Section 3.2
Air Quality, Meteorology and Greenhouse Gases

SECTION SUMMARY

This section describes existing air quality, meteorology, and greenhouse gas (GHG) emissions within the Port and potential impacts on air quality associated with construction and operation of the proposed Project or an alternative.

Section 3.2, Air Quality, Meteorology, and Greenhouse Gases, provides the following:

- A description of existing air quality in the Port area;
- A discussion on the methodology used to determine whether the proposed Project or alternatives result in an impact to air quality from Project or alternative generated emissions and GHGs;
- An impact analysis of both the proposed Project and alternatives; and,
- A description of any mitigation measures proposed to reduce any potential impacts, as applicable.

Key Points of Section 3.2:

The proposed Project and alternatives would expand an existing container terminal, and its operations would be consistent with other uses and container terminals in the Project area.

Construction Impacts

The proposed Project and Alternatives 1 through 6 would result in significant air quality and GHG emissions impacts during construction under CEQA. In addition, the proposed Project and Alternatives 3 through 6 would result in significant air quality emissions impacts during construction under NEPA. No significance threshold under NEPA for GHGs has been set at this time; therefore, a significance determination for GHGs is not made for the proposed Project and Alternatives.

Construction-related emissions would lead to significant ambient air concentrations under CEQA for the proposed Project and all alternatives with the exception of Alternative 1; and under NEPA for the proposed Project and all alternatives with the exception of Alternatives 1 and 2. After the application of MM AQ-1 through MM AQ-8, summarized below, construction impacts would be reduced but would remain significant and unavoidable for air quality impacts and GHG emissions.

MM AQ-1 ***Harbor Craft Used during Construction.*** With some exceptions, harbor craft would be upgraded to Tier 3 or better engines.

MM AQ-2: ***Cargo Ships Used During Construction***. All ships and barges must comply with the expanded Vessel Speed Reduction Program (VSRP) and use low-sulfur fuel (maximum fuel sulfur content of 0.2 percent) within 40 nautical miles (nm) of Point Fermin.

MM AQ-3: ***Fleet Modernization for On-Road Trucks Used During Construction***. Trucks hauling material such as debris or any fill material would be fully covered while operating off Port property; idling would be restricted to a maximum of 5 minutes; and trucks must be compliant with an accelerated schedule for the USEPA emission standards.

MM AQ-4: ***Fleet Modernization for Construction Equipment (except Vessels, Harbor Craft and On-Road Trucks***. All dredging equipment shall be electric and construction equipment will incorporate emissions-saving technology, if feasible; idling will be restricted to a maximum of 5 minutes; and, engines must meet USEPA standards depending on truck type and timing with certain exceptions.

MM AQ-5: ***Construction Best Management Practices (BMPs).*** LAHD shall implement BMPs to reduce air emissions from all LAHD-sponsored construction projects.

MM AQ-6: ***Additional Fugitive Dust Controls.*** Construction contractors must operate in compliance with South Coast Air Quality Management District (SCAQMD) Rule 403.

MM AQ-7: ***General Mitigation Measure.*** For any of the above mitigation measures (MM AQ-1 through MM AQ-6), if a CARB-certified technology becomes available and is shown to be as good as or better in terms of emissions performance than the existing measure, the technology would replace the existing measure pending approval by the Port. Measures will be set at the time a specific construction contract is advertised for bids.

MM AQ-8: ***Special Precautions near Sensitive Sites***. All construction activities located within 1,000 feet of sensitive receptors (defined as schools, playgrounds, daycares, and hospitals) shall notify each of these sites in writing at least 30 days before construction activities begin.

Operational Impacts

Operation of the proposed Project and Alternatives 1 through 6 would result in significant air quality emissions impacts under CEQA. Under CEQA, the proposed Project and all alternatives would emit significant levels of GHGs. No significance threshold under NEPA for GHGs has been set at this time; therefore a significance determination for GHGs is not made. Under NEPA, the Proposed Project and Alternatives 3 through 6 would result in significant air quality emissions. After the application of MM AQ-9 through MM AQ-20 and LM AQ-1 and LM AQ-2, summarized below, operational impacts would be reduced but would remain significant and unavoidable for operational air quality impacts and GHG emissions.

MM AQ-9: ***Alternative Maritime Power (AMP).*** APL ships calling at Berths 302-306 must use AMP at the following percentages while hoteling in the Port: 70 percent of total ship calls by 2017 and 95 percent of total ship calls by 2026.

MM AQ-10: ***Vessel Speed Reduction Program.*** All ships calling at Berths 302-306 shall comply with the expanded VSRP of 12 knots between 40 nm from Point Fermin and the Precautionary Area in the following implementation schedule: 2014 and thereafter: 95 percent.

MM AQ-11: ***Cleaner Ocean-going Vessels (OGV) Engines.*** The Tenant shall seek to maximize the number of vessels calling at the Berths 302-306 terminal that meet the International Maritime Organization (IMO) NOx limits.

MM AQ-12: ***OGV Engine Emissions Reduction Technology Improvements.*** When using or retrofitting existing ships bound for the Port of Los Angeles, the Tenant shall determine the feasibility of incorporating all emission reduction technology and/or design options.

MM AQ-13: ***Yard Tractors at Berths 302-306 Terminal.*** By the end of 2013, all yard tractors operating at the terminal shall meet either USEPA Tier 4 non-road or USEPA 2007 on-road emission standards.

MM AQ-14: ***Yard Equipment at Berth 302-306 Rail Yard.*** All diesel-powered equipment operated at the Berths 302-306 terminal rail yard shall implement the requirements discussed below in **MM AQ-15**

MM AQ-15: ***Yard Equipment at Berths 302-306 Terminal.*** All terminal equipment must been an accelerated schedule for USEPA standards and must install Verified Diesel Emissions Controls (VDECs) by a designated schedule.

MM AQ-16: ***Truck Idling Reduction Measure.*** Within six months of the effective (lease signed and approved) date and thereafter for the remaining term of the Permit and any holdover, the terminal operator shall ensure that truck idling is reduced to less than 30 minutes in total or 10 minutes at any given time while on the terminal.

In addition, the following mitigation measures, and **MM AQ-2** through **MM AQ-4** would be applied to the operation of the proposed Project and Alternatives 2 through 6 to further reduce GHG emissions.

MM AQ-17: ***Compact Fluorescent Light Bulbs.*** All interior buildings on the premises shall exclusively use fluorescent light bulbs, compact fluorescent light bulbs, or a technology with similar energy-saving capabilities, for ambient lighting within all terminal buildings. The tenant shall also maintain and replace any Port-supplied compact fluorescent light bulbs.

MM AQ-18: ***Energy Audit.*** The tenant shall conduct an energy audit by a third party of its choice every 5 years and install innovative power saving technology (1) where it is feasible; and (2) where the amount of savings would be reasonably sufficient to cover the costs of implementation.

MM AQ-19: ***Recycling.*** The tenant shall ensure a minimum of 40 percent of all waste generated in all terminal buildings is recycled by 2014 and 60 percent of all waste generated in all terminal buildings is recycled by 2016.

MM AQ-20: ***Tree Planting.*** The tenant shall plant shade trees around the main terminal building, and the tenant shall maintain all trees through the life of the lease.

Lease Measures

The following measures are standard lease measures that would be included in the lease for Berths 302-306 due to projected future emissions levels associated with the proposed Project. The measures will reduce future air emissions and comply with Port air quality planning requirements.

LM AQ-1: ***Periodic Review of New Technology and Regulations.*** The Port shall require the Berths 302-306 tenant to review, in terms of feasibility and benefits, any Port-identified or other new emissions-reduction technology, and report to the Port.

LM AQ-2: ***Substitution of New Technology.*** If any kind of technology becomes available and is shown to be as good or as better in terms of emissions reduction performance than the existing measure, the technology could replace the existing mitigation measure pending approval by the Port of Los Angeles.

Health Risk Impacts

Project operations would emit toxic air contaminant (TAC) emissions that could affect public health. A health risk assessment (HRA) evaluated three different types of health effects: individual lifetime cancer risk, acute noncancer hazard index (e.g., temporary irritation to the eyes, nose, throats, and lungs), and chronic noncancer hazard index (e.g., emphysema). Individual lifetime cancer risk is the additional chance for a person to contract cancer after a lifetime of exposure (in this case 70 years for a resident and 40 years for a worker) to proposed Project or alternative emissions.

The maximum CEQA cancer risk increments for residential and occupational receptors would exceed the SCAQMD thresholds of significance. The locations identified for the peak residential impact are at the liveaboards (people who live on boats) for boats docked west of Terminal Island Freeway at Anchorage Road. The cancer risk increment would also exceed the significance threshold at the liveaboards docked in Fish Harbor west of the proposed Project site. However, residential incremental cancer risk would not exceed the significance threshold at any residential areas on the mainland. The maximum NEPA cancer risk increments for all receptors are less than the significance thresholds for all receptor types. Mitigation measures MM AQ-9 through MM AQ-16 would reduce the maximum CEQA cancer risk increments associated with the proposed Project; however, the incremental cancer risks at the maximum exposed residential and occupational receptors would remain significant and unavoidable.

The acute hazard index is a ratio of the short-term average concentrations of TACs in the air to established referenced exposure levels. An acute hazard index below 1.0 indicates that adverse noncancer health effects from short term exposure are not expected. The combined TACs from construction and operations would result in significant acute hazard index impacts under CEQA and NEPA for the proposed Project and all alternatives, with the exception of Alternatives 1 and Alternative 2 under CEQA and NEPA. Mitigation measures **MM AQ-9 through MM AQ-16** would reduce the acute health risk impact but impacts would remain significant and unavoidable after mitigation for occupational receptors.

The chronic hazard index is a ratio of long-term average concentrations of TACs in the air to established referenced exposure levels. A chronic hazard index below 1.0 indicates that adverse noncancer health effects from long-term exposure are not expected. There are no chronic hazard index impacts for the proposed Project and alternatives under CEQA. Chronic hazard index impacts under NEPA would be less than significant, and there would be no impact under NEPA for Alternative 2.

Carbon Monoxide Hotspot, Odor, and Air Quality Management Plan (AQMP) Impacts

Construction and operation of the proposed Project or any of the alternatives would not generate on-road traffic that would contribute to an exceedance of the 1-hour or 8-hour CO standards; would not create an objectionable odor at the nearest sensitive receptor; and would not conflict with or obstruct implementation of the applicable AQMP. Impacts would be less than significant and mitigation would not be required

3.2.1 Introduction

Emissions from construction and operation of the proposed Project and alternatives would affect air quality in the immediate Project area and the surrounding region. This section includes a description of the affected air quality environment, predicted impacts of the proposed Project and alternatives, and mitigation measures that would reduce significant impacts.

3.2.2 Environmental Setting

The Project site is located in the Harbor District of the City of Los Angeles, within the South Coast Air Basin (SCAB). The SCAB consists of the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties and all of Orange County. The air basin covers an area of approximately 6,000 square miles and is bounded on the west by the Pacific Ocean; on the north and east by the San Gabriel, San Bernardino, and San Jacinto Mountains; and on the south by the San Diego County line.

3.2.2.1 Regional Climate and Meteorology

The climate of the Project region is classified as Mediterranean, characterized by warm, rainless summers and mild, wet winters. The major influence on the regional climate is the Eastern Pacific High (a strong persistent area of high atmospheric pressure over the Pacific Ocean), topography, and the moderating effects of the Pacific Ocean. Seasonal variations in the position and strength of the High are a key factor in the weather changes in the area.

The Eastern Pacific High attains its greatest strength and most northerly position during the summer, when the High is centered west of northern California. In this location, the High effectively shelters Southern California from the effects of polar storm systems. Large-scale atmospheric subsidence associated with the High produces an elevated temperature inversion along the West Coast. The base of this subsidence inversion is generally from 1,000 to 2,500 ft (300 to 800 meters) above mean sea level (MSL) during the summer. Vertical mixing is often limited to the base of the inversion, and air pollutants are trapped in the lower atmosphere. The mountain ranges that surround the Los Angeles Basin constrain the horizontal movement of air and also inhibit the dispersion of air pollutants out of the region. These two factors, combined with the air pollution sources of over 15 million people, are responsible for the high pollutant concentrations that can occur in the SCAB. In addition, the warm temperatures and high solar radiation during the summer months promote the formation of ozone (O_3), which has its highest levels during the summer.

The proximity of the Eastern Pacific High and a thermal low pressure system in the desert interior to the east produce a sea breeze regime that prevails within the Project region for most of the year, particularly during the spring and summer months. Sea breezes at the Port typically increase during the morning hours from the southerly direction and reach a peak in the afternoon as they blow from the southwest. These winds generally subside after sundown. During the warmest months of the year, however, sea breezes could persist well into the nighttime hours. Conversely, during the colder months of the year, northerly land breezes increase by sunset and into the evening hours. Sea breezes transport air pollutants away from the coast and towards the interior regions in the afternoon hours for most of the year.

During the fall and winter months, the Eastern Pacific High can combine with high pressure over the continent to produce light winds and extended inversion conditions in the region. These stagnant atmospheric conditions often result in elevated pollutant concentrations in the SCAB. Excessive buildup of high pressure in the Great Basin region can produce a “Santa Ana” condition, characterized by warm, dry, northeast winds in the basin and offshore regions. Santa Ana winds often ventilate the SCAB of air pollutants.

The Palos Verdes Hills have a major influence on wind flow in the Port. For example, during afternoon southwest sea breeze conditions, the Palos Verdes Hills often block this flow and create a zone of lighter winds in the inner Harbor area of the Port. During strong sea breezes, this flow can bend around the north side of the Hills and end up as a northwest breeze in the inner Harbor area. This topographic feature also deflects northeasterly land breezes that flow from the coastal plains to a more northerly direction through the Port.

3.2.2.2 Criteria Pollutants and Air Monitoring

Criteria Pollutants

Air quality at a given location can be characterized by the concentration of various pollutants in the air. Units of concentration are generally expressed as parts per million by volume (ppmv) or micrograms per cubic meter ($\mu g/m^3$) of air. The significance of a pollutant concentration is determined by comparing the concentration to an appropriate national or state ambient air quality standard. These standards represent the allowable atmospheric concentrations at which the public health and welfare are protected. They include a reasonable margin of safety to protect the more sensitive individuals in the population.

Pollutants for which ambient air quality standards have been adopted are known as criteria pollutants. These pollutants can harm human health and the environment, and cause property damage. These pollutants are called "criteria" air pollutants because they are regulated by developing human health-based and/or environmentally based criteria (science-based guidelines) for setting permissible levels. The set of limits based on human health is called the primary standards. Another set of limits intended to prevent environmental and property damage is called the secondary standards. The criteria pollutants of greatest concern in this air quality assessment are O_3, CO, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), PM_{10}, and particulate matter less than 2.5 µm in diameter ($PM_{2.5}$). NO_X and SO_X refer to generic groups of compounds that include NO_2 and SO_2, respectively, because NO_2 and SO_2 are naturally highly reactive and may change composition when exposed to oxygen, other pollutants, and/or sunlight in the atmosphere. These oxides are produced during combustion.

USEPA establishes the National Ambient Air Quality Standards (NAAQS), and defines how to demonstrate whether an area meets the NAAQS. CARB establishes the California Ambient Air Quality Standards (CAAQS), which must be equal to or more stringent than the NAAQS when initially adopted. CARB defines how to demonstrate whether an area meets the CAAQS.

As discussed above, one of the main concerns with criteria pollutants is that they contribute directly to regional human health problems. The known adverse effects associated with these criteria pollutants are shown in Table 3.2-1.

Table 3.2-1: Adverse Effects Associated with the Criteria Pollutants

Pollutant	Adverse Effects
Ozone (O_3)	(a) Short-term exposures: (1) Pulmonary function decrements and localized lung edema in humans and animals and (2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) Long-term exposures: Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; (d) Property damage
Carbon Monoxide (CO)	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; (d) Possible increased risk to fetuses
Nitrogen Dioxide (NO_2)	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; (c) Contribution to atmospheric discoloration
Sulfur Dioxide (SO_2)	(a) Broncho-constriction accompanied by symptoms that may include wheezing, shortness of breath, and chest tightness during exercise or physical activity in persons with asthma
Suspended Particulate Matter less than 10 Microns (PM_{10})	(a) Excess deaths from short-term and long-term exposures; (b) excess seasonal declines in pulmonary function, especially in children; (c) asthma exacerbation and possibly induction; (d) adverse birth outcomes including low birth weight; (e) increased infant mortality; (f) increased respiratory symptoms in children such as cough and bronchitis; and (g) increased hospitalization for both cardiovascular and respiratory disease (including asthma) [a]
Suspended Particulate Matter less than 2.5 microns ($PM_{2.5}$)	(a) Excess deaths from short-term and long-term exposures; (b) excess seasonal declines in pulmonary function, especially in children; (c) asthma exacerbation and possibly induction; (d) adverse birth outcomes including low birth weight; (e) increased infant mortality; (f) increased respiratory symptoms in children such as cough and bronchitis; and (g) increased hospitalization for both cardiovascular and respiratory disease (including asthma)[a]
Lead [b]	(a) Increased body burden; (b) impairment of blood formation and nerve conduction, and neurotoxin.
Sulfates [c]	(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardiopulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) Property damage

Source: (SCAQMD, 2007).
[a]More detailed discussions on the health effects associated with exposure to suspended particulate matter can be found in the following documents: Office of Environmental Health Hazard Assessment (OEHHA), *Particulate Matter Health Effects and Standard Recommendations* (www.oehha.ca.gov/air/toxic_contaminants/PM10notice.html#may), May 9, 2002; and USEPA, *Air Quality Criteria for Particulate Matter*, October 2004a.
[b]Lead emissions were evaluated in the health risk assessment of this study. Screening calculations have shown that lead emissions would be below the SCAQMD emission thresholds for all Project alternatives.
[c]Sulfate emissions were evaluated in the health risk assessment of this study. The SCAQMD has not established an emissions threshold for sulfates, nor does it require dispersion modeling against the localized significance thresholds (LSTs).
[d]California Ambient Air Quality Standards have also been established for hydrogen sulfide, vinyl chloride, and visibility reducing particles.
They are not shown in this table because they are not pollutants of concern for the proposed Project.

Of the criteria pollutants of concern, ozone is unique because it is not directly emitted from Project-related sources. Rather, ozone is a secondary pollutant, formed from the precursor pollutants VOC and NO_X. VOC and NO_X react to form ozone in the presence of sunlight through a complex series of photochemical reactions. As a result, unlike inert pollutants, ozone levels usually peak several hours after the precursors are emitted and many miles downwind of the source. Because of the complexity and uncertainty in predicting photochemical pollutant concentrations, ozone impacts are indirectly addressed in this study by comparing Project-generated emissions of VOC and NO_X to daily emission thresholds set by the SCAQMD. These emission thresholds are discussed in Section 3.2.4.2.

Generally, concentrations of photochemical pollutants, such as ozone, are highest during the summer months and coincide with the season of maximum solar insolation. Concentrations of inert pollutants, such as CO, tend to be the greatest during the winter months and are a product of light wind conditions and surface-based temperature inversions that are frequent during that time of year. These conditions limit atmospheric dispersion. However, in the case of PM_{10} impacts from fugitive dust sources, maximum concentrations may occur during high wind events or near man-made ground-disturbing activities, such as vehicular activities on roads and earth moving during construction activities.

Because most of the Project-related emission sources would be diesel-powered, DPM is a key pollutant evaluated in this analysis. DPM is one of the components of ambient PM_{10} and $PM_{2.5}$. DPM is also classified as a toxic air contaminant by the CARB. As a result, DPM is evaluated in this study both as a criteria pollutant (as a component of PM_{10} and $PM_{2.5}$) and as a toxic air contaminant.

Local Air Monitoring Levels

USEPA designates all areas of the United States according to whether they meet the NAAQS. A nonattainment designation means that one or more of the six criteria pollutants, considered as indicators of air quality, exceeds the primary NAAQS in any given area, over a period of time specified by the NAAQS. States with nonattainment areas must prepare a State Implementation Plan (SIP) that demonstrates how those areas will come into attainment. USEPA currently designates the SCAB as a nonattainment area for ozone, $PM_{10,}$ $PM_{2.5}$ and lead[1]. The SCAB is in attainment of the NAAQS for CO, SO_2 and NO_2. The severity of the nonattainment has been classified by USEPA for several of these pollutants. On May 5, 2010, USEPA approved the reclassification of the SCAB from "severe-17" to "extreme[2]" for the 8-hour ozone NAAQS. This reclassification went in to effect on June 4, 2010. The SCAB continues to be classified as a "serious" nonattainment area for PM_{10}.

The CARB also designates areas of the state according to whether they meet the CAAQS. A nonattainment designation means that a CAAQS has been exceeded more than once in 3 years. The CARB currently designates the SCAB as a nonattainment area for ozone, PM_{10}, $PM_{2.5}$, NO_2 and lead. The air basin is in attainment of the CAAQS for CO, SO_2,

[1] The contributions to the violation of the lead standard are caused by lead-related industrial facilities located within a 15-mile radius in the southern portion of Los Angeles County. This project is not a source of lead emissions and would not contribute to a violation of the lead standard.

[2] The "extreme" classification for ozone nonattainment means the air quality is worse than areas with a "severe" classification, and more time will be needed to bring the area into attainment of the NAAQS.

and sulfates, and is unclassified for hydrogen sulfide and visibility reducing particles.

The Port has been conducting its own air quality monitoring program since February 2005. The main objective of the program is to estimate ambient levels of DPM near the Port. The secondary objective of the program is to estimate ambient particulate matter levels within adjacent communities due to Port emissions. To achieve these objectives, the program measures ambient concentrations of PM_{10}, $PM_{2.5}$, and elemental carbon $PM_{2.5}$ (which indicates fossil fuel combustion sources) at four locations in the Port vicinity (POLA, 2011a). The station locations are:

- Wilmington Station – Located at the Saints Peter and Paul School. This station measures aged urban emissions during offshore flows and a combination of marine aerosols (salt spray from the ocean that typically consists of sodium chloride [table salt] and other salts and organic matter), aged urban emissions (man-made and naturally occurring airborne particulates that have been in the atmosphere long enough to have undergone some chemical reaction or accumulation with other airborne compounds or particles), and fresh emissions from Port operations during onshore flows. This station also provides information on the relative strengths of these source combinations. Meteorological data from this site and the Berth 47 site (described below) were used in this air quality analysis to model human health risks and criteria pollutant impacts associated with the proposed Project.
- Coastal Boundary Station – Located at Berth 47 in the Port Outer Harbor. This station measures aged urban and Port emissions and marine aerosols during onshore flows and aged urban emissions and fresh Port emissions during offshore flows. Meteorological data from this site and the Wilmington site (described above) were used in this air quality analysis to model human health risks and criteria pollutant impacts associated with the proposed Project.
- Source-Dominated Station – Located at the Terminal Island Water Reclamation Plant. This site is surrounded by three terminals and has a potential to receive emissions from off-road equipment, on-road trucks, and rail. During onshore flows, this station measures marine aerosols and fresh emissions from several nearby diesel-fired sources (trucks, trains, and ships). During offshore flows, this station measures aged urban emissions and Port emissions.
- San Pedro Station – Located at the Liberty Hill Plaza Building, adjacent to the Port administrative property on Palos Verdes Street. This location is near the western edge of Port operational emission sources and adjacent to residential areas in San Pedro. During onshore flows, aged urban emissions, marine aerosols, and fresh Port emissions have the potential to affect this site. During nighttime offshore flows, this site measures aged urban emissions and Port emissions.

The Port has been collecting PM_{10} data for five years at two of its monitoring stations and $PM_{2.5}$ data at all four of its stations for several years. In addition, the Port is now collecting several gaseous pollutant (O_3, NO_2, SO_2, and CO) data at all four stations. Though the Port operates monitoring stations in the vicinity of the proposed Project, three years of complete data from these stations were not available and were not used in this analysis. Of the SCAQMD monitoring stations, the most representative station for the Project vicinity is the North Long Beach station because it is the closest to the proposed Project site with both gaseous and particulate measurements. Table 3.2-2 shows the highest pollutant concentrations recorded at the North Long Beach station for 2007 through 2009, the most recent complete 3-year period of data available.

Table 3.2-2: Maximum Pollutant Concentrations Measured at the North Long Beach Monitoring Station

Pollutant	Averaging Period	National Standard	State Standard	Highest Monitored Concentration[d]			Selected for Background
				2007	2008	2009	
Ozone (ppm)	1 hour[a]	na	0.09	0.099	0.093	0.089	0.099
	8 hours[a]	0.075	0.070	0.074	0.074	0.067	0.074
CO (ppm)	1 hour[e]	35	20	3	4	3	4
	8 hours	9	9.0	2.6	2.5	2.2	2.6
NO_2 (ppm)	1 hour	0.100[h]	0.18	0.107	0.125	0.111	0.125
	Annual	0.053	0.030	0.020	0.021	0.021	0.021
SO_2 (ppm)[g]	1 hour[e]	0.075[f]	0.25	0.02	0.02	0.02	0.02
	24 hours	n/a	0.04	0.010	0.012	0.005	0.012
PM_{10} ($\mu g/m^3$)	24 hours[b]	150	50	232.0	62.0	62.0	232.0
	Annual	na	20	33.5	29.1	30.2	33.5
$PM_{2.5}$ ($\mu g/m^3$)	24 hours[c]	n/a	n/a	82.8	57.2	63.0	82.8
	24 hour (98th percentile)	35	n/a	40.7	38.8	34.2	40.7
	Annual	15	12	14.6	14.1	12.9	14.6
Lead ($\mu g/m^3$)	30 days[e]	n/a	1.5	0.02	0.01	0.0	0.02
	Calendar[e] quarter	1.5	n/a	0.01	0.01	0.0	0.01
	Rolling 3-Month average[e]	0.15	n/a	NA	NA	NA	NA
Sulfates ($\mu g/m^3$)	24 hours[e]	n/a	25	10.5	14.0	13.6	14.0

a The state 1-hour ozone standard was exceeded on 1 day in 2007, and 0 days in 2008 and 2009. The state 8-hour ozone standard was exceeded on 1 day in 2007, 1 day in 2008, and was not exceeded in 2009. The national 8-hour ozone standard was not exceeded.
b The state 24-hour PM_{10} standard was exceeded on 6 sampled days in 2007, on 1 sampled day in 2008, and on 3 sampled days in 2009. The national 24-hour PM_{10} standard was exceeded on 1 sampled day in 2007 and was not exceed in 2008 or 2009.
c The national 24-hour $PM_{2.5}$ standard was exceeded on 12 days in 2007, 8 days in 2008, and 6 days in 2009.
d Data reflects California measurement techniques (unless state measurements are the only available data), which may vary somewhat from Federal measurement techniques.
e Source: SCAQMD (www.aqmd.gov) from Southwest Coastal LA County Site 1. The data shown is for the most recent available years: 2007, 2008, and 2009.
f Final rule signed June 2, 2010 and effective August 23, 2010. To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.
g USEPA revoked both the 24-hour and annual SO_2 standards effective August 23, 2010.
h Final rule was effective April 12, 2010. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb.
Source: CARB (http://www.arb.ca.gov/adam/welcome.html)
µg/m3 micrograms per cubic meter
ppm parts per million

Toxic Air Contaminants

TACs are identified and their toxicity is studied by the California Office of Environmental Health Hazard Assessment (OEHHA). TACs include air pollutants that can produce adverse human health effects, including carcinogenic effects, after short-term (acute) or long-term (chronic) exposure. Examples of TAC sources within the SCAB include industrial processes, dry cleaners, gasoline stations, paint and solvent operations, and fossil fuel combustion sources.

The SCAQMD determined in the *Multiple Air Toxics Exposure Study III* (MATES III) that about 84 percent of the background airborne cancer risk in the SCAB is due to diesel exhaust (SCAQMD, 2008). The highest modeled air toxics risk was near the ports. In addition to the ports, areas of elevated risk were found near Central Los Angeles and transportation corridors and freeways. Compared to the MATES II study, the MATES III study found a decrease in carcinogenic risk, with the population-weighted risk down by 8 percent from the analysis in MATES II.

Furthermore, a CARB report titled *Diesel Particulate Matter Exposure Assessment Study for the Ports of Los Angeles and Long Beach* indicated that the Ports contributed approximately 21 percent of the total DPM emissions in the air basin during 2002 (CARB, 2006a). These emissions were reported to result in elevated cancer risk levels over the entire 20-mile by 20-mile study area.

As discussed in Section 1.6.2.1, the Port of Los Angeles, in conjunction with the Port of Long Beach, developed the San Pedro Bays CAAP that targets all emissions related to the Port. In five years under the Plan, DPM from all port-related sources would be reduced by 47 percent. NOx emissions would be reduced by 45 percent and SOx emissions would be reduced by 52 percent. Through 2009, the Ports had achieved actual reductions of 58 percent for DPM, 48 percent for NOx, and 61 percent for SOx, relative to uncontrolled levels (POLA and POLB, 2010). For the first time ever, the ports established uniform air quality standards at the program level, project specific level, and the source specific level.

Secondary $PM_{2.5}$ Formation

Within the SCAB, $PM_{2.5}$ particles are both directly emitted into the atmosphere (e.g., primary particles) and formed through atmospheric chemical reactions from precursor gases (e.g., secondary particles). Primary $PM_{2.5}$ includes diesel soot, combustion products, road dust, and other fine particles. Secondary $PM_{2.5}$, which includes products such as sulfates, nitrates, and complex carbon compounds, are formed from reactions with directly emitted NOx, SOx, VOCs, and ammonia (SCAQMD, 2006). Project-generated emissions of NOx, SOx, and VOCs would contribute toward secondary $PM_{2.5}$ formation some distance downwind of the emission sources. However, the air quality analysis in this EIR focuses on the effects of direct $PM_{2.5}$ emissions generated by the proposed Project and alternatives and their ambient impacts. This approach is consistent with the recommendations of the SCAQMD (SCAQMD, 2006).

Ultrafine Particles

Although USEPA and the State of California currently monitor and regulate PM_{10} and $PM_{2.5}$, research is being done on ultrafine particles (UFP), particles classified as less than 0.1 micron in diameter. UFPs are formed usually during combustion, independent of fuel type. When diesel fuel is used, UFPs can be formed directly from fuel combustion. With gasoline and natural gas (liquefied or compressed), UFPs are formed mostly from the burning of lubricant oils. UFPs are emitted directly from the tailpipe as solid particles (soot - elemental carbon and metal oxides) and semi-volatile particles (sulfates and hydrocarbons) that coagulate to form particles.

The research regarding UFPs suggests UFPs might be more dangerous to human health than the larger PM_{10} and $PM_{2.5}$ particles (termed fine particles) due to size and shape. Because of the smaller size, UFPs are able to travel more deeply into the lung (the alveoli) and are deposited in the deep lung regions more efficiently than fine particles. UFPs are inert; therefore, normal bodily defense does not recognize the particle. UFPs might have the ability to travel across cell layers and enter into the bloodstream and/or into individual cells. With a large surface area-to-volume ratio, other entities might attach to the particle and travel into the cell as a kind of "hitchhiker." Recent studies have found that UFPs may also pose a risk to cardiovascular health, particular in at-risk individuals, and may be a risk-factor for heart arrhythmias (University Of California, Los Angeles [UCLA], 2010).

The University of Southern California (USC), in collaboration with CARB and California Environmental Protection Agency (Cal/EPA), released a study in April 2011 investigating UFP concentrations within communities in Los Angeles, including the port area of San Pedro and Long Beach (USC, 2007). The study found that UFP concentrations vary significantly near the Ports (a major UFP source) and therefore substantiated concerns about the applicability of using centrally-located UFP concentrations for estimating population exposure.

Additional UFP research primarily involves roadway exposure. Studies suggest that over 50 percent of an individual's daily exposure is from driving on highways (Fruin, et al, 2004). Levels appear to drop off rapidly as one moves away from major roadways (Zhu et al, 2002a and 2002b). Little research has been done directly on ships and off-road vehicles. Work is being done on filter technology, including filters for ships, which appears promising (POLA, 2011c). The Port began collecting UFP data at its four air quality monitoring stations in late 2007 and early 2008. The Port actively participates in the CARB testing at the Port and will comply with all future regulations regarding UFPs. Finally, measures included in the CAAP aim to reduce all emissions Port-wide.

Atmospheric Deposition

The fallout of air pollutants to the surface of the earth is known as atmospheric deposition. Atmospheric deposition occurs in both a wet and dry form. Wet deposition occurs in the form of precipitation or cloud water and is associated with the conversion in the atmosphere of directly emitted pollutants into secondary pollutants such as acids. Dry deposition occurs in the form of directly emitted pollutants or the conversion of gaseous pollutants into secondary particulate matter (PM). Atmospheric deposition can produce watershed acidification, aquatic toxic pollutant loading, deforestation, damage to building materials, and respiratory problems.

The CARB and California Water Resources Control Board are in the process of examining the need to regulate atmospheric deposition for the purpose of protecting both fresh and saltwater bodies from pollution. Port emissions deposit into both local waterways and regional land areas. Emission sources from the proposed Project Alternatives would produce DPM, which contains trace amounts of toxic chemicals. Through the CAAP, the Port will reduce air pollutants from its future operations, which will work towards the goal of reducing atmospheric deposition for purposes of water quality protection. The CAAP will reduce air pollutants that generate both acidic and toxic compounds, include emissions of NO_X, SO_X, and DPM.

Greenhouse Gases and Climate Change

Gases that trap heat in the atmosphere are often called greenhouse gases (GHGs). GHGs are emitted by natural processes and human activities. Examples of GHGs that are produced both by natural processes and industry include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Examples of GHGs created and emitted primarily through human activities include fluorinated gases (hydrofluorocarbons [HFCs] and perfluorocarbons [PFCs]) and sulfur hexafluoride (SF_6).

The accumulation of GHGs in the atmosphere regulates the earth's temperature. Without these natural GHGs, the earth's surface would be about 61degrees Fahrenheit (°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 Intergovernmental Panel on Climate Change (IPCC), the atmospheric concentration of CO_2 in 2005 was 379 parts per million (ppm) compared to the pre-industrial levels of 280 ppm (IPCC, 2007). In addition, the Fifth U.S. Climate Action Report concluded, in assessing current trends, that carbon dioxide emissions increased by 20 percent from 1990 to 2007, while methane and nitrous oxide emissions decreased by 5 percent and 1 percent, respectively (U.S. Department of State, 2010).

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 to10.5ºF 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 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 snowpack in the Sierra Nevada mountain range). Current data suggest that in the next 25 years, in every season of the year, California would 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 3-10.5°F;
- 6-20 inches or more of sea level rise;
- 2-4 times as many heat wave days in major urban centers;
- 2-6 times as many heat related deaths in major urban centers;
- 1-1.5 times more critically dry years; and
- 10-55 percent increase in the expected risk of wildfires.

Risks to public health are summarized in the 2009 California Climate Adaptation Strategy. As stated above climate change is expected to lead to increases in the frequency, intensity, and duration of extreme heat events and heat waves in California. This is likely to increase the risk of mortality and morbidity due to heat-related illness on the elderly, individuals with chronic conditions such as heart and lung disease, diabetes and mental illnesses, infants, the socially or economically disadvantaged and those who work outdoors. The expected increase in temperatures and resulting increases in ultraviolet radiation due to climate change is likely to exacerbate existing air quality problems unless measures are taken to reduce GHG as well as air pollutants and their precursors.

A recent study (Geophysical Research Letters, 2008), has identified direct links between increased levels of carbon dioxide in the atmosphere and increases in human mortality. Jacobson determined the amounts of ozone and airborne particles that result from temperature increases in carbon dioxide emissions. The effects of considering the human impact of increased carbon dioxide emissions showed two important effects:

- Higher temperatures due to carbon dioxide increased the chemical rate of ozone production in urban areas
- Increased water vapor due to carbon dioxide- induced higher temperatures boosted chemical ozone production even more in urban areas.

Jacobson further indicated that the effects of carbon dioxide emissions are most pronounced in areas that already have significant pollution such as California.

Many of the plans, policies and regulations identified in the applicable regulations section of this document are directed at reducing these impacts.

The World Resources Institute's GHG Protocol Initiative identifies six GHGs generated by human activity that are believed to be contributors to global warming (World Resources Institute/World Business Council for Sustainable Development [WRI/WBCSD], 2011):

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

These are the same six GHGs that are identified in California Assembly Bill 32 (AB 32) and by the USEPA. Appendix E1.10 contains descriptions of the natural and man-made sources of emissions for each of these GHGs.

The different GHGs have varying global warming potential (GWP). The GWP is the ability of a gas or aerosol to trap heat in the atmosphere. By convention, CO_2 is assigned a GWP of 1. By comparison, CH_4 has a GWP of 21, which means that it has a global warming effect 21 times greater than CO_2 on an equal-mass basis. N_2O has a GWP of 310, which means that it has a global warming effect 310 times greater than CO_2 on an equal-mass basis. To account for their GWPs, GHG emissions are often reported as a CO_2 equivalent (CO_2e). The CO_2e is calculated by multiplying the emission of each GHG by its GWP, and adding the results together to produce a single, combined emission rate representing all GHGs. Appendix E1.10 lists the GWP for each GHG.

The Project air quality analysis includes estimates of GHG emissions generated by the proposed Project for existing and future conditions, as presented in Sections 3.2.2.3 and 3.2.4.3, respectively. In keeping with international convention, the GHG emissions in this report are expressed in metric units (metric tons [tonnes], in this case).

Sustainability and Port Climate Action Plan

In May 2007, the City of Los Angeles Mayor's Office released the Green LA initiative, which is an action plan to lead the nation in fighting global warming (City of Los Angeles, 2007). The Green LA Plan presents a citywide framework for confronting global climate change to create a cleaner, greener, sustainable Los Angeles. The Green LA Plan directs the Port to develop an individual Climate Action Plan, consistent with the goals of Green LA, to examine opportunities to reduce GHG emissions from operations.

In accordance with this directive, the Port's Climate Action Plan developed in December of 2007 covers currently listed GHG emissions related to the Port's activities (such as Port buildings, and Port workforce operations) (LAHD, 2007). The Climate Action Plan outlines specific steps that the Port of Los Angeles Harbor Department has taken and will take on global climate change. These steps include specific actions that will be taken for energy audits, green building policies, on-site photovoltaic (PV) solar energy, green energy procurement, tree planting, water conservation, alternative fuel vehicles, increased recycling, and green procurement.

The Port of Los Angeles 2011 Sustainability Report provides an assessment of existing programs and policies that address the Port's material issues related to sustainability: Green Growth, Health Risk Reduction, Air Quality, Energy and Climate Change, Water Quality, Habitat Protection, Open Space and Greening, Land Use, Local Economic Development, and Environmental Justice (POLA, 2011b).

The Port also completes annual GHG inventories of the Port and reports these to the appropriate climate registry. The 2006-2009 data were reported to the California Climate Action Registry (CCAR) and future data will be reported to The Climate Registry (TCR) (TCR, 2011).

The Port, as a Department of the City of Los Angeles and as a Port associated with a major City, is a participant in Clinton Climate Initiative as a C40 City. The Port is also a signatory to the California Sustainable Goods Movement Program.

3.2.2.3 APL Terminal Baseline Emissions

For purposes specific to this Draft EIS/EIR, the CEQA baseline 12-month period used for determining the significance of potential proposed Project impacts is the period from July 1, 2008 to June 31, 2009.

The analysis of impacts is based on a comparison of the proposed Project and each of the alternatives to the baseline existing conditions. This is consistent with CEQA Guidelines Section 15125 which states that the environmental setting "will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant. This approach was recently confirmed in *Sunnyvale West Neighborhood Association v. City of Sunnyvale* (2010) 190 Cal. App. 4th 1351. Future conditions that could be affected by rules and regulations implemented over time were not considered in the baseline. Only rules and regulations effective by June 30, 2009, are considered in the baseline for the source categories listed.

In the baseline period, the APL Terminal was used for containerized cargo handling, operated a maintenance and repair facility and on-dock rail service. The container throughput at the existing APL Terminal (Berths 302-305) in the baseline period was 1,128,080 TEUs. This throughput was developed from data provided by APL. Chapter 2 provides more detail on the derivation of the baseline container throughput.

Criteria Pollutant Emissions

The existing APL Terminal operations in the baseline year included the following emission sources – ships, tugboats, trucks, locomotives, cargo handling equipment and employee vehicles. Table 3.2-3 summarizes the average daily emissions associated with operation of the existing APL Terminal in the baseline year. The average daily emissions represent the annual emissions divided by 365 days per year. Average daily emissions are a good indicator of terminal operations over the long term since terminal operations can vary substantially from day-to-day depending on the number of containers handled.

Table 3.2-3: CEQA Baseline (July 2008 - June 2009) Average Daily Operational Emissions

Emission Source	Average Daily Emissions (pounds per day [lb/day])[a,c]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Ships – Transit and Anchoring	112	209	2,017	1,155	190	152
Ships – Hoteling	34	85	1,079	1,423	131	103
Tugboats	3	14	48	0	2	2
Trucks	252	1,104	2,311	2	174	129
Trains	72	219	1,335	9	39	36
Terminal Equipment	12	92	343	1	9	9
Worker Trips	14	143	12	0	17	3
Total – CEQA Baseline[b]	**499**	**1,866**	**7,145**	**2,590**	**562**	**434**

a) Emissions represent annual emissions divided by 365 days per year of operation.

b) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

c) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Table 3.2-4 summarizes the peak daily emissions associated with baseline year operations. Baseline peak daily emissions are compared to future Project peak daily emissions to determine CEQA significance for the proposed Project and alternatives. Peak daily emissions represent theoretical upper-bound estimates of activity levels at the terminal and therefore represent a more conservative set of assumptions. In contrast to average daily emissions, peak daily emissions would occur infrequently.

Table 3.2-4: CEQA Baseline (July 2008 - June 2009) Peak Daily Operational Emissions

Emission Source	Peak Daily Emissions (lb/day)[a,c]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Ships – Transit and Anchoring	204	380	3,475	2,044	344	275
Ships – Hoteling	87	223	2,611	3,333	327	259
Tugboats	5	21	71	0	3	3
Trucks	470	2,054	4,301	3	324	248
Trains	92	280	1,719	12	51	47
Terminal Equipment	31	214	917	1	24	22
Worker Trips	35	367	32	0	43	9
Total - CEQA Baseline[b]	**924**	**3,539**	**13,126**	**5,394**	**1,115**	**863**

a) Emissions assume maximum theoretical daily equipment activity levels. Such levels would rarely occur during day-to-day terminal operations.
b) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.
c) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Peak daily ship calls and cargo handling equipment activity was developed by APL from historical data for the baseline period. For truck and rail activity, the peak daily emissions for the CEQA baseline operations were based on the monthly throughput data which indicates that approximately 9.3 percent of the annual TEUs are processed in the peak month. This peak month activity was then used to estimate peak daily emissions.

Greenhouse Gas Emissions

Table 3.2-5 presents an estimate of the GHG emissions for activities related to the existing APL terminal operations generated within California borders for the CEQA baseline year.[3] As discussed further in Section 3.2.3.2, the analysis of GHG emissions within the State of California is consistent with the methodology of the CCAR. While CCAR officially closed in December 2010, its protocols were consistent with those created by TCR. The emission sources for which baseline GHG emissions were calculated include ships, tugboats, trucks, trains, terminal equipment, workers and on-terminal electricity usage. The GHG emission calculation methodology is described in Appendix E1.10.

[3] In the case of electricity consumption, the GHG emissions may also be generated by out-of-state power plants.

Table 3.2-5: Annual Operational GHG Emissions – Berths 302-305 Terminal – CEQA Baseline (July 2008 - June 2009)

Source Type	Metric Tons Per Year[a]				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
Ships – Transit and Anchoring	43,960	0.96	2.27	-	44,684
Ships – Hoteling	14,056	0.11	0.86	-	14,325
Tugboats	359	0.01	0.02	-	364
Trucks	34,633	0.08	0.08	-	34,659
Trains	33,253	2.72	0.89	-	33,585
Terminal Equipment	6,848	0.17	0.08	-	6,878
Reefer Refrigerant Losses	-	-	-	0.38	498
Worker Trips	2,846	0.24	0.32	-	2,952
On-Terminal Electricity Usage	13,286	0.35	0.09	-	13,320
CEQA Baseline Total[c]	**149,241**	**4.63**	**4.61**	**0.38**	**151,264**

Notes:

a) 1 metric ton equals 1,000 kilograms, 2,205 lbs, or 1.1 U.S. (short) tons.

b) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; and 1300 for HFC-134a.

c) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

3.2.2.4 Sensitive Receptors

The impact of air emissions on sensitive members of the population is a special concern. Sensitive receptor groups include children, the elderly, and the acutely and chronically ill. The locations of these groups include residences, schools, daycare centers, convalescent homes, and hospitals. The nearest sensitive receptors to the proposed Project site include residents (two liveaboard tenants) in Fish Harbor (at the Al Larson Marina) approximately 0.2 mile west of the site's southwestern corner. The nearest shore-bound residents are in San Pedro, roughly one mile west of the site's western boundary. Additionally, the 15th Street Elementary School and Barton Hill Elementary School on Pacific Avenue in San Pedro are about 1.2 and 1.4 miles away, respectively, from the west edge of the proposed Project site. The nearest daycare center is the World Tots LA Daycare Center, about 0.9 mile west of the proposed Project site. The nearest convalescent home is the Harbor View House, about one mile west of the proposed Project site. The nearest hospitals are the San Pedro Peninsula Hospital and Little Company of Mary San Pedro Hospital, both about 2.5 miles west of the proposed Project site.

3.2.3 Applicable Regulations

The Federal Clean Air Act of 1970 and its subsequent amendments established air quality regulations and the NAAQS, and delegated enforcement of these standards to the states. In California, the CARB is responsible for enforcing air pollution regulations. The CARB has, in turn, delegated the responsibility of regulating stationary emission sources to the local air agencies. In the SCAB, the local air agency is the SCAQMD.

The following is a summary of the key federal, state, and local air quality rules, policies, and agreements that potentially apply to the Project and its related activities.

3.2.3.1 International Regulations

IMO International Convention for the Prevention of Pollution from Ships (MARPOL) Annex VI

The IMO MARPOL Annex VI, which came into force in May 2005, set new international NOx emission limits on marine engines over 130 kilowatts (kW) installed on new vessels retroactive to the year 2000. In April 2008, the Marine Environment Projection Committee of the IMO approved a recommendation for new MARPOL Annex VI sulfur limits for fuel and NOx limits for engines. In October 2008 the IMO adopted these amendments under MARPOL Annex VI which place a global limit on marine fuel sulfur content of 3.5 percent by 2012, reduced to 0.5 percent sulfur by 2020 or 2025 pending a technical review in 2018. On July 21, 2008 the United States signed the Maritime Pollution Protection Act of 2008, ratifying MARPOL Annex VI and the requirements became enforceable in January 2009.

On March 26, 2010 the IMO amended MARPOL designating specific portions of U.S. waters including the Pacific coast as an Emission Control Area (ECA). The requirements for an ECA are 1 percent sulfur by 2010 and 0.1 percent sulfur by 2015. In addition, as of 2016 ships will be required to comply with Tier III standards (after treatment-forcing) to reduce NOx emissions. For the proposed Project, all SOx emission calculations for ship main engines assume that all ships calling at APL are 100 percent compliant with MARPOL Annex VI SO_X limits.

3.2.3.2 Federal Regulations

State Implementation Plan

In federal nonattainment areas, the Federal Clean Air Act (CAA) requires preparation of a SIP, detailing how the state will attain the NAAQS within mandated timeframes. In response to this requirement, the SCAQMD and the Southern California Association of Governments (SCAG) have jointly developed the *2007 Air Quality Management Plan* (SCAQMD, 2007). The 2007 AQMP was adopted by the SCAQMD on June 1, 2007. The focus of the 2007 AQMP is to demonstrate compliance with the new NAAQS for $PM_{2.5}$ and 8-hour ozone (O_3) and other planning requirements, including compliance with the NAAQS for PM_{10} (SCAQMD, 2007). The Final Plan proposes attainment demonstration of the federal $PM_{2.5}$ standards through a more focused control of sulfur oxides (SO_X), directly emitted $PM_{2.5}$, and nitrogen oxides (NO_X) supplemented with VOCs by 2015. The 8-hour ozone control strategy builds upon the $PM_{2.5}$ strategy, augmented with additional NO_X and VOC reductions to meet the standard by 2024 assuming a bump-up is obtained. Since it will be more difficult to achieve the 8-hour ozone NAAQS compared to the 1-hour NAAQS, the 2007 AQMP contains substantially more emission reduction measures compared to the 2003 AQMP.

On November 22, 2010, the USEPA proposed a partial approval and partial disapproval of the 2007 South Coast State Implementation Plan for 1997 Fine Particulate Matter Standards as part of the South Coast 2007 AQMP. Specifically, USEPA proposed to approve the emissions inventories and commitments by the SCAQMD and CARB as well as the air quality modeling demonstration as meeting the requirements of the CAA and USEPA guidance. However, USEPA proposed to disapprove the attainment demonstration because it does not provide sufficient emissions reductions from adopted and USEPA-approved measures to provide for attainment of the NAAQS. As a result, USEPA also proposed to disapprove the reasonably available control measures/technology and reasonable further progress demonstrations and proposed not to grant California's request to extend the April 5, 2015 deadline for the South Coast nonattainment area to attain the 1997 $PM_{2.5}$ NAAQS. Finally, USEPA proposed to disapprove the assignment of 10 tpd of NOx to the federal government, $PM_{2.5}$ contingency measures, and the motor vehicle emissions budgets for the area's Reasonable Further Progress (RFP) years and attainment year. To the extent that the State can remedy the shortfall in emissions reductions for the attainment demonstration, which is the basis for the proposed disapproval, USEPA believes that many of the noted deficiencies could be addressed.

On April 28, 2011 CARB approved a progress report and proposed revisions to the SIP for submittal to USEPA. CARB's proposed $PM_{2.5}$ SIP revisions are limited to an updated calendar of CARB rulemaking, adjustments to transportation conformity budgets, and revisions to reasonable further progress tables and associated reductions for contingency purposes for the South Coast and the San Joaquin Valley. The proposal also includes approval for USEPA revisions to the $PM_{2.5}$ and ozone SIP for the SCAB.

Emissions Standards for Marine Compression Ignition (Diesel) Engines

On March 14, 2008, USEPA finalized a program to reduce emissions from marine diesel engines above 800 horsepower (hp) and below 30 liters per cylinder displacement. The regulations introduce new standards, Tier 3 and Tier 4, which apply to both new and remanufactured diesel engines. Tier 3 standards apply to new engines used in commercial, recreation, and auxiliary marine power applications beginning in 2009 for Category 1 engines and in 2013 for Category 2 engines. Tier 4 standards apply to new Category 1 and 2 engines above 600 kW on commercial vessels beginning in 2014. For remanufactured engines, standards apply only to commercial marine diesel engines above 600 kW when the engines are remanufactured and as soon as certified systems are available.

On April 30, 2010, USEPA published a rule to control emissions from new marine compression-ignition engines at or above 30 liters per cylinder. The emission standards apply in two stages, near-term standards apply beginning in 2011, and long-term standards apply beginning in 2016. The emission standards are equivalent to those adopted in the amendments to MARPOL Annex VI. The NOx limit for Tier 2 engines in 2011 is 14.4 g/kW-hr for engines less than 130 rpm, is determined by engine revolutions per minute (RPM) rating for engines between 130 RPM and 2,000 RPM, and is 7.7

g/kW-hr for engines over 2,000 RPM. Tier 3 engines in 2016 must meet a NOx limit of 3.4 g/kW-hr for engines less than 130 RPM, standard determined by engine RPM rating for engines between 130 RPM and 2,000 RPM, and 2.0 g/kW-hr for engines over 2,000 RPM. In addition, fuel limits for ECAs are 10,000 parts per million (ppm) in 2012 and 1,000 ppm in 2020. The final rule is effective on June 29, 2010.

Emission Standards for Large Marine Diesel Engines

In January 2003, USEPA adopted Tier 1 NOx standards for marine diesel engines above 30 liters per cylinder, large (Category 3, marine propulsion engines on ocean-going vessels. The standards went into effect for new engines built), in 2004 and later. The Tier 1 limits were achieved by engine-based controls, without the need for exhaust gas after-treatment. In December 2009, USEPA finalized emission standards for Category 3 marine diesel engines installed on U.S. flagged vessels as well as marine fuel sulfur limits which are equivalent to the amendments recently adapted to MARPOL Annex VI. The final regulation established stricter standards for NOx and added standards for hydrocarbon (HC) and CO. Tier 2 NOx standards for newly built engines apply beginning in 2011 and Tier 3 standards will apply beginning in 2016 in emission control areas (ECAs). The Tier 2 standards result in a 15 to 25 percent NOx reduction below the Tier 1 levels and Tier 3 standards are expected to achieve NOx reductions 80 percent below the Tier 1 levels.

The IMO has designated waters along the US and Canadian shorelines as the North American ECA for the emissions of NOx and SOx (enforceable from August 2012). The ECA ensures that foreign flagged vessels comply with IMO Tier III NOx limits while in US waters (the IMO Tier III standards are only applicable within ECAs). The ECA also triggers low sulfur fuel requirements for vessels in US waters.

To reduce emissions from Category 1 (at least 50 hp but < 5 liters per cylinder displacement) and Category 2 (5 to 30 liters per cylinder displacement) marine diesel engines, USEPA established emission standards for new engines, referred to as Tier 2 marine engine standards. The Tier 2 standards have been phased in from 2004 to 2007 (year of manufacture), depending on the engine size. For the proposed Project, this rule is assumed to affect harbor craft but not oceangoing vessel auxiliary engines because the latter would likely be manufactured overseas and, therefore, would not be subject to the rule.

Emission Standards for Non-Road Diesel Engines

To reduce emissions from non-road diesel equipment, USEPA established a series of increasingly strict emission standards for new non-road diesel engines. Tier 1 standards were phased in on newly manufactured equipment from 1996 through 2000 (year of manufacture), depending on the engine horsepower category. Tier 2 standards were phased in on newly manufactured equipment from 2001 through 2006. Tier 3 standards were phased in on newly manufactured equipment from 2006 through 2008. Tier 4 standards, which require advanced emission control technology to attain them, are being phased in between 2008 to 2015. These standards apply to construction equipment and cargo handling equipment.

Emission Standards for Locomotives

To reduce emissions from switch and line-haul locomotives, USEPA established a series of increasingly strict emission standards for new or remanufactured locomotive engines. Tier 0 standards applied to engines manufactured or remanufactured from 1973 to 2001. Tier 1 standards applied to engines manufactured/remanufactured from 2002 to 2004. Tier 2 standards applied to engines manufactured/ remanufactured after 2004. A regulation signed on March 14, 2008, introduced more stringent emission requirements: Tier 3 standards, to be met by engine design methods, are effective between 2011 and 2012. Tier 4 standards, which are expected to require exhaust gas after-treatment technologies, become effective starting in 2015. The 2008 regulation also includes more stringent emission standards for remanufactured Tier 0, Tier 1 and Tier 2 locomotive engines (DieselNet, 2011).

Emission Standards for On-Road Trucks

To reduce emissions from on-road, heavy-duty diesel trucks, USEPA established a series of increasingly strict emission standards for new engines, starting in 1988. Table 3.2-6 summarizes the non-methane hydrocarbon (NMHC), NMHC+NOx, NOx, and PM emission standards that have been promulgated through the years. The NOx and NMHC limits for 2007 and newer engines were phased in together between 2007 and 2010 on a percent of sales basis of newly manufactured engines: 50 percent from 2007 to 2009 and 100 percent in 2010.

Table 3.2-6: USEPA Emission Standards for Heavy-Duty Diesel Engines, g/bhp-hr

Model Year	NMHC	NMHC+NOx	NOx	PM
1988	--	--	10.7	0.60
1990	--	--	6.0	0.60
1991	--	--	5.0	0.25
1994	--	--	5.0	0.10
1998	--	--	4.0	0.10
2004 and later				
Option 1	--	2.4	--	0.10
Option 2	0.5	2.5	--	0.10
2007 and later	0.14	--	0.20	0.01

Non-Road Diesel Fuel Rule

With this rule, USEPA set sulfur limitations for non-road diesel fuel, including locomotives and marine vessels (though not for the marine residual fuel used by very large engines on oceangoing vessels). For the proposed Project, this rule affects line-haul locomotives; the California Diesel Fuel Regulations (described below) generally pre-empt this rule for other sources such as yard locomotives, construction equipment, terminal equipment, and harbor craft. Under this rule, the diesel fuel used by line-haul locomotives was limited to 500 ppm starting June 1, 2007; and will be further limited to 15 ppm starting January 1, 2012 (USEPA, 2004b).

Highway Diesel Fuel Rule

With this rule, USEPA set sulfur limitations for on-road diesel fuel to 15 ppm starting June 1, 2006 (USEPA, 2006b).

GHG Endangerment Finding and Light-Duty Vehicle Rule

The U.S. Supreme Court ruled that the harms associated with climate change are serious and well recognized, that the USEPA must regulate GHGs as pollutants, and unless the agency determines that GHGs do not contribute to climate change, it must promulgate regulations for GHG emissions from new motor vehicles (Massachusetts et al. Environmental Protection Agency [case No. 05-1120], 2007). In response, in December 2009 the Federal government released an 'endangerment finding' that GHGs endanger public health and welfare (2009b).

As required by the Supreme Court ruling, on May 7, 2010 the USEPA in conjunction with the Department of Transportation's National Highway Traffic Safety Administration (NHTSA) finalized the Light-Duty Vehicle Rule (LDVR) that establishes a national program consisting of GHG emissions standards and Corporate Average Fuel Economy (CAFE) standards for light-duty vehicles. LDVR standards first apply to new cars and trucks starting with model year 2012.

The LDVR will affect passenger vehicles (ex. APL workers) and other light-duty vehicles traveling to the Port. This rule will reduce both GHG emissions and criteria pollutant emissions beginning in 2012.

Prevention of Significant Deterioration (PSD)/Title V Tailoring Rule

On May 13, 2010 the USEPA finalized the *Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule* (Tailoring Rule) that requires new facilities that emit over 100,000 tons of GHGs per year or modifications to facilities that increase GHG emissions by over 75,000 tons per year to obtain permits that would demonstrate they are using the best practices and technologies to minimize GHG emissions (USEPA, 2010). The permitting requirements under the Tailoring Rule went into effect on January 2, 2011.

Mandatory GHG Reporting Rule

To evaluate the sources of GHG emissions in the U.S. economy, the USEPA finalized a Mandatory Greenhouse Gas Reporting Rule (MRR) on December 29, 2009 (USEPA, 2009c). The MRR covers suppliers of fossil fuels and industrial GHGs, manufacturers of vehicles and engines, and facilities that emit over 25,000 metric tons of GHGs per year. The first emissions reports from covered facilities are due on September 30, 2011. Information collected from this rule is expected to be used to inform future policy decisions.

General Conformity Rule

Section 176(c) of the CAA states that a federal agency cannot support an activity unless the agency determines that the activity will conform to the most recent USEPA-approved SIP. This means that projects using federal funds or requiring federal approval must not: (1) cause or contribute to any new violation of a NAAQS; (2) increase the frequency or severity of any existing violation; or (3) delay the timely attainment of any standard, interim emission reduction, or other milestone.

On April 5, 2010 the USEPA revised the General Conformity Regulations (40 CFR Parts 51 and 93). The revisions were intended to clarify, streamline, and improve conformity determination and review processes, and provide transition tools for making conformity determinations for new NAAQS standards. The revisions also allowed federal facilities to negotiate a facility-wide emission budget with the applicable air pollution control agencies, and to allow the emissions of one precursor pollutant to be offset by the emissions of another precursor pollutant. The revised rules became effective on July 6, 2010.

Based on the current General Conformity rule and attainment status of the South Coast Air Basin, a federal action would conform to the SIP if its annual emissions remain below 100 tons of CO or $PM_{2.5}$ (or any of the $PM_{2.5}$ precursors: NOx, SOx, VOC or ammonia), 70 tons of PM_{10}, or 10 tons of NO_X or VOC. These *de minimis* thresholds apply to both proposed Project or alternative construction and proposed Project or alternative operations. (For proposed Project or alternative operations, the thresholds are compared to the net change in emissions relative to the NEPA baseline.) If the proposed action exceeds one or more of the *de minimis* thresholds, a more rigorous conformity determination is the next step in the conformity evaluation process.

Conformity Statement

Section 176 (c) of the CAA (42 U.S.C. Section 7506(c)) requires any entity of the Federal government that engages in, supports, or in any way provides financial support for, licenses or permits, or approves any activity to demonstrate that the action conforms to the applicable SIP required under Section 110 (a) of the CAA (42 U.S.C. Section 7410(a)) before the action is otherwise approved. In this context, conformity means that such Federal actions must be consistent with a SIP's purpose of eliminating or reducing the severity and number of violations of NAAQS and achieving expeditious attainment of those standards. Each Federal agency (including the United States Army Corps of Engineers [USACE]) must determine that any action that is proposed by the agency and that is subject to the regulations implementing the conformity requirements will, in fact, conform to the applicable SIP before the action is taken.

The general conformity regulations incorporate a stepwise process, beginning with an applicability analysis. According to USEPA guidance, before any approval is given for a Federal action to go forward, the regulating Federal agency must apply the applicability requirements found at 40 CFR Section 51.853(b) to the Federal action and/or determine the regional significance of the Federal action pursuant to 40 C.F.R. Section 51.853(j) to evaluate whether, on a pollutant-by-pollutant basis, a determination of general conformity is required. The guidance states that the applicability analysis can be (but is not required to be) completed concurrently with any analysis required under the NEPA. If the regulating Federal agency determines that the general conformity regulations do not apply to the Federal action, no further analysis or documentation is required. If the general conformity regulations do apply to the Federal action, the regulating Federal agency must next conduct a conformity evaluation in accord with the criteria and procedures in the implementing regulations, publish a draft determination of general conformity for public review, and then publish the final determination of general conformity.

As part of the environmental review of the Federal action, the USACE conducted a general conformity evaluation pursuant to SCAQMD Rule 1901 and 40 Code of Federal

Regulations (CFR) Part 51 Subpart W. The general conformity regulations apply at this time to those actions at POLA requiring USACE approval, because the SCAB where Port is situated in a nonattainment area for O_3, PM_{10}, and $PM_{2.5}$; and a maintenance area for NO_2 and CO.

The USACE began the general conformity evaluation by conducting the applicability analysis in which the calculated Federal action emissions are compared to the general conformity *de minimis* thresholds. This applicability analysis is presented in Appendix E1.2. Following USACE guidance (USACE 1994), the Federal actions for this evaluation included construction emissions for the following project elements:

- Dredging and disposal of 20,000 cubic yards required to build Berth 306.
- Berth 306 wharf construction.
- Development of new 41 acres of backlands adjacent to Berth 306.
- Installation of AMP at Berth 306.
- Installation of wharf cranes at Berths 302-306.
- Construction worker commute trips to one from the project site.

Construction of the Federal action elements was estimated to require two years to complete. The total emissions were determined for these two years. To develop a conservative estimate, it was assumed that the construction would start in the first quarter of 2012. The emission factors used for on-road on off-road construction equipment were those for 2012 provided by SCAQMD. If construction were to start later, the emission factors would decrease due to implementation of newer emission standards through fleet turnover. The USACE proposes that the Federal action as designed will conform to the approved SIP since the Federal action is not subject to a general conformity determination for CO, VOC (as an O_3 and $PM_{2.5}$ precursor), NOx (as an O_3 and $PM_{2.5}$ precursor), PM_{10}, $PM_{2.5}$, or SOx (as a $PM_{2.5}$ precursor) because the net emissions associated with the Federal action are less than the general conformity *de minimis* thresholds.

Therefore, USACE herewith concludes that the Federal action as designed conforms to the purpose of the approved SIP and it is consistent with all applicable requirements.

3.2.3.3 State Regulations and Agreements

California Clean Air Act

The California Clean Air Act of 1988, as amended in 1992, outlines a program to attain the CAAQS by the earliest practical date. Because the CAAQS are more stringent than the NAAQS, attainment of the CAAQS will require more emissions reductions than what would be required to show attainment of the NAAQS. Consequently, the main focus of attainment planning in California has shifted from the federal to state requirements. Similar to the federal system, the state requirements and compliance dates are based upon the severity of the ambient air quality standard violation within a region.

AB 2650

AB 2650 (Lowenthal) was signed into law by Governor Davis and became effective on January 1, 2003. Under AB 2650, shipping terminal operators are required to limit truck-waiting times to no more than 30 minutes at the Ports of Los Angeles, Long Beach, and Oakland, or face fines of $250 per violation. Collected fines are to be used to provide grants to truck drivers to replace and retrofit their vehicles with cleaner engines and pollution control devices. A companion piece of legislation (AB 1971) was approved in September 2004 to ensure that the intent of AB 2650 is not circumvented by moving trucks with appointments inside the terminal gates to wait.

Heavy Duty Diesel Truck Idling Regulation

This CARB rule affects heavy-duty diesel trucks in California beginning in 2008. The rule requires that heavy-duty trucks be equipped with a non-programmable engine shutdown system that shuts down the engine after 5 minutes or optionally meet a stringent NOx idling emission standard.

1998 South Coast Locomotive Emissions Agreement

In 1998, CARB, Class I freight railroads operating in the SCAB (Burlington Northern and Santa Fe [BNSF] and Union Pacific Railroad [UPRR]), and USEPA signed the 1998 Memorandum of Understanding (MOU), agreeing to a locomotive fleet average emissions program in the SCAQMD. The 1998 MOU requires that, by 2010, the Class I freight railroad fleet of locomotives in the SCAQMD achieve average

e emissions equivalent to the NO_X emission standard established by USEPA for Tier 2 locomotives (5.5 g/bhp-hr). The MOU applies to both line-haul (freight) and switch locomotives operated by the railroads. This emission level is equivalent, on average district-wide, to operating only federal Tier 2 NO_X-compliant locomotives in the SCAQMD (CARB, 2005a). Since this MOU applies to locomotives on an average district-wide basis, it was conservatively neither considered as a Project component nor as a mitigation measure in this study.

2005 CARB/Railroad Statewide Agreement

In 2005, the CARB, Class I freight railroads operating in the SCAB (BNSF and UPRR), and USEPA signed the 2005 MOU, agreeing to several program elements intended to reduce the emission impacts of rail-yard operations on local communities. The 2005 MOU includes a locomotive idling-reduction program, early introduction of lower-sulfur diesel fuel in interstate locomotives, and a visible emission reduction and repair program (CARB, 2005a).

California Diesel Fuel Regulations

With this rule, the CARB set sulfur limitations for diesel fuel sold in California for use in on-road and off-road motor vehicles (Title 13, California Code of Regulations [CCR], Sections 2281-2285 Title 17 CCR, Section 93114). Harbor craft and intrastate locomotives were originally excluded from the rule, but were later included by a 2004 rule amendment (CARB, 2005b). Under this rule, diesel fuel used in motor vehicles except harbor craft and intrastate locomotives has been limited to 500-ppm sulfur since 1993. The sulfur limit was reduced to 15 ppm on September 1, 2006. A federal diesel rule similarly limited sulfur content nationwide to 15 ppm by October 15, 2006. Diesel fuel used in harbor craft in the SCAQMD was limited to 500-ppm sulfur starting January 1, 2006, and 15-ppm sulfur starting September 1, 2006. Diesel fuel used in intrastate locomotives (switch locomotives) was limited to 15-ppm sulfur starting January 1, 2007.

On July 24, 2008 CARB adopted low sulfur fuel requirements for marine engines, auxiliary engines, and auxiliary boilers within 24 nm of the California coastline starting July 1, 2009. The regulation required the use of marine gas oil (MGO) with a sulfur content less than 1.5 percent or marine diesel oil (MDO) with a sulfur content of equal to or less than 0.5 percent. By January 1, 2012 all engines and boilers must use MGO or MDO with a sulfur content of equal to or less than 0.1 percent.

Measures to Reduce Emissions from Goods Movement Activities

<u>Emission Reduction Plan for Ports and Goods Movement in California</u>

In April 2006, the CARB approved the *Emission Reduction Plan for Ports and Goods Movement in California* (CARB, 2006b). The Goods Movement Plan proposes measures that would reduce emissions from the main sources associated with port cargo-handling activities, including ships, harbor craft, terminal equipment, trucks, and locomotives. This effort is also the next step in implementing the *Goods Movement Action Plan (GMAP)* developed by the California Business, Transportation and Housing Agency (BTH) and the Cal/EPA. The final GMAP was released on January 11, 2007, and includes measures to address the various layers of the goods movement system throughout the State including freeways, rail, and ports.

<u>Regulations for Fuel Sulfur and Other Operational Requirements for Ocean-Going Vessels within California Waters and 24 Nautical Miles of the California Baseline</u>

In July 2008, CARB approved the Regulations for Fuel Sulfur and Other Operational Requirements for Ocean-Going Vessels Within California Waters and 24 Nautical Miles of the California Baseline (Title 13, CCR, Section 2299.2). These regulations have required ship main engines, auxiliary engines, and auxiliary boilers operating in California waters since July 2009 to either use MDO with a maximum sulfur content of 0.5 percent or MGO with a maximum sulfur content of 1.5 percent. By January 1, 2012, these source activities must meet an MDO or MGO sulfur limit of 0.1 percent.

<u>Mobile Cargo-Handling Equipment (CHE) at Ports and Intermodal Rail Yards</u>

In December 2006, CARB approved the Regulation for Mobile Cargo Handling Equipment (CHE) at Ports and Intermodal Rail Yards (Title 13, CCR, Section 2479), which is designed to use best available control technology (BACT) to reduce diesel PM and NO_X emissions from mobile cargo-handling equipment at ports and intermodal rail yards. Since January 1, 2007, the regulation has imposed emission performance standards on new and in-use terminal equipment that vary by equipment type. The regulation also includes recordkeeping and reporting requirements. The effects of this regulation are accounted for in the unmitigated OFFROAD2007 emission factors used in this study (CARB, 2006c).

California Drayage Truck Regulation

CARB adopted a drayage truck regulation effective December 3, 2009 to reduce emissions and public exposure to diesel particulate matter, NOx, and other air contaminants that transport cargo to and from California's ports and intermodal rail facilities. Emergency vehicles and yard trucks are exempted from this regulation. The following requirements are phased in starting in 2009:

1) By December 31, 2009, all drayage trucks were required to be equipped with a 1994-2003 model year (MY) engine certified to California or federal emission standards and a level 3 Verified Diesel Emission Control System (VDECS) for PM emissions; or 2004 or newer MY engine certified to California or federal emission standards; or 1994 or newer MY engine that meets or exceeds 2007 MY state or federal standards.
2) After December 31, 2012, all drayage trucks with 2005-2006 MY engines must be equipped with the highest level VDECS for PM emissions.
3) After December 31, 2014, all drayage trucks must be equipped with a 1994 or newer MY engine that meets or exceeds 2007 MY state or federal standards.

At-Berth Ocean-Going Vessels

On December 6, 2007, CARB approved the California Port Regulations for At-Berth Ocean-Going Vessels (Title 13, CCR, Section 2299.3), which requires operators of vessels meeting specified criteria to turn off auxiliary engines for most of their stay in port. For terminals that are providing electrical power from the electrical grid (such as the AMP program established by the Port), the regulation requires ship fleets to reduce NO_X and PM emissions from auxiliary engines while at berth by 50 percent starting January 1, 2014, 70 percent in 2017 and 80 percent starting January 1, 2020. This regulation was approved by the California Office of Administrative Law on December 3, 2008 and took effect on January 2, 2009. Therefore the effects of this regulation are assumed in the unmitigated emission calculations for the Project alternatives.

Statewide Portable Equipment Registration Program

The Portable Equipment Registration Program (PERP) establishes a uniform program to regulate portable engines and portable engine-driven equipment units (CARB, 2005c). Once registered in the PERP, engines and equipment units may operate throughout California without the need to obtain individual permits from local air districts. The PERP generally would apply to proposed Project construction-related dredging and barge equipment.

AB 1493 – Vehicular Emissions of Greenhouse Gases

California AB 1493 (Pavley), enacted on July 22, 2002 and amended on September 24, 2009, required CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. Regulations adopted by CARB will apply to 2009 and later model year vehicles. The USEPA granted California the authority to implement GHG emission reduction standards for new passenger cars, pick-up trucks, and sport utility vehicles on June 30, 2009. The Pavley regulations are expected to reduce GHG emissions from these sources by 22 percent in 2012 and 30 percent in 2016.

Low-Carbon Fuel Standard

CARB passed a Low-Carbon Fuel Standard (LCFS) pursuant to AB 32 and the Governor's Executive Order S-01-07 on January 18, 2007. The final regulation was published on April 23, 2009 and became effective on April 15, 2010, with substantive requirements beginning in 2011. The LCFS calls for a 10 percent reduction in the carbon intensity of California's transportation fuels by 2020.

Executive Order S-3-05

California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S-3-05, statewide GHG emission reduction targets as follows: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; and by 2050, reduce GHG emissions to 80 percent below 1990 levels. Some literature equates these reductions to 11 percent by 2010 and 25 percent by 2020.

AB 32 – California Global Warming Solutions Act of 2006

The purpose of AB 32 is to reduce statewide GHG emissions to 1990 levels by 2020. This enactment instructs the CARB to adopt regulations that reduce emissions from significant sources of GHGs and establish a mandatory GHG reporting and verification program by January 1, 2008. AB 32 requires the CARB to adopt GHG emission limits and emission reduction measures by January 1, 2011, both of which are to become effective on January 1, 2012. The CARB must also evaluate whether to establish a market-based cap and trade system.

On October 24, 2008 CARB released a preliminary draft proposal, "Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under CEQA." CARB suggests the following threshold for industrial projects: the project, with mitigation, will emit no more than 7,000 metric tons CO_2e per year from non-transportation-related sources such as stationary combustion, process losses, purchased electricity, and water usage and wastewater discharge. For transportation and construction sources, CARB is developing performance standards against which significance may be evaluated.

Executive Order S-01-07

Executive Order S-01-07 was enacted by the Governor on January 18, 2007. Essentially, the order mandates the following: 1) that a statewide goal be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020; and 2) that a LCFS for transportation fuels be established for California.

CARB established a LCFS on January 18, 2007 which calls for a reduction of at least 10 percent in the carbon intensity of California's transportation fuels by 2020. CARB adopted the final regulation on November 25, 2009 and the regulation became effective January 12, 2010. Reporting and recordkeeping requirements are required starting in 2010 and carbon intensity standards go into effect in 2011.

SB 1368 GHG Standard for Electrical Generation

Senate Bill 1368 authorizes the California Public Utilities Commission (CPUC), in consultation with the California Energy Commission (CEC) and CARB, to establish GHG emissions standards for baseload generation for investor owned utilities (IOUs). It requires the CEC to adopt a similar standard for local publicly owned or municipal utilities. This 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 1,100 pounds per megawatt hour.

The CPUC adopted rulemaking implementing the legislation in January 2007. The CEC adopted rulemaking establishing a performance standard for baseload generation facilities in early 2007.

Renewable Portfolio Standard (RPS) / Renewable Electricity Standard (RES)

Established in 2002 under Senate Bill 1078 (SB 1078) and accelerated in 2006 under Senate Bill 107, California's Renewable Portfolio Standard (RPS) is one of the most ambitious renewable energy standards in the country. The RPS program requires investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources by at least 1 percent of their retail sales annually, until they reach 20 percent by 2010.

Under Governor Schwarzenegger, CARB was directed (Executive Order S-21-09) to adopt a regulation by July 31, 2010, requiring the state's load serving entities to meet a 33 percent renewable energy target by 2020. CARB may consider different approaches that would achieve the objectives of the Executive Order. This could include increasing the target and accelerating and expanding the time frame based on a thorough assessment of technical feasibility, system reliability, cost, greenhouse gas emissions, environmental protection, and other relevant factors. The Executive Order commits CARB staff to work with the Public Utilities Commission, the California Energy Commission, the California Independent System Operators and others in the development of the regulation. A Renewable Electricity Standard to achieve these goals was approved by CARB on September 23, 2010. The final regulation has not been published at this time.

Senate Bill 97 (SB 97)

SB 97 requires the Office of Planning and Research (OPR) to prepare guidelines to submit to the California Resources Agency regarding feasible mitigation of GHG emissions or the effects of GHG emissions as required by CEQA. The Natural Resources Agency adopted amendments to the CEQA Guidelines for GHG emissions on December 30, 2009. On February 16, 2010, the Office of Administrative Law approved the amendments and filed them with the Secretary of State for inclusion in the California Code of Regulations. The amendments became effective on March 18, 2010. The guidelines apply retroactively to any incomplete environmental impact report, negative declaration, mitigated negative declaration, or other related document and are reflected in this EIS/EIR.

Attorney General Greenhouse Gas CEQA Guidance Memo

Although not considered a regulation, the California State Attorney General's Office released a CEQA guidance memo related to GHG analysis and mitigation measures in 2008, and last revised in 2010 (California State Attorney General's Office, 2010). The memo provides examples of mitigation measures that could be used in a diverse range of projects. Measures identified in the memo have been incorporated, to the extent feasible, as GHG mitigation measures in this analysis.

Office of Planning and Research's CEQA Guidelines on GHGs

OPR developed amendments to the State CEQA Guidelines for addressing GHG emissions. These amendments became effective on March 18, 2010, when the Office of Administrative Law approved them.

OPR did not define or set a CEQA threshold over which GHG emissions would be considered significant. Instead the lead agency would assess the significance of impacts from GHG emissions on the environment by considering a threshold that applies to the project and evaluate feasible mitigation measures. In addition, projects will be assessed as to whether they conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. OPR allows lead agencies to exercise discretion and make their own determinations of significance.

Senate Bills 1078 and 107 (Renewables Portfolio Standard)

Established in 2002 under Senate Bill 1078 and accelerated in 2006 under Senate Bill 107, California's Renewables Portfolio Standard requires retail suppliers of electric services to increase procurement from eligible renewable energy resources by at least 1 percent of their retail sales annually, until they reach 20 percent by 2010.

California Climate Action Registry(CCAR)/The Climate Registry (TCR)

Established by the California Legislature in 2000, the CCAR was a nonprofit public-private partnership that maintained a voluntary registry for GHG emissions. CCAR transitioned into two programs in 2009, the Climate Action Reserve (CAR) and TCR. CAR tracks and registers voluntary projects that reduce emissions of GHGs. TCR has taken over the voluntary registry for GHG emissions from CCAR. The purpose of TCR is to help companies, organizations, and local agencies establish GHG emissions baselines for purposes of complying with future GHG emission reduction requirements. The Port was a voluntary member of both CCAR and is currently member of TCR and has made the following commitments:

- Identify sources of GHG emissions including direct emissions from vehicles, on-site combustion, fugitive and process emissions; and indirect emissions from electricity, steam and co-generation
- Calculate GHG emissions using the CCAR General Reporting Protocol Version 3.1 (CCRA, 2009).
- Report final GHG emissions estimates on the Registry website.

LAHD has been a member of CCAR since March 29, 2006. The Port of Los Angeles also became a member of TCR on March, 3, 2008.

3.2.3.4 Local Regulations and Agreements

Through the attainment planning process, the SCAQMD develops the *SCAQMD Rules and Regulations* to regulate sources of air pollution in the SCAB. The most pertinent SCAQMD rules to the proposed Project are listed below. The emission sources associated with the proposed Project are considered mobile sources. Therefore, the sources are not subject to the SCAQMD rules that apply to stationary sources, such as Regulation XIII (New Source Review), Rule 1401 (New Source Review of Toxic Air Contaminants), or Rule 431.2 (Sulfur Content of Liquid Fuels).

SCAQMD Rule 402 – Nuisance. This rule prohibits discharge of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or that endanger the comfort, repose, health, or safety of any such persons or the public; or that cause, or have a natural tendency to cause, injury or damage to business or property.

SCAQMD Rule 403 – Fugitive Dust. This rule prohibits emissions of fugitive dust from any active operation, open storage pile, or disturbed surface area that remains visible beyond the emission source property line. During proposed Project construction, best available control measures identified in the rule would be required to minimize fugitive dust emissions from proposed earth-moving and grading activities. These measures would include site prewatering and rewatering as necessary to maintain sufficient soil moisture content. Additional requirements apply to construction projects on property with 50 or more acres of disturbed surface area, or for any earth-moving operation with a daily earth-moving or throughput volume of 5,000 cubic yards or more three times during the most recent 365-day period. These requirements include submittal of a dust control plan, maintaining dust control records, and designating a SCAQMD-certified dust control supervisor.

SCAQMD Rule 1403 – Asbestos Emissions from Demolition/Renovation Activities. The purpose of this rule is to limit emissions of asbestos, a toxic air contaminant, from structural demolition/renovation activities. The rule requires people to notify the SCAQMD of proposed demolition/renovation activities and to survey these structures for the presence of asbestos-containing materials (ACMs). The rule also includes notification requirements for any intent to disturb ACM; emission control measures; and ACM removal, handling, and disposal techniques. All proposed structural demolition activities associated with proposed Project construction would need to comply with the requirements of Rule 1403.

POLA/Port of Long Beach (POLB) Vessel Speed Reduction Program (VSRP). Under this voluntary program, the Port of Los Angeles has requested that ships coming into the Port reduce their speed to 12 knots or less within 20 nm of the Point Fermin Lighthouse. This reduction of 3 to 10 knots per ship (depending on the ship's cruising speed) can substantially reduce emissions from the main propulsion engines of the ships. The program started in May 2001. The CAAP adopted the VSRP as control measure OGV-1 and expanded the program out to 40 nm from the Point Fermin Lighthouse.

POLA/POLB Switch Locomotive Modernization. Pacific Harbor Line (PHL) has entered into an agreement with the Port of Los Angeles and Port of Long Beach to replace its harbor locomotives with cleaner locomotives either meeting the Tier 2 standards or using alternative fuels. Currently, all switcher locomotives operated by PHL at the Port meet Tier 2 emission limits or better. The Port has entered into a subsequent agreement to require switcher locomotive engine compliance with Tier 3 emission limits by the end of 2011.

3.2.3.5 San Pedro Bay Ports Clean Air Action Plan (CAAP)

The Ports of Los Angeles and Long Beach, with the participation and cooperation of the staff of the USEPA, CARB and SCAQMD, the San Pedro Bay Ports Clean Air Action Plan (CAAP), a planning and policy document that sets goals and implementation strategies to reduce air emissions and health risks associated with port operations while allowing port development to continue (POLA and POLB, 2006). In addition, the CAAP sought the reduction of criteria pollutant emissions to the levels that assure port-related sources decrease their "fair share" of regional emissions to enable the Basin to attain state and federal ambient air quality standards. Each individual CAAP measure is a proposed strategy for achieving these emissions reductions goals. The Ports approved the first CAAP in November, 2006. Specific strategies to significantly reduce the health risks posed by air pollution from port-related sources include:

- Aggressive milestones with measurable goals for air quality improvements
- Specific goals set forth as standards for individual source categories to act as a guide for decision-making
- Recommendations to eliminate emissions of ultrafine particulates
- Technology advancement programs to reduce greenhouse gases
- Public participation processes with environmental organizations and the business communities

The CAAP focuses primarily on reducing DPM, along with NOx and SOx. This reduces emissions and health risk and thereby allows for future port growth while progressively controlling the impacts associated with growth. The CAAP includes emission control measures as proposed strategies that are designed to further these goals expressed as Source-Specific Performance Standards which may be implemented through the environmental review process, or could be included in new leases or Port-wide tariffs, Memoranda of Understanding (MOU), voluntary action, grants or incentive programs.

The CAAP Update, adopted in November, 2010 includes updated and new emission control measures as proposed strategies which support the goals expressed as the Source-Specific Performance Standards and the Project-Specific Standards. In addition, the CAAP Update includes the recently developed San Pedro Bay Standards which establish emission and health risk reduction goals to assist the ports in their planning for adopting and implementing strategies to significantly reduce the effects of cumulative port-related operations (POLA and POLB, 2010).

The goals set forth as the San Pedro Bay Standards are the most significant addition to the CAAP and include both a Bay-wide health risk reduction standard and a Bay-wide mass emission reduction standard. Ongoing Port-wide CAAP progress and effectiveness will be measured against these Bay-wide Standards which consist of the following reductions as compared to 2005 emissions levels:

- Health Risk Reduction Standard: 85 percent reduction in DPM by 2020
- Emission Reduction Standards:
    - By 2014, reduce emissions by 72 percent for DPM, 22 percent for NOx, and 93 percent for SOx
    - By 2023, reduce emissions by 77 percent for DPM, 59 percent for NOx, and 92 percent for SOx

The Project-Specific Standard remains as adopted in the original CAAP in 2006, that new projects meet the 10 in 1,000,000 excess residential cancer risk threshold, as determined by health risk assessments conducted subject to CEQA statutes, regulations and guidelines, and implemented through required CEQA mitigations and/or lease negotiations. Although each Port has adopted the Project Specific Standard as a policy, the Boards of Harbor Commissioners retain the discretion to consider and approve projects that exceed this threshold if the Board deems it necessary by adoption of a statement of overriding considerations at the time of project approval.

The goals set forth as the Source-Specific Performance Standards of the CAAP address a variety of port-related emission sources – ships, trucks, trains, cargo-handling equipment and harbor craft – and outline specific strategies to reduce emissions from each source category. The Source-Specific Performance Standards have been updated as detailed in Section 2 of the CAAP Update and the applicable emission control measures (as detailed in Section 4 of the CAAP Update) for the proposed Project are discussed in Section 3.2.4.3.1.below.

While the Port has adopted a general policy that its leases shall be compliant with the CAAP, the Board of Harbor Commissioners has discretion regarding the form of all lease provisions and CAAP measures at the time of lease approval. In addition, tenants must comply with all applicable federal, state, and local air quality regulations.

As the CAAP is a planning document that sets goals and implementation strategies to guide future actions, it does not constrain the discretion of the Ports' Boards of Harbor Commissioners as to any specific future action. Each individual CAAP measure is a proposed strategy for achieving necessary emission reductions. The Board of Harbor Commissioners uses its discretion in its approvals of projects, leases, tariffs, contracts, or other implementing activities in order to appropriately apply the CAAP to the particular situation, and may make adjustments if any proposed measure proves infeasible or if better alternatives for a measure emerge.

POLA/POLB Clean Truck Program (CTP). The Port CTP is a central element of the CAAP. The CTP establishes a progressive ban on polluting trucks. As of October 1, 2008, all pre-1989 trucks are banned from the Port. As of January 1, 2010, all 1989-1993 trucks are banned from the Port in addition to 1994-2003 trucks that have not been retrofitted. As of January 1, 2012, all trucks that do not meet the 2007 Federal Clean Truck Emissions Standards will be banned from the Port. In the first year of the CTP, the program reduced the rate of Port truck emissions by an estimated 70 percent. When fully implemented in 2012, Port truck emissions will be reduced by more than 80 percent. The proposed Project analysis assumes full compliance with the CTP.

3.2.4 Impacts and Mitigation Measures

This section presents a discussion of the potential air quality impacts associated with the construction and operation of the proposed Project and alternatives. Mitigation measures are provided where feasible for impacts found to be significant.

3.2.4.1 Methodology

Air pollutant emissions of CO, VOC, NO_X, SO_X, PM_{10}, and $PM_{2.5}$ were estimated for construction and operation of the proposed Project and alternatives. To determine their significance, the proposed Project emissions minus the appropriate baseline emissions were compared to Significance Criteria AQ-1 and AQ-3 identified in Section 3.2.4.2. The criteria pollutant emission calculations are presented in Appendix E1.

Dispersion modeling of CO, NO_X, PM_{10}, and $PM_{2.5}$ emissions was performed to estimate maximum off-site pollutant concentrations in the air from emission sources attributed to the proposed Project site. The predicted ambient concentrations associated with construction and operation of the proposed Project and alternatives were compared to Significance Criteria AQ-2 and AQ-4, respectively. The complete dispersion modeling report is presented in Appendix E2.

Dispersion modeling of vehicle traffic also was performed at a worst-case roadway intersection affected by proposed Project or alternative-generated truck trips. The maximum predicted CO "hot spot" concentrations near the intersection were compared to Significance Criterion AQ-5.[4]

The potential for proposed Project or alternative-generated odors at sensitive receptors in the Project vicinity was assessed qualitatively and compared to Significance Criterion AQ-6.

An HRA of toxic air contaminant emissions associated with construction and operation of the proposed Project and alternatives was conducted in accordance with a Protocol prepared previously by the Port and reviewed and approved by both CARB and SCAQMD (POLA, 2005c), the *Sunnyvale* decision, and in accordance with recent changes to Port protocols and procedures for conducting HRAs (POLA, 2011c). Maximum predicted health risk values in the communities adjacent to the proposed Project site were compared to Significance Criterion AQ-7. The HRA analyzed Project emissions and human exposure to the emissions during the 70-year period from 2012 to 2081. The HRA includes an evaluation of three different types of health effects: individual lifetime cancer risk, chronic noncancer hazard index, and acute noncancer hazard index. Impact AQ-7 also discusses the effects of ambient PM on mortality and morbidity. The complete Health Risk Assessment Report is presented in Appendix E3.

Consistency of the proposed Project and alternatives with the AQMP was addressed in accordance with Significance Criterion AQ-8. GHG impacts were addressed in Significance Criterion AQ-9.

Finally, mitigation measures were applied to proposed Project or project alternative activities that would exceed a significance criterion prior to mitigation, and then evaluated as to their effectiveness in reducing proposed Project or alternative impacts.

The emission estimates, dispersion modeling, and health risk estimates presented in this document were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared.

The numerical results presented in the tables of this report were rounded, often to the nearest whole number, for presentation purposes. As a result, the sum of tabular data in the tables could differ slightly from the reported totals. For example, if emissions from Source A equal 1.2 pound per day (lb/day), and emissions from Source B equal 1.4 lb/day,

[4] Motor vehicle idling emissions for criteria pollutants during the increased idling time at rail crossings would be expected to be less than significant since: (1) idling does not generate fugitive dust emissions which make up most of the PM_{10} and a substantial portion of the $PM_{2.5}$ vehicle emissions; (2) NOx emissions are very low during idling (assigned a value of zero for light duty autos and light duty trucks in EMFAC); and (3) motor vehicle CO impacts to concentrations are less than the ambient air quality standards (when included with background sources) in the entire air basin, and will continue to drop as the regional fleet is replaced with newer vehicles. Therefore, CO hot spot analyses were not conducted at rail crossings.

the total emissions from both sources would be 2.6 lb/day. However, in a table, the emissions would be rounded to the nearest lb/day, such that Source A would be reported as 1 lb/day, Source B would be reported as 1 lb/day, and the total emissions from both sources would be reported as 3 lb/day. Although the rounded numbers create an apparent discrepancy in the table, the underlying addition is accurate.

3.2.4.1.1 Methodology for Determining Construction Emissions

Proposed Project or project alternative construction activities would involve the use of off-road construction equipment (including land-side construction equipment and in-water equipment such as dredgers and pile drivers), on-road trucks, tugboats, general cargo ships used to deliver construction-related equipment, and worker vehicles. Because these sources would primarily use diesel fuel, they would generate emissions of diesel exhaust in the form of CO, VOC, NO_X, SO_X, PM_{10} and $PM_{2.5}$. In addition, off-road construction equipment traveling over unpaved surfaces and performing earthmoving activities such as site clearing or grading would generate fugitive dust emissions in the form of PM_{10} and $PM_{2.5}$. Worker commute trips would also generate vehicle exhaust and paved road dust emissions.

The equipment usage and scheduling data needed to calculate emissions for the proposed construction activities were obtained from the project applicant and Port staff, which are included in Appendix E1.1. Construction emissions were estimated for both the initial Project construction and for potential construction of infrastructure to support automated backland operations later in the Project lease term.

To estimate peak daily construction emissions for comparison to SCAQMD emission thresholds, emissions were first calculated for the individual construction activities (for example, wharf construction, marine terminal crane delivery, or backlands construction). Peak daily emissions then were determined by summing emissions from overlapping construction activities as indicated in the proposed construction schedule (Table 2-2). The SCAQMD emission thresholds are discussed in Section 3.2.4.2.

The specific approaches to calculating emissions for the various emission sources during construction of the proposed Project or an alternative are discussed below. Table 3.2-7a includes a synopsis of the regulations and agreements that were assumed as part of the Project in the construction calculations. The construction emission calculations are presented in Appendix E1.1.

Table 3.2-7a: Regulations and Agreements Assumed in the Unmitigated Construction Emissions

Off-Road Construction Equipment	On-Road Trucks	Tugboats	General Cargo Ships	Fugitive Dust
Emission Standards for Non-road Diesel Engines – Tier 1, 2, 3, and 4 standards gradually phased in over all years due to normal construction equipment fleet turnover. **California Diesel Fuel Regulations** – 15-ppm sulfur. **CARB Portable Diesel-Fueled Engines Air Toxic Control Measure (ATCM)** – Effective September 12, 2007, all portable engines having a maximum rated horsepower of 50 bhp and greater and fueled with diesel shall meet weighted fleet average PM emission standards.	**Emission Standards for On-road Trucks** – Tiered standards gradually phased in over all years due to normal truck fleet turnover. **California Diesel Fuel Regulations** – 15-ppm sulfur. **Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling** – Diesel trucks are subject to idling limits, when not being used to power concrete mixing, water pumps, etc.	**California Diesel Fuel Regulations** –15-ppm sulfur. From January 1, 2011 on: All harbor craft with C1 or C2 marine engines must utilize a USEPA Tier-3 engine, or cleaner.	**IMO Marpol VI** - 0.1 percent sulfur fuel **VSRP –** comply with the expanded Vessel Speed Reduction Program (VSRP) of 12 knots between 40 nautical miles (nm) from Point Fermin and the Precautionary Area. These ships must also use low-sulfur fuel (maximum sulfur content of 0.2 percent) in auxiliary engines, main engines, and boilers within 40 nm of Point Fermin.	**SCAQMD Rule 403 Compliance** – 60 percent reduction in fugitive dust due to watering three times per day. **SCAQMD Rule 1403 Compliance** – Work practices will limit asbestos emissions from demolition or renovations.

Note: This table is not a comprehensive list of all applicable regulations; rather, the table lists key regulations and agreements that substantially affect the emission calculations for the proposed Project. A description of each regulation or agreement is provided in Section 3.2.3.

Off-Road Construction Equipment

Emissions of VOC, CO, NOx, SO_2, PM_{10}, and $PM_{2.5}$ from diesel-powered construction equipment were calculated using emission factors derived from the CARB OFFROAD 2007 Emissions Model (CARB, 2006c). Using the SCAB fleet information, the SCAQMD ran OFFROAD to develop SCAB fleet average emission factors for each year from 2007 through 2025 (SCAQMD, 2008). Emission factors were calculated for each type of equipment based on horsepower rating of the equipment and corresponding equipment activity levels. The OFFROAD model output shows that, on a per-horsepower-hour basis, emission factors will steadily decline in future years as older equipment is replaced with newer, cleaner equipment that meets the already-adopted future state and federal off-road engine emission standards. The SCAQMD files for off-road equipment described above for proposed Project construction years 2012 and 2013 were used this air quality impact analysis. Although CARB is in the process of updating the off-road emission factor databases, the OFFROAD2007 model remains appropriate to use because there have been no regulatory requirements since 2007 for new engines and that the only regulatory requirements for NOx and PM for in-use engines promulgated since the initial release of OFFROAD2007 were delayed in February 2010.

On-Road Trucks

Emissions from on-road, heavy-duty diesel trucