (396 m) (Cesar Chavez Park) and 1,500 ft (457 m) (Cesar Chavez Elementary School) from the construction areas for the Bridge Replacement Alternatives. Maximum construction noise levels associated with the Build Alternatives would occur during pile driving and bridge demolition activities associated with the Bridge Replacement Alternatives. Anticipated pile driving noise levels at 1,300 and 1,500 ft (396 and 457 m) would be 61 and 60 dBA, respectively. Anticipated maximum bridge demolition noise levels at 1,300 and 1,500 ft (396 and 457 m) would be 60 and 59 dBA, respectively. Maximum anticipated construction noise levels at the nearest sensitive receptors would both be less than the measured ambient noise levels.

Additionally, the Rehabilitation Alternative would require replacement of the bridge deck at night between the hours of 7:00 p.m. and 7:00 a.m., which would require a variance/permit from the noise control officer. Anticipated maximum noise levels would be 57 and 56 dBA at 1,300 and 1,500 ft (396 and 457 m) from bridge deck replacement activities. Bridge deck replacement activities would stop at the end of the bridge, approximately 0.4-mi (0.6-km) west of the Los Angeles River. The nearest potential noise sensitive receptor (i.e., Cesar Chavez Elementary School) is located 0.7-mi (1.1 km) from the nearest bridge deck replacement activities. All other retrofit activities would occur during normal construction hours and would have noise levels below the maximum noise levels associated with the Build Alternatives, as previously discussed.

- Build Alternative construction activities would not exceed City of Long Beach Municipal Code maximum noise levels, and construction noise impacts would be less than significant.

The nearest sensitive receptors, Cesar Chavez Park and Cesar Chavez Elementary School, are located in Land Use District 1. As discussed in Section 2.2.6, the maximum noise level allowed at these locations under the Long Beach Municipal Code is 65 dBA. The maximum anticipated project construction noise level would be 61 dBA at Cesar Chavez Park and 60 dBA at Cesar Chavez Elementary school.

- Build Alternative operational noise levels would not increase ambient noise levels by 3 dBA at the location of sensitive receptors and operational noise levels would be less than significant.

Operational noise levels associated with the Build Alternatives are directly related to forecasted traffic volumes. Forecasted traffic volumes will increase with or without the project from 2005 baseline levels; therefore, ambient operational noise will also increase with or without the project.

Traffic noise from SR 710 would be the dominant project-related noise source with the potential to increase ambient noise levels at the nearest sensitive receptor locations. As discussed in Section 2.2.6, the worst-case noise condition was modeled along SR 710. The worst-case scenario resulted in a predicted 2030 operational ambient noise level of 64 dBA at the nearest sensitive noise receptor across the river. As previously discussed, the measured ambient condition near the sensitive receptor locations was 62 dBA. Project-related increase in ambient noise at sensitive receptors would be 2 dBA in 2030. This represents a maximum worst-case increase because predicted noise levels are based on the worst-case noise conditions. A difference of 3 dBA or less is generally considered imperceptible to human hearing.

As discussed in Section 2.2.6, increases in operational ambient noise levels adjacent to Ocean Boulevard would also occur with or without the project. The portions of Ocean Boulevard within the project area are located within the Harbor District. The expected project-related maximum increase in ambient noise levels associated with the Build Alternatives, compared to the overall future ambient noise levels without the project, would be no more than 1 dBA. As previously discussed, a difference of 3 dBA or less is generally considered imperceptible to human hearing.

- Build Alternative operational noise levels would not exceed City of Long Beach Municipal Code maximum noise levels, and operational noise impacts would be less than significant.

The nearest sensitive receptors, Cesar Chavez Park and Elementary School and Edison Elementary School, are located in Land Use District 1. As discussed in Section 2.2.6, the maximum noise level allowed at these locations under the Long Beach Municipal Code is 65 dBA. The maximum anticipated project operational noise level, based on the 2030 worst-case noise conditions on SR 710, would be 64 dBA at the nearest sensitive receptor across the river.

- As discussed in Section 2.4, no cumulatively considerable significant impacts on sensitive receptors associated with construction or operation of the Build Alternatives are anticipated.

See Sections 2.2.6 (Noise) and 2.4 (Cumulative Impacts) for more information.

3.2.10.2 Significant Environmental Effects of the Proposed Project

There are no significant effects related to noise associated with construction or operation of the build alternatives.

3.2.10.3 Unavoidable Significant Environmental Effects

There are no unavoidable significant environmental effects related to noise associated with construction or operation of the Build Alternatives.

3.2.10.4 Mitigation Measures

No mitigation is required.

3.2.11 Population and Housing

3.2.11.1 Less than Significant Effects of the Proposed Project

- The proposed project is a transportation project. The temporary construction work force for this project would come from the existing labor pool in the southern California area, and construction of the project would not require any relocation or new housing for construction workers. The proposed project does not include construction of residential housing, commercial, office, industrial, institutional, or any other use other than transportation. No permanent employment or associated population growth would occur due to the construction or operation of the project. No housing would be displaced, and construction of replacement housing would not be required. The proposed project would have less than significant impacts on population and housing.
- The proposed project would rehabilitate or replace the Gerald Desmond Bridge. The Build Alternatives would not result in additional traffic-generating land use or direct traffic growth, and impacts would be less than significant.

The Build Alternatives would provide access to and from the same areas that the existing Gerald Desmond Bridge serves today. The Bridge Replacement Alternatives would not result in new accessibility to and from areas that are currently inaccessible and would not cause associated indirect growth via creation of new access. The Bridge Replacement Alternatives would not be a direct cause of new vehicle trips generated; rather the congestion-relief benefits of the Bridge Replacement Alternatives would have the potential to attract traffic from other more-congested roadways in the project area. This potential future increase in traffic volume on the new bridge would be a redistribution of vehicle trips and would not actually cause a net increase in local or regional vehicle trips; therefore, the Bridge Replacement Alternatives would redistribute existing vehicle trips and would not result in new vehicle trips. Impacts on traffic growth would be considered less than significant.

- The Bridge Replacement Alternatives would require the relocation of several businesses within the project footprint. The business operations are associated with Port operations, and it is anticipated that the impacted business could be relocated to other areas within or adjacent to the Port. The proposed project would not require large numbers of people to relocate; therefore, it would not require replacement housing elsewhere, and impacts are considered less than significant.
- As discussed in Section 2.4, no cumulatively considerable significant impacts on population or housing are anticipated.

See Sections 2.1.2 (Growth), 2.1.3 (Community Impacts), and 2.4 (Cumulative Impacts) for more information.

3.2.11.2 Significant Environmental Effects of the Proposed Project

There are no significant environmental effects related to population and housing associated with construction or operation of the Build Alternatives.

3.2.11.3 Unavoidable Significant Environmental Effects

There are no unavoidable significant environmental effects related to population and housing associated with construction or operation of the Build Alternatives.

3.2.11.4 Mitigation Measures

No mitigation is required.

3.2.12 Public Services & Safety

3.2.12.1 Less than Significant Effects of the Proposed Project

- Construction of the Bridge Replacement Alternatives would require temporary relocation of Fire Boat Station #20 operations to temporary facilities due to its location within the construction and demolition area. Temporary facilities would be located in an improved area approximately 100 ft (30.6 m) outside of the construction and demolition areas. The temporary facilities would be available for use prior to relocation. Subsequent to completion of the construction and demolition activities, Fire Boat Station #20 operations would be relocated back to its existing location. No loss of service or increase in response times is anticipated, and impacts are considered less than significant.
- As discussed in Section 2.4, no cumulatively considerable significant impacts on public services and safety are anticipated.

See Sections 2.1.3.2 (Relocations) and 2.4 (Cumulative Impacts) for more information.

3.2.12.2 Significant Environmental Effects of the Proposed Project

- The Bridge Replacement Alternatives would result in new bridge structures and associated modified access that have yet to be evaluated by the Port for vulnerability to terrorist attacks. Impacts on public services and safety would be less than significant with incorporated mitigation measures.
- Construction activities could result in temporary road and navigation hazards that may result in safety hazards to businesses, tenants, transportation companies, construction workers, and the public. Impacts on public services and safety would be less than significant with incorporated mitigation measures.

See Section 2.2.4 (Public Health and Safety) for more information.

3.2.12.3 Unavoidable Significant Environmental Effects

There are no unavoidable significant environmental effects associated with construction or operation of the Build Alternatives on public services, assuming implementation of the mitigation measures discussed in Section 2.2.4.

3.2.12.4 Mitigation Measures

Mitigation measures under CEQA would be the same as those discussed in Section 2.2.4.

3.2.13 Recreation

3.2.13.1 Less than Significant Effects of the Proposed Project

- Construction and operation of the Build Alternatives would not affect recreation opportunities, facilities, or services, or access to recreational facilities or services. The Build Alternatives would have no impact on recreation.
- As discussed in Section 2.4, no cumulatively considerable significant impacts on recreation are anticipated.

See Sections 2.1.1 (Land Use, Recreation, and Coastal Zone), 2.1.3 (Community Impacts), and 2.4 (Cumulative Impacts) for more information.

3.2.13.2 Significant Environmental Effects of the Proposed Project

There are no significant environmental effects related to recreation associated with construction or operation of the Build Alternatives.

3.2.13.3 Unavoidable Significant Environmental Effects

There are no unavoidable significant environmental effects related to recreation associated with construction and operation of the Build Alternatives.

3.2.13.4 Mitigation Measures

No mitigation is required.

3.2.14 Transportation/Traffic

3.2.14.1 Less than Significant Effects of the Proposed Project

- The Rehabilitation Alternative would have less than significant impacts on traffic congestion during construction. This is because the existing Gerald Desmond Bridge would remain in place, the bridge deck rehabilitation would occur only during nighttime hours when traffic volumes are light, no traffic detour routes would be required, and all lanes of the bridge would be restored to full operation during daytime peak traffic hours. Construction impacts of the Bridge Rehabilitation Alternative would be less than significant.
- The Rehabilitation Alternative would have less than significant operational impacts because this alternative does not change traffic operations. This alternative results in the same operational conditions as the No Project Alternative. It should be noted that this alternative improves seismic performance only and does not address the other project objectives as discussed in Chapter 1, which include additional roadway capacity to handle current and forecasted traffic volumes and increased vertical clearance for safe navigation through the Back Channel into the Inner Harbor.
- As discussed in Section 2.4, no cumulatively considerable significant impacts on traffic and circulation due to construction or operation of the Bridge Rehabilitation Alternative are anticipated.
- The Bridge Replacement Alternatives would have a beneficial impact on harbor operations, commerce, and harbor congestion as a result of improved safety for ships passing under the new bridge and additional traffic capacity on the bridge (see below). The increased vertical clearance would have a beneficial impact to harbor safety and congestion, as it would allow ships to pass under the new bridge quicker due to improved safety conditions. Impacts on harbor congestion or the ability for maritime commerce to operate efficiently would be less than significant.

  The Rehabilitation Alternative would maintain existing limited vertical clearance of the Gerald Desmond Bridge. The limited vertical clearance provided by the existing bridge has the potential to cause increased harbor congestion due to time-consuming navigation safety procedures that must be followed when larger ships need to pass beneath the existing bridge. Due to the fact that this safety hazard is an existing condition in place with the current Gerald Desmond Bridge, the impact to harbor operations and congestion within the harbor attributable to the Rehabilitation Alternative is considered less than significant.
- The proposed Bridge Replacement Alternatives would increase the traffic-carrying capacity of the bridge, which would improve traffic flow, handle future projected increases in traffic volume (that would otherwise occur regardless of the project), and lead to an overall reduction in area traffic congestion. Although the Bridge Replacement Alternatives do not add any trips to the transportation system, the new bridge would cause a redistribution of area traffic due to congestion reduction on a new Replacement Bridge Alternative compared to the existing bridge. Overall, compared to the No Project/ Rehabilitation Alternatives, the proposed Bridge Replacement Alternatives would result in a benefit to traffic on the bridge.

See Section 2.1.5 (Traffic and Circulation) for more information.

3.2.14.2 Significant Environmental Effects of the Proposed Project

- A temporary significant traffic impact attributable to the Bridge Replacement Alternatives would occur at the Pico Avenue and Pier B Street/9th Street intersection during construction Stage 2. Mitigation Measure TC-1 includes the following improvements to the intersection prior to the start of construction Stage 2: add dual NB right-turn lanes; restripe the EB through/right lane to a right-turn lane; provide one EB through lane; and continue to provide two SR 710 SB off-ramp lanes to Pico Avenue. This impact would be less than significant after mitigation.
- A temporary significant traffic impact attributable to the Bridge Replacement Alternatives would occur at the Pico Avenue and Pier D Street intersection during construction Stages 2, 3, and 4. Mitigation Measure TC-3 includes the following improvements to the intersection prior to the

start of construction Stage 2: install a traffic signal at the intersection of Pico Avenue and Pier D Street. The traffic signal will be permanent and will not be removed after completion of construction of a Bridge Replacement Alternative. After mitigation, impacts at this intersection would be less than significant during construction Stage 2, but they would be significant during construction Stages 3 and 4, as discussed in Section 3.2.14.3 below.

- A temporary significant traffic impact attributable to the Bridge Replacement Alternatives would occur at the Pico Avenue and Pier E Street intersection during construction Stages 3 and 4. Mitigation Measure TC-4 includes the following improvements to the intersection prior to the start of construction Stages 3 and 4: install a traffic signal at the intersection of Pico Avenue and Pier E Street (the signal will be permanent and will not be removed after completion of construction); restripe the NB through lane to a NB right-turn lane, providing a single NB through lane; add dual free-flow WB right-turn lanes; and continue to provide two EB Ocean Boulevard off-ramp lanes to Pico Avenue. This impact would be less than significant after mitigation.
- A project-related significant impact is anticipated at the intersection of Ocean Boulevard/Magnolia Avenue. As discussed in Section 2.1.5, potential striping and signalization improvements have been identified that would mitigate this significant impact. Mitigation Measure TC-6 requires the Port to coordinate with the Long Beach City Traffic Engineer and provide funding for restriping and/or signalization improvements at the intersection of Ocean Boulevard and Magnolia Avenue as mitigation for the impact of a Bridge Replacement Alternative at the intersection. This impact would be less than significant after mitigation.

See Section 2.1.5 (Traffic and Circulation) for more information.

3.2.14.3 Unavoidable Significant Environmental Effects

Bridge Replacement Alternatives

- A temporary unavoidable significant traffic impact would occur during construction of the proposed Bridge Replacement Alternatives at the intersection of Pico Avenue and Pier B Street/9th Street. The significant impact would occur for 22 months due to conditions during construction Stages 3 and 4 of the proposed Bridge Replacement Alternatives. Proposed Mitigation Measure TC-2 and implementation of the TMP would mitigate this impact to the maximum extent practicable and includes the following improvements to the intersection prior to the start of construction Stages 3 and 4: remove the NB-SB split-signal phasing; restripe the NB through lane to a NB left-turn lane; widen the SB approach and provide two left-turn lanes and one through lane; and continue to provide two on-ramp lanes to NB SR 710. Upon opening the new bridge, the significant traffic impact would no longer exist due to the new alignment and ramps.
- A temporary unavoidable significant traffic impact has been identified that would occur during construction of the proposed Bridge Replacement Alternatives at the intersection of Pico Avenue and Pier D Street. The significant impact would occur for 22 months due to conditions during construction Stages 3 and 4 of the proposed Bridge Replacement Alternatives. There is no feasible mitigation for this impact; however, the TMP would minimize impacts to the maximum extent practicable. Upon opening the new bridge, the significant traffic impact would no longer exist due to the new alignment and ramps.
- A temporary significant traffic impact has been identified that would result from construction of the proposed Bridge Replacement Alternatives at the Ocean Boulevard and Terminal Island Freeway interchange. As discussed in Section 2.1.5, there is no feasible mitigation for this impact, and the two intersections of the Ocean Boulevard ramps (north and south) and the Terminal Island Freeway would have temporary and unavoidable significant impacts for 3 years, which is the approximate combined duration of construction Stages 2, 3, and 4 of either of the proposed Bridge Replacement Alternatives.
- A project-related significant impact is anticipated at the intersection of Navy Way/ Seaside Avenue under the Bridge Replacement Alternatives. This intersection and implementation of mitigation at this location is outside of the Port's jurisdiction; therefore, it must be considered a significant and unavoidable project impact pursuant to CEQA. However, it should be noted, as discussed in Section 2.1.5, proposed Measure TC-5 would mitigate this impact by adding a

third NB left-turn lane at this intersection. If TC-5 is implemented through NEPA or Measure TRANS-6 is implemented as identified in the approved POLA China Shipping EIR, or if POLA implements any of the projects at this location as discussed in Section 2.1.5 prior to opening the new bridge, then the significant traffic impact would be eliminated.

- A temporary significant project-related traffic impact attributable to the Bridge Replacement Alternatives would occur on WB Ocean Boulevard between the Horseshoe Ramps and the Terminal Island Freeway interchange. This condition would occur in the opening year (2015) but would no longer occur in the horizon year (2030). As discussed in Section 2.1.5, there are no feasible measures to mitigate this impact, and it is considered a significant and unavoidable project impact; however, it should be noted that construction of the SR 47 Flyover, as approved in 2009 within the Schuyler Heim Bridge Replacement SR 47 Expressway Project FEIS/EIR, would eliminate this significant traffic impact. The estimated completion date for the SR 47 Flyover is 2019.
- All unavoidable traffic impacts are also considered cumulative unavoidable significant impacts on traffic and circulation. With incorporation of mitigation measures as discussed in Section 2.1.5 (Traffic and Circulation), all unavoidable traffic impacts, and thus cumulative traffic impacts, have been mitigated to the maximum extent practicable. As previously discussed, pursuant to CEQA, there is no feasible mitigation for impacts at Navy Way/Seaside Avenue and on Ocean Boulevard between the horseshoe ramps and Terminal Island freeway interchange. Improvements proposed at Navy Way/Seaside Avenue (TC-6) are outside the jurisdiction of the Port. If either Measure TC-6 or POLA's proposed improvements are completed at this location, then the cumulative impact would be eliminated. Similarly, subsequent to construction of the SR 47 Flyover, as discussed in Section 2.4 (Cumulative Impacts), the cumulative unavoidable significant impact would be eliminated and the new bridge, in combination with the SR 47 Flyover, would result in cumulatively beneficial effects on traffic and circulation that would otherwise not occur if only one of the projects were constructed. However, the anticipated construction completion date for the SR 47 Flyover is 2019 (Caltrans 2009), and the cumulative unavoidable significant traffic impact between the horseshoe ramps and the Terminal Island Freeway interchange would remain until completion of the flyover or would no longer exist in 2030, as discussed in Section 2.1.5.

See Sections 2.1.5 (Traffic and Circulation) and 2.4 (Cumulative Impacts) for more information.

3.2.14.4 Mitigation Measures

Mitigation measures under CEQA would be the same as those discussed in Section 2.1.5.

3.2.15 Utilities and Service Systems

3.2.15.1 Less than Significant Effects of the Proposed Project

- The proposed project is a transportation project and would have no impact on wastewater treatment requirements or require expansion of plants or facilities.
- The proposed project would have less than significant effects on storm water drainage facilities and would not require construction of new facilities (see Section 2.2.1 [Water Resources]).
- The proposed project is a transportation project. The project would result in some water demand during construction; however, it would not result in any future demand. Effects on water supply due to construction and operation are considered less than significant impacts.
- The Build Alternatives would generate large amounts of construction and demolition debris. The project would comply with all federal, state, and local requirements regarding solid waste disposal and recycling. Impacts on local and regional landfill capacity would be less than significant.
- The project requires extensive utility relocation that could temporarily interrupt service during changeover from the existing to relocated facilities. Utility relocation would be conducted in a manner designed to minimize any potential for interruption. Interruption of associated utility service in the project area is unlikely to occur; however, if interruption does occur, the impact would be minor and temporary; therefore, this impact is considered less than significant.

- As discussed in Section 2.4, no cumulatively considerable significant impacts on utilities and service systems are anticipated.

See Sections 2.1.4 (Utilities and Service Systems) and 2.4 (Cumulative Impacts) for more information.

3.2.15.2 Significant Environmental Effects of the Proposed Project

There are no significant environmental effects related to utilities and service systems associated with construction or operation of the Build Alternatives.

3.2.15.3 Unavoidable Significant Environmental Effects

There are no unavoidable significant environmental effects related to utilities and service systems associated with construction and operation of the Build Alternatives.

3.2.15.4 Mitigation Measures

No mitigation is required.

3.3 CLIMATE CHANGE

While climate change has been a concern since at least 1988, as evidenced by the establishment of the United Nations and World Meteorological Organization's Intergovernmental Panel on Climate Change (IPCC), efforts devoted to GHG emissions reduction and climate change research and policy have increased dramatically in recent years.

Global climate change is expressed as changes in the average weather of the earth, as measured by changes in wind patterns, storms, precipitation, and temperature. Much scientific research has indicated that the human-related emissions of GHGs above natural levels are likely a significant contributor to global climate change.

3.3.1 Impacts of Greenhouse Effect

Changes in the global climate are associated with substantial potential physical, economic, and social effects, such as inundation of settled areas near the coast from rises in sea level associated with melting of land-based glacial ice sheets, exposure to more frequent and powerful climate events, and changes in suitability of certain areas for agriculture, among others. The IPCC constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. It concluded that stabilization of GHGs at 400 to 450 ppm carbon dioxide (CO_2)-equivalent concentration is required to keep global mean warming below 2 °C, which is assumed to be necessary to avoid dangerous climate change (IPCC, 2001).

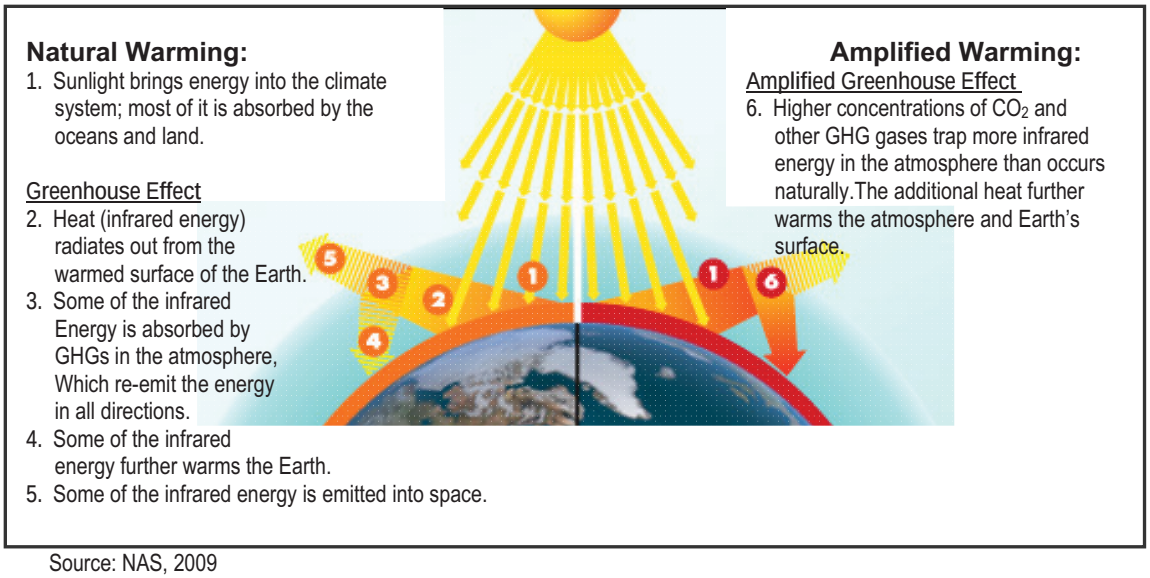
GHGs are gases that trap heat in the atmosphere; GHGs are emitted by natural processes and human activities. Emissions from human activities, such as electricity production and internal combustion vehicle use, have elevated the concentration of these gases in the atmosphere.

Worldwide, 11 of the 12 years between 1995 and 2006 ranked among the 12 warmest years in the record of global surface temperature since 1850 (IPCC, 2007). According to a recent CEC document, the American West is heating up faster than other regions of the U.S. (CEC, 2009). It is estimated that approximately 40 percent of GHGs in the State of California are produced by passenger vehicles and light-duty trucks (CEC, 2006).

The accumulation of GHGs in the atmosphere regulates the earth's temperature. Without these natural GHGs, the earth's surface would be approximately 61°F cooler (AEP, 2007); however, emissions from fossil fuel combustion for activities such as electricity production and vehicular transportation have elevated the concentration of GHGs in the atmosphere above natural levels. According to the IPCC study (IPCC, 2007), the atmospheric concentration of CO_2 in 2005 was 379 ppm compared to the pre-industrial levels of 280 ppm. In addition, the Fourth U.S. Climate Action Report concluded, in assessing current trends, that carbon dioxide emissions increased by 20 percent from 1990 to 2004, while methane and nitrous oxide emissions decreased by 10 percent and 2 percent, respectively. Exhibit 3-1 shows a graphical presentation of the global heat balance.

There appears to be a close relationship between the increased concentration of GHGs in the atmosphere and global temperatures. For example, the California Climate Change Center reports that by the end of this century, average global surface temperatures could rise by 4.7 to 10.5 ºF due to increased GHG emissions. Scientific evidence indicates a trend of increasing global temperatures near the earth's surface over the past century due to increased human-induced levels of GHGs.

GHGs differ from criteria pollutants in that GHG emissions do not cause direct adverse human health effects. Rather, the direct environmental effect of GHG emissions is the increase in global temperatures, which in turn has numerous indirect effects on the environment and humans. For example, some observed changes include shrinking glaciers, thawing permafrost, later



Source: NAS, 2009

Exhibit 3-1 Natural and Amplified Warming

freezing and earlier break-up of ice on rivers and lakes, a lengthened growing season, shifts in plant and animal ranges, and earlier flowering of trees (IPCC, 2001). Other, longer term environmental impacts of global warming may include sea-level rise, changing weather patterns with increases in the severity of storms and droughts, changes to local and regional ecosystems including the potential loss of species, and a significant reduction in winter snow pack. For example, estimates include a 30 to 90 percent reduction in snow pack in the Sierra Nevada mountain range. Current data suggest that in the next 25 years, in every season of the year, California could experience unprecedented heat, longer and more extreme heat waves, greater intensity and frequency of heat waves, and longer dry periods. More specifically, the California Climate Change Center (2006) predicted that California could witness the following events:

- Temperature rises between three to 10.5 ºF
- 6 to 20 inches or more rise in sea level
- 2 to 4 times as many heat-wave days in major urban centers
- 2 to 6 times as many heat-related deaths in major urban centers
- 1 to 1.5 times more critically dry years
- Losses to mountaintop snowpacks and water supply (e.g., according to the California Climate Change Center, Sierra snowpack could be reduced by as much as 20 to 40 percent by 2100 [CEC, 2009])
- 25 to 85 percent increase in days conducive to ozone formation
- 3 to 20 percent increase in electricity demand
- 10 to 55 percent increase in the risk of wildfires

Direct Effects of Sea-Level Rise on the California Coast

According to studies by California Climate Change Center and the Pacific Institute (PI, 2009) under medium to medium-high GHG emissions scenarios, MSL along the California coast is projected to rise from 3 to 4.5 ft (1.0 to 1.4 m) by the year 2100. The direct effect of sea-level rise on transportation includes the following:

Navigation. Sea-level rise makes water deeper, which enables deeper draft vessels to navigate a particular channel. This effect, however, is fairly small compared with the draft of most vessels. Saltwater advancing upstream can alter the point at which flocculation leads to sedimentation and the creation of shoals. Conversely, the clearance under bridges decreases. In a few cases where clearances are extremely tight, this effect could limit the ability of boats to pass underneath a bridge, particularly in the case of very small boats slowly passing underneath very small bridges, where the clearance may be less than a foot. Larger vessels are less likely to be impeded, because most bridges over key shipping lanes are either drawbridges or have very high spans. The proposed bridge replacement project would be taller with more

clearance for the vessel passage compared to the existing condition. As such, it would provide better safety for vessel traffic in case of sea-level rise.

Roadways. Sea-level rise may also affect roadways. In many low-lying communities, roads are lower than the surrounding lands, so that land can drain into the streets. As a result, the streets are the first to flood. In some barrier island communities, the lowest bayside streets are already flooded during spring high tides. As the sea rises, this flooding will become more frequent. Most roads are not flooded by the tides and have some type of drainage system to convey water away during rainstorms. As the sea level rises, these drainage systems become less effective, causing more flooding—and increased rainfall intensity will further increase the severity and frequency of flooding there. The proposed project would improve safety by providing improved corridor conditions.

The World Resources Institute's GHG Protocol Initiative identifies six GHGs generated by human activity that are believed to be contributors to global warming (WRI/WBCSD, 2007):

- Carbon dioxide (CO_2)
- Methane (CH_4)
- Nitrous oxide (N_2O)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulfur hexafluoride (SF_6)

The different GHGs have varying global warming potential (GWP). The GWP is the potential of a gas to trap heat in the atmosphere. The reference gas for GWP is CO_2, which has a GWP of one. Methane has a GWP of 21, which means that it has 21 times greater global warming effect than CO_2 on a mass basis. N_2O has a GWP of 310. To assess the effect of GHG emissions, the combined emissions of various GHGs from a source are presented as a CO_2 equivalent (CO_2e). The total CO_2e is calculated by multiplying the amount of each GHG emitted from the project by its GWP and adding them up.

Black carbon has recently been implicated as a contributor to global warming due to its heat absorption while airborne in the atmosphere (House of Representatives 2007). It also may contribute to melting of snowpack, glaciers, and polar ice when it settles on these surfaces because its black color absorbs more solar radiation than ice. Recent research indicates that some fraction of black carbon observed in California mountains is likely due to trans-Pacific transport from Asia (Hadley, *et. al.* 2008). Black carbon is emitted from a range of naturally occurring events and human activities, including wildfires, diesel engines, and domestic biofuel burning. Emission studies suggest that approximately one-third of black carbon emissions come from biomass burning sources such as waste combustion and wood-fired stoves, and the remainder come from fossil fuel burning sources such as diesel engines (House of Representatives 2007). At present, there are no standards, regulations, or protocols related to assessing or mitigating black carbon emissions.

Black carbon is a component of DPM; therefore, it is released into the atmosphere as a component of diesel engine emissions. Black carbon emissions are addressed in this EIR/EA through the detailed analysis of DPM emissions. DPM emissions are the focus of the project criteria pollutant and HRA. The health risk factors for DPM take into consideration all of its chemical constituents, including black carbon; therefore, black carbon emissions are addressed as part of DPM through the project HRA.

Recently, the U.S. Supreme Court ruled that potential harm associated with climate change is serious and well recognized, that EPA must regulate GHGs as pollutants, and it must promulgate regulations for GHG emissions from new motor vehicles (*Massachusetts et al. Environmental Protection Agency* [case No. 05-1120], 2007). Currently, control of GHGs is generally regulated at the state level and approached by setting emission reduction targets for existing sources of GHGs, setting policies to promote renewable energy and increase energy efficiency, and developing statewide action plans.

To date, 12 states, including California, have set state GHG emission targets. EO S-3-05 and the passage of AB 32, the California Global Warming Solutions Act of 2006, promulgated the California target to achieve 1990 GHG levels by the year 2020. The target-setting approach allows progress to be made in addressing climate change and is a forerunner to the setting of emission limits. A companion bill, Senate Bill (SB) 1368, similarly addresses global warming, but from the perspective of electricity generators selling power into the state. The legislation requires that imported power meet the same GHG standards that power plants in California meet. SB 1368 also sets standards for CO_2 for any long-term power production of electricity at 1,000 pounds per megawatt hour.

3.3.2 Regulatory Background

The approach to addressing the emission of GHGs is through environmental regulations enforced through air quality laws. The Supreme Court has determined that GHGs are pollutants that can be regulated under the CAA. In addition,

California has passed laws directing the CARB to develop actions to reduce GHG emissions.

Federal Level

At the time of this writing, EPA had not promulgated any regulations under the CAA pertaining to GHG emissions; however, GHG emissions and related energy issues are in the process of consideration for legislation at the federal level. On May 19, 2009, President Obama announced a new national policy aimed at increasing fuel economy and reducing GHG emissions for all new cars and trucks sold in the United States. The new national policy, which will harmonize GHG emissions standards and fuel economy standards, is the result of an agreement among California, the United States, and the automobile industry. As part of the agreement, EPA and the federal DOT are jointly developing new federal standards for model years 2012-2016 that will ultimately require an average fuel economy standard of 35.5 mpg in 2016. This is roughly equivalent to Pavley's 2016 GHG emission standard and surpasses the standard set in the fuel economy law passed by Congress in 2007, which required an average fuel economy of 35 mpg in 2020. Furthermore, in June 2009, the House of Representatives passed the American Clean Energy and Security Act (HR 2454), which would establish an economy-wide GHG cap-and-trade system to help address climate change and build a clean energy economy (PEW Center, 2009).

State Level

California has passed laws directing the CARB to develop actions to reduce GHG emissions. Caltrans and its parent agency, the Business, Transportation, and Housing Agency, have also taken an active role in addressing GHG emission reduction and climate change.

Western Regional Climate Action Initiative. In 2007, the states of California, Arizona, New Mexico, Oregon, Washington, Utah, and Montana, and the Canadian provinces of British Colombia, Manitoba, and Quebec signed the Western Regional Climate Action Initiative (WCI). The goal of the Initiative is to collaborate to identify, evaluate, and implement ways to reduce GHG emissions, as well as to design a regional market-based multi-sector mechanism by the end of 2008. In addition, a multi-state registry will track, manage, and credit entities that reduce GHG emissions.

AB 1493 – Vehicular Emissions of Greenhouse Gases. In 2002, with the passage of AB 1493 (Pavley), California launched an innovative and proactive approach to dealing with GHG emissions and climate change at the state level. AB 1493 required CARB to develop and implement regulations to reduce GHGs emitted by automobile passenger vehicles and light-duty trucks; these regulations will apply to automobiles and light trucks beginning with 2009 and later model year vehicles. CARB estimates that the regulation will reduce climate change emissions from the light-duty passenger vehicle fleet by 18 percent in 2020 and by 27 percent in 2030 (CARB, 2004). In 2008, EPA denied California's request for a waiver under the CAA needed to implement AB 1493. On January 21, 2009, CARB requested that EPA reconsider its previous waiver denial, and on June, 30, 2009, EPA granted the waiver request, which begins with motor vehicles in the 2009 model year (74 Fed. Reg. 32744). California is expected to enforce its standards for 2009 to 2011 and then harmonize efforts with the federal government to implement equivalent standards for 2012 to 2016. The granting of the waiver will also allow California to implement even stronger standards in the future. The state is expected to start developing new standards for the post-2016 model years later this year.

AB 32 – California Global Warming Solution Act of 2006. On June 1, 2005, Governor Arnold Schwarzenegger signed EO S-3-05. The goal of this Executive Order is to reduce California's GHG emissions to: (1) 2000 levels by 2010, (2) 1990 levels by the 2020 and (3) 80 percent below the 1990 levels by the year 2050.

In 2006, this goal was further reinforced with the passage of AB 32, the California Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals while further mandating that CARB create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of GHGs." By January 1, 2009, CARB must adopt a scoping plan for reducing California's GHG emissions. In December 2008, CARB adopted a final scoping plan for reducing the State's GHG emissions.

Executive Order S-01-07. EO S-01-07 was enacted by Governor Schwarzenegger on January 18, 2007. The order mandates the following: (1) establish a statewide goal to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020; and (2) establish a Low Carbon Fuel Standard (LCFS) for transportation fuels for California.

California Climate Action Registry. Established by the California Legislature in 2000, the California Climate Action Registry (CCAR) (Registry) is a nonprofit public-private partnership that maintains a voluntary registry for GHG emissions. The purpose of the Registry is to help

companies, organizations, and local agencies establish GHG emissions baselines for purposes of complying with future GHG emission reduction requirements. It provides leadership on climate change by developing and promoting credible, accurate, and consistent GHG reporting standards and tools for organizations to measure, monitor, verify, and reduce their GHG emissions consistently across industry sectors and geographical borders.

SB 97. SB 97, enacted in 2007, directs the state Office of Planning and Research (OPR) to develop draft CEQA Guidelines "for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions" by July 1, 2009, and directs the Resources Agency (now the National Resources Agency) to certify and adopt the CEQA Guidelines by January 1, 2010. The National Resources Agency closed comments on the CEQA Guidelines amendments for GHG emissions on November 10, 2009.

AB 32 requires CARB to incorporate the standards and protocols developed by CCAR into the state's future GHG emissions reporting program to the maximum extent feasible. The current GHG emission calculation methods used by CCAR are contained in *California Climate Action Registry – General Reporting Protocol* (CCAR Protocol – V2.2) (CCAR, 2007). This protocol categorizes GHG emission sources as: (1) direct (i.e., vehicles, onsite combustion, fugitive, and process emissions), and (2) indirect (i.e., from offsite electricity, steam, and co-generation). The City of Long Beach (and the Port, as the City Harbor Department), is a member of the CCAR. EO S-20-06 further directs state agencies to begin implementing AB 32, including the recommendations made by the state's Climate Action Team.

POLB Climate Change/Greenhouse Gas Strategic Plan. The Port's commitment to protecting the environment, as stated in the Green Port Policy, necessitates the development of programs and projects to reduce GHG emissions. Although the state has yet to formalize GHG regulations for the goods movement sector, the Port has already begun work in this area. In September 2008, the Port's Board of Harbor Commissioners adopted a formal resolution establishing a framework for reducing GHG emissions. The framework outlined efforts that are already underway at the Port toward addressing the issue of climate change. These efforts include:

1. The Port collaborated with other city departments to produce the city's first voluntary GHG emissions inventory (calendar year 2007) which was submitted to the CCAR.
2. The Port joined other city departments in preparing a plan to increase energy efficiency in city-owned facilities, in turn reducing indirect GHG emissions from energy generation. This initiative is known as the Southern California Edison 2009- 2011 Local Government Partnership.
3. The Port participates in tree planting and urban forest renewal efforts through its support of the City of Long Beach's Urban Forest Master Plan.
4. Port staff consulted with the Long Beach Gas and Oil Department (LBGO) and Tidelands Oil Production Company (Tidelands) to evaluate potential opportunities for capturing CO_2 produced by oil operations in the Harbor District and re-injecting (sequestration) it through wells at the Port back into the subsurface formations.
5. Beginning with the 2006 POLB air emissions inventory, GHG emissions from oceangoing vessels, heavy-duty trucks, cargo-handling equipment, harbor craft, and locomotives are quantified to enable the establishment of GHG reduction goals.
6. The Port's Renewable Energy Working Group is developing strategies to expand renewable energy at the Port. Criteria for emerging technologies will be established so that the technologies can be evaluated in a manner similar to the existing CAAP Technology Advancement Program.
7. The Port's Renewable Energy Working Group recently finalized a Solar Energy Technology and Siting Study ("Solar Siting Study") that reviewed available solar technologies and the estimated solar energy generation potential for the entire Harbor District. The study determined that there are many sites within the Harbor District where solar energy-generating technologies could be developed on building rooftops and at ground-level.
8. Based on the Solar Siting Study, the Port is developing a program to provide incentive funding to Port tenants for the installation of solar panels on tenant-controlled facilities.

The Port is also developing a Climate Change/ Greenhouse Gas Strategic Plan (CC/GHG Plan). This plan will examine GHG impacts for all activities within the Harbor District and will identify strategies for reducing the overall carbon footprint of those activities. Similar to the CAAP, the Port's GHG/CC Plan will identify strategies for activities under direct Port control and also those that are controlled by third parties, such as tenants. This Plan will also be used to mitigate potential project-

specific and cumulative GHG impacts from future projects through modernization and/or upgrading of marine terminals and other facilities in the Long Beach Harbor District.

One element of the CC/GHG Plan is the Greenhouse Gas Emission Reduction Program Guidelines (GHG Guidelines). These Guidelines describe a procedure that the Port will use to select GHG emission reduction programs that meet the CC/GHG Plan reduction goals. The Guidelines were adopted by the Board of Commissioners on March 22, 2009.

The work on establishing thresholds is continuing, and regional action plans are being developed throughout California. These include Climate Change Action Plans adopted by: San Joaquin Valley APCD, August 2008; San Francisco Bay Area.

Caltrans Climate Action Program. The Climate Action Program (CAP) at Caltrans is an interdisciplinary effort intended to promote, facilitate, and coordinate implementation of climate change strategies and related activities within the Department and with partner agencies. The program focuses on GHG emission reduction and adaptation measures. The overall objective is to encourage innovative ways to balance progressive program delivery within the context of responsible environmental stewardship in a way that:

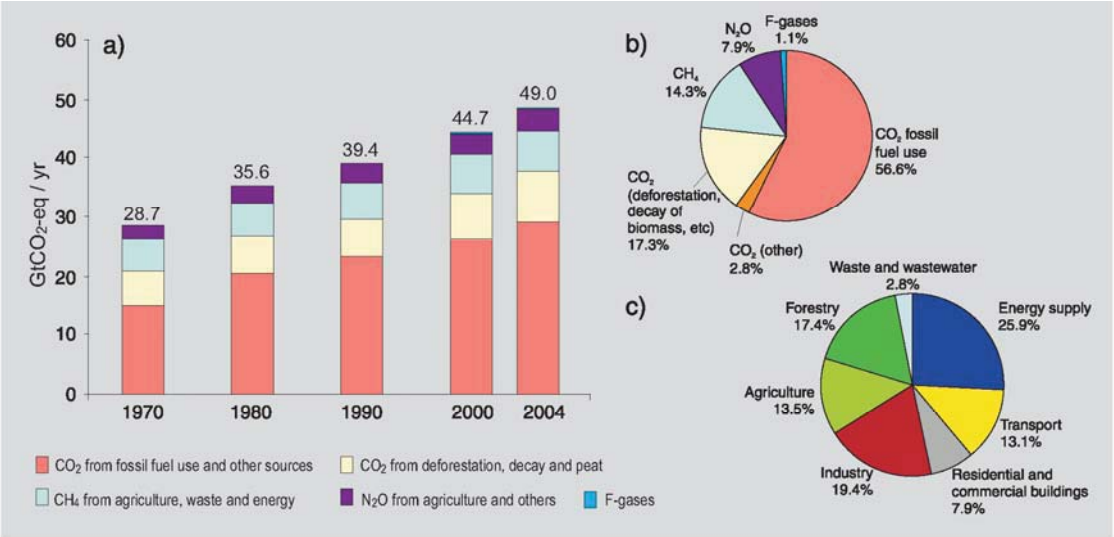
1. allows transportation strategies, plans, and projects as a whole to contribute to the state's GHG emission reduction plan;
2. provides guidelines, procedures, performance measures, and a quantifiable set of reporting protocol to monitor GHG footprints;
3. considers potential impacts of climate variability on the transportation system and development of risk assessment for long-lasting transportation investments; and
4. advances applied research to support climate change knowledge base in transportation.

The CAP serves as a resource for technical assistance, training, information exchange, and partnership-building opportunities.

Caltrans has taken tangible steps and will continue to explore feasible, cost-effective measures for further reduction of GHG emissions from transportation. The Department will work closely with the CAT, Cal-EPA, CARB, CEC. and other stakeholders to ensure an effective cross-agency policy framework to maintain California as a leader in protecting the environment and in the fight against climate change.

3.3.3 Sources of GHGs

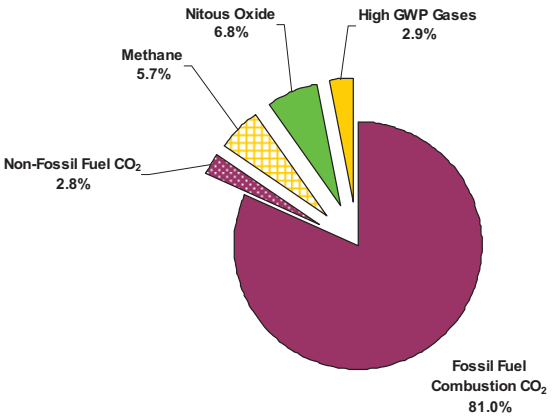
The GHG emissions are mostly related to fossil fuel combustion for energy use, as shown in Exhibits 3-2 and 3-4. Exhibit 3-2 shows historical GHG emissions from a global perspective, and Exhibit 3-4 presents California sources of anthropogenic GHGs. These sources are driven largely by economic growth and fuel used for power generation, transportation, heating, and cooling.



(a) Global annual emissions of anthropogenic GHGs from 1970 to 2004. (b) Share of different anthropogenic GHGs in total emissions in 2004 in terms of carbon dioxide equivalents (CO_2-eq). (c) Share of different sectors in total anthropogenic GHG emissions in 2004 in terms of CO_2-eq. (Forestry includes deforestation.)

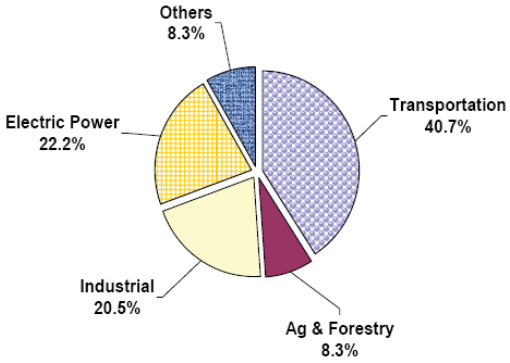
Source: IPCC, 2007

Exhibit 3-2 Global Sources of Anthropogenic GHGs



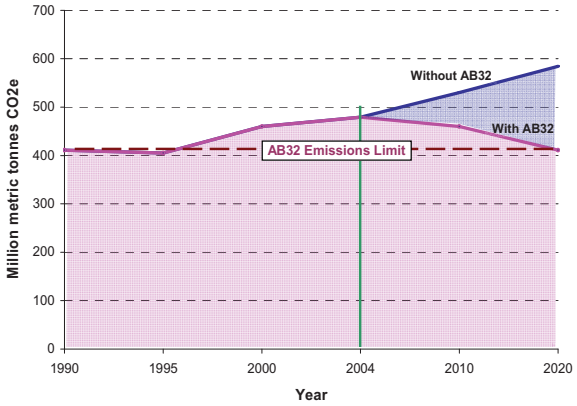
Source: CEC, 2006.

Exhibit 3-3
California GHG Composition by Type of Gas in 2004



Source: CEC, 2006

Exhibit 3-4
Sources of California's GHG Emissions by End-Use Sector (2004)



Source: CEC, 2006.

Exhibit 3-5
California GHG Inventory Forecast

According to the CEC, energy-related CO_2 emissions resulting from fossil fuel combustion represents approximately 81 percent of California's total GHG emissions (Exhibit 3-3). Although the emissions of other GHG gases, such as CH_4 (methane) and N_2O (nitrous oxide) are small, it should be noted that their GWP is very high in relation to that of CO_2.

Primary sources of emissions of these GHGs are from:

- CH_4 – agricultural activities and landfills
- N_2O – agricultural soil and mobile source fuel combustion
- High GWP gases – industrial processes, refrigerants, insulating material; these have a long lifetime in the atmosphere (varying from several decades to several centuries)

According to CEC, among the end-use sectors contributing to California's GHG emissions, the transportation sector represents the largest source and constitutes 41 percent of the state's GHG emissions. Exhibit 3-4 shows the emissions of GHGs by the end-use sector in 2004, and Exhibit 3-5 presents California GHG emissions trends and forecasts to 2020, with and without the AB 32 limit.

As Exhibit 3-4 shows, transportation sector activities are responsible for a substantial portion of the GHG emissions in California. Because of its size, it is critical that the transportation sector achieve significant emission reductions toward the State's 2020 goal. If the transportation sector does not provide significant GHG reductions, it would be difficult for another sector to make up the required reduction in emission reductions.

3.3.4 Project GHG Emissions

GHG Significance Threshold

As previously described, California laws, such as SB 97 (PRC §21083.05) and AB 32, provide that climate change is an environmental effect subject to CEQA. Lead agencies therefore are required to determine whether a project's climate change-related effects may be significant and to impose feasible mitigation to minimize any significant effects. Determining significance, however, can be a challenging task. Accordingly, the Governor's OPR in its June 2008 Technical Advisory, "CEQA and Climate Change," asked CARB to make recommendations for GHG-related thresholds of significance, identifiable benchmarks or standards that assist lead agencies in the significance determination. According to its *Climate Change Scoping Plan* (CARB, 2008c), CARB was

anticipating to make its final recommendations on thresholds in 2009 (by June 1) to harmonize with OPR's timeline for issuing draft CEQA guidelines addressing GHG emissions and to provide much needed guidance to lead agencies in the near term; such guidance is, as of writing, not yet available.

As stated in CARB's Proposed Scoping Plan, CARB has concluded that a zero threshold, which was previously considered, should not be mandated in light of the fact that (1) some level of emissions in the near term and at mid-century is still consistent with climate stabilization and (2) current and anticipated regulations and programs apart from CEQA (e.g., AB 32, the Pavley vehicle regulations) will increasingly reduce the GHG contributions of past, present, and future projects; however, any non-zero threshold must be sufficiently stringent to make substantial contributions to reducing the State's GHG emissions to meet its interim (2020) and long-term (2050) emissions reduction targets.

CARB has developed preliminary interim threshold concepts for two important sectors: industrial projects, and residential and commercial projects (CARB, 2008c). At the time of this writing, CARB is still working on a proposal for an interim approach for significance thresholds for transportation projects and other sectors; therefore, for the analysis presented here, the project GHG emissions are compared with two baselines, consistent with those used in the analysis of criteria pollutant operational emissions. The project GHG emissions in opening year 2015 and horizon year 2030 are compared with two baselines as follows:

- The changes in CO_2e emissions along the project corridor, compared with the CEQA baseline (i.e., emissions during the NOP year 2005).
- The changes in CO_2e emissions along the project corridor compared with the No Project scenario.

These comparisons provide disclosure of changes in project emissions of GHGs. The analysis will be updated when thresholds of significance for transportation projects become available, which is anticipated by early 2010, according to the CARB Scoping Plan update.

GHG Emissions Analysis

The proposed project is a transportation facility; therefore, the GHG emissions would only include the direct GHG emissions that would be generated by the construction and operational activities of the project. Sources of GHG emissions are the same as those analyzed for criteria pollutant emissions and include (1) project-related construction sources, including off-road construction equipment exhaust emissions, and emissions from on-road haul trucks and workers commute vehicles; and (2) GHG emissions from vehicles traveling along the project corridor.

Project-related GHG emissions (No Project and Build Alternatives) were calculated using the emission factors for off-road and on-road mobile sources, annual VMTs along the project roadways, and guidelines of the CCAR Protocol and the *Technical Advisory*, prepared by the Governor Office of Planning and Research (OPR, 2008).

Climate change, as it relates to man-made GHG emissions, is by nature a global and cumulative phenomenon. According to the Association of Environmental Professionals (AEP), in its paper titled *Alternative Approaches to Analyzing Greenhouse Gas Emissions and Global Climate Change in CEQA Documents* (AEP, 2007), "an individual project does not generate enough GHG emissions to significantly influence global climate change. Global climate change is a cumulative impact; a project participates in this potential impact through its incremental contribution combined with the cumulative increase of all other sources of GHGs." The following GHG emissions estimate at the project level is presented following the POLB directive and for the purpose of disclosing all project-related emissions.

Table 3-5 summarizes the annual GHG emissions that would occur within the project region (i.e., California) associated with the construction and operation of the Bridge Replacement Alternatives during opening year 2015 and horizon year 2030. For the opening year, the total GHGs are presented as combined emissions from project operation and emissions from the simultaneous demolition of the old bridge. As Table 3-5 indicates, in each project construction phase, as well as future operation, CO_2 is the primary GHG of concern because vehicle operation (on-road or off-road) does not result in appreciable amounts of other GHGs.

Comparison with No Project (NEPA Baseline)

Table 3-5 shows that the project annual CO_2e emissions would increase relative to the No Project scenario (defined as NEPA baseline in this EIR/EA). The estimated GHG emissions increases as compared with the No Project scenario are 5,618 metric tons CO_2e per year ($MTCO_2e/yr$) and 6,383 $MTCO_2e/yr$ in 2015 and 2030, respectively.

It should be noted that while the CO_2 emissions factor does assume certain reductions in vehicle emissions due to future vehicle models operating more efficiently, the factor does not take into account additional reductions in vehicle emissions that would take place in response to AB 1493, when mobile source emission reductions are ultimately implemented through legislation.

As previously mentioned, CARB and SCAQMD have developed preliminary interim threshold concepts for two important sectors – industrial projects, and residential and commercial projects – but not as yet for the transportation sector (CARB, 2008c). The proposed CARB interim significance threshold of GHG emissions for industrial projects is set at 7,000 $MTCO_2e$/yr, and for residential/ commercial projects the interim significance threshold is approximately 6,500 $MTCO_2e$/yr. SCAQMD recently recommended a revised threshold of 10,000 $MTCO_2e$/yr for industrial-sector projects. This new threshold includes construction emissions amortized over 30 years and added to operational GHG emissions (SCAQMD, 2008).

Although a significance threshold of GHG emissions for transportation-sector projects has not yet been proposed, it should be noted that the project contribution to GHG emissions, compared with the no-project scenario, is below the CARB and SCAQMD recommended interim significance thresholds for both industrial and residential/ commercial projects. Similarly, compared with the SCAQMD recommended threshold of 10,000 $MTCO_2e$/yr for industrial-sector projects; with total GHG emissions through the construction period of project, amortized over 30 years, the additional CO_2e for the project would be 653 metric tons per year. Adding this value to the operational emissions of GHGs would result in project increment (the increase of GHG emissions compared to no-project scenario) of 5,964 $MTCO_2e$/yr and 7,036 $MTCO_2e$/yr in 2015 and

Table 3-5
Annual Operational GHG Emissions Associated with Project Proposed Alternative

Project Scenario/Roadway Segments	Emissions (Metric Tons per Year)			
	CO_2	CH_4	N_2O	CO_2e
CEQA Base Year 2005				
Ocean Boulevard Navy Way to Pier S Avenue	6,250	0.39	0.16	6,308
Pier S Avenue to Terminal Island Freeway	2,278	0.20	0.04	2,295
Terminal Island Freeway to Horseshoe Ramps	7,876	0.48	0.20	7,949
Gerald Desmond Bridge	10,511	0.63	0.27	10,608
NB SR 710 Connector Ramp	2,965	0.16	0.08	2,994
SB SR 710 Connector Ramp	1,136	0.06	0.03	1,148
Ocean Boulevard Connector Ramps to Downtown	1,567	0.14	0.02	1,577
Total Year 2005	32,583	2.05	0.81	32,878
Year 2015 – No Project				
Ocean Boulevard Navy Way to Pier S Avenue	6,471	0.14	0.18	6,529
Pier S Avenue to Terminal Island Freeway	6,229	0.14	0.16	6,282
Terminal Island Freeway to Horseshoe Ramps	3,775	0.11	0.09	3,805
Gerald Desmond Bridge	16,714	0.41	0.43	16,858
NB SR 710 Connector Ramp	4,192	0.08	0.12	4,232
SB SR 710 Connector Ramp	2,136	0.04	0.07	2,158
Ocean Boulevard Connector Ramps to Downtown	1,677	0.06	0.03	1,687
Total Year 2015 – No Project	41,195	0.98	1.08	41,551
Net Change from 2005 CEQA Baseline	8,612	-1.07	0.27	8,673

Table 3-5
Annual Operational GHG Emissions Associated with Project Proposed Alternative

Project Scenario/Roadway Segments	Emissions (Metric Tons per Year)			
	CO_2	CH_4	N_2O	CO_2e
Year 2015 – With Project (Opening Year)				
Ocean Boulevard				
Navy Way to Pier S Avenue	6,536	0.14	0.18	6,594
Pier S Avenue to Terminal Island Freeway	7,338	0.17	0.19	7,401
Terminal Island Freeway to Horseshoe Ramps	3,420	0.10	0.08	3,447
New Bridge	18,151	0.38	0.51	18,318
NB SR 710 Connector Ramp	4,905	0.09	0.14	4,951
SB SR 710 Connector Ramp	3,672	0.06	0.11	3,708
Ocean Boulevard Connector Ramps to Downtown	2,427	0.08	0.04	2,442
Total Roadway Traffic Emissions	46,448	1.02	1.27	46,862
Demolition of Old Bridge – Construction Emissions	306	0.06	0.00	307
Total Year 2015 – Project Opening Year	46,754	1.08	1.27	47,169
Net Change from 2005 CEQA Baseline	14,171	-0.98	0.46	14,291
Net Change from No Project Scenario	5,559	0.1	0.19	5,618
Horizon Year 2030 – No Project				
Ocean Boulevard				
Navy Way to Pier S Avenue	8,467	0.07	0.24	8,544
Pier S Avenue to Terminal Island Freeway	7,317	0.06	0.20	7,381
Terminal Island Freeway to Horseshoe Ramps	4,514	0.05	0.11	4,549
Gerald Desmond Bridge	19,905	0.22	0.50	20,065
NB SR 710 Connector Ramp	4,669	0.03	0.14	4,714
SB SR 710 Connector Ramp	2,553	0.01	0.08	2,579
Ocean Boulevard Connector Ramps to Downtown	1,775	0.02	0.03	1,785
Total Year 2030 – No Project	49,201	0.47	1.31	49,616
Net Change from 2005 CEQA Baseline	16,618	-1.58	0.5	16,738
Horizon Year 2030 – With Project				
Ocean Boulevard				
Navy Way to Pier S Avenue	8,601	0.07	0.25	8,678
Pier S Avenue to Terminal Island Freeway	8,784	0.07	0.24	8,861
Terminal Island Freeway to Horseshoe Ramps	3,883	0.04	0.10	3,914
New Bridge	21,342	0.17	0.62	21,537
NB SR 710 Connector Ramp	5,781	0.04	0.18	5,837
SB SR 710 Connector Ramp	4,481	0.03	0.14	4,526
Ocean Boulevard Connector Ramps to Downtown	2,633	0.03	0.04	2,648
Total Year 2030 – With Project	55,504	0.45	1.57	55,999
Net Change from 2005 CEQA Baseline	22,921	-1.60	0.75	23,121
Net Change from No Project Scenario	6,303	-0.02	0.26	6,383

One metric ton equals 2,204.6 lbs

CO_2e = carbon dioxide equivalent of combined emissions of all GHGs. The CO_2-equivalent emission of each GHG is the emission rate multiplied by its corresponding global warming potential (GWP). The GWPs for CH_4 and N_2O are 21 and 310, respectively.

2030, respectively, both of which are less than the SCAQMD recommended threshold for industrial projects. Furthermore, project GHG emissions compared to the CEQA baseline are above the aforementioned thresholds; however, determination of significance of project GHG emissions will be provided when CARB adopts or makes available such thresholds for transportation-sector projects.

As described above, both the Port and Caltrans have committed to reducing GHG emissions through the development of programs and plans to reduce GHG emissions. The Port has already begun programs to reduce GHG emissions from goods movement. The Port's 2008 formal resolution has established a framework for reducing GHG emissions. The framework outlined efforts (as listed above) that are already underway at the Port toward addressing the issue of climate change.

Comparison with CEQA Baseline

The data in Table 3-5 show that in each analyzed future year, annual operational CO_2e emissions would increase relative to the CEQA baseline.

The estimated GHG emissions increase from 2005 emissions is 14,291 $MTCO_2e$/yr and 23,121 $MTCO_2e$/yr during 2015 and 2030, respectively. These increases would be considered significant based on the above discussion of thresholds for GHG emissions.

Cumulative and Regional Emissions

At the regional level, the proposed Build Alternatives do not generate additional new trips, but rather result in a redistribution of vehicle trips. As shown in Table 3-6, the cumulative effect of the Bridge Replacement Alternatives would be a decrease in regional VMT and Vehicle Hours Traveled (VHT) when compared to the No Project/ Rehabilitation Alternative. The reduction in VMT and VHT would likely result in a decrease of the cumulative GHG emissions within the region; however, the anticipated decrease cannot be quantified and the project-related increase in GHG would still be considered a cumulatively considerable significant and unavoidable project impact.

Mitigation Measures

As described in Section 2.2.5.5 of this EIR/EA, the project would employ all applicable control measures included in the CAAP and will comply with applicable state plans and regulations.

As included in the CARB Scoping Plan, GHG emission reductions will come from three overarching strategies: more efficient vehicles, lower-carbon fuels, and reduction of vehicle use or VMT. The GHG emission reductions in the transportation sector will be achieved through regulations, market mechanisms, incentives, and land use policy.

At the project level, there are common measures that have the potential to reduce GHG emissions. These measures include using reclaimed water, landscaping, energy-efficient lighting, and idling restrictions. The following presents a brief discussion of GHG reduction potential of these measures.

Table 3-6
Forecasted Daily VMT and VHT in the Project Vicinity

	No Project/ Rehabilitation Alternative	Bridge Replacement Alternatives	Increase/ (Decrease)	No Project/ Rehabilitation Alternative	Bridge Replacement Alternatives	Increase/ (Decrease)
	2015 VMT			**2030 VMT**		
Total Autos	4,475,415	4,466,876	(8,539)	4,950,124	4,937,966	(12,157)
Total Trucks	850,846	847,881	(2,964)	1,144,522	1,138,963	(5,560)
Total All Vehicles	5,326,260	5,314,757	(11,503)	6,094,646	6,076,929	(17,717)
	2030 VHT			**2030 VHT**		
Total Autos	113,604	112,817	(787)	148,869	147,273	(1,596)
Total Trucks	17,685	17,404	(281)	31,687	30,909	(778)
Total All Vehicles	131,289	130,221	(1,068)	180,556	178,182	(2,374)

Source: Iteris, 2009.

- Reclaimed Water – It is estimated that 30 percent of the electricity used in California is used for the treatment and delivery of water. Using reclaimed water helps conserve energy and reduces GHG emissions from electricity production. Reclaimed water would be used, if available, during construction of the proposed project.
- Landscaping – Landscaping would reduce surface warming and would decrease CO_2 through photosynthesis. Implementation of this measure would also have the potential to reduce GHG emissions.
- Energy-Efficient Lighting – Energy-efficient streetlights and LED traffic signals would be incorporated, to the extent feasible, in the final design of the proposed project.
- Idling restrictions for trucks – Limiting truck idling time to 2 minutes during construction would also reduce GHG emissions during construction.

Use of these common GHG reduction measures would be considered, as applicable during the construction planning stage, for implementation during project construction. Implementation of these measures has the potential to reduce GHG emissions in addition to the reductions expected from operation of the proposed project.

Caltrans and the Business, Transportation, and Housing Agency have taken an active role in addressing GHG emissions reduction from transportation sources. Recognizing that more than 81 percent of California's GHG emissions are from the burning of fossil fuels and 40 percent of all human-made GHG emissions are from transportation, Caltrans has created and is implementing the CAP (December 2006).One of the main strategies in the proposed CAP is to make California's transportation system more efficient. The highest levels of CO_2 from mobile sources, such as automobiles, occur at stop-and-go speeds (zero to 25 mph – traffic congestion) and speeds higher than 55 mph. Relieving congestion, by enhancing operations and improving travel times in high-congestion travel corridors, would lead to an overall reduction in GHG emissions. A stated project objective is to reduce congestion and improve traffic operations, which is consistent with the objectives of the CAP. The Bridge Replacement Alternatives are expected to relieve congestion and improve travel times, which may result in an overall reduction of GHG emissions.

Caltrans continues to be actively involved on the Governor's Climate Action Team as CARB works to implement AB 1493 and AB 32. As part of its CAP, Caltrans is supporting efforts to reduce VMT by planning and implementing smart land use strategies (i.e., job/ housing proximity, developing transit-oriented communities, and high-density housing along transit corridors). Caltrans is working closely with local jurisdictions on planning activities; however, Caltrans does not have local land use planning authority. Caltrans is also supporting efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars and light- and heavy-duty trucks; however, it is important to note that control of fuel economy standards is held by EPA and CARB. Caltrans is also reducing the amount of cement used as binding material in concrete. Consistent with the CAP, binding materials for pavements and bridges, could be partially substituted by supplementary cementitious materials such as fly ash, slag, or silica fume, whose production generate less CO_2 emissions than traditional Portland cement. Lastly, the use of alternative fuels is also being considered. Caltrans is participating in funding for alternative fuel research at UC Davis.

3.4 MITIGATION MEASURES FOR SIGNIFICANT IMPACTS UNDER CEQA

Mitigation measures under CEQA would be the same as those discussed in Chapter 2 within each section under Avoidance, Minimization and/or Mitigation Measures and CEQA (AQ-1) and CEQA (GHG-1) described above. With the exception of construction and operational NO_X emissions and the cumulative considerable effects on air quality, unavoidable traffic impacts, and unavoidable project-related and cumulatively considerable increase in GHG emissions, all other construction and operational impacts associated with the Build Alternatives would be fully mitigated.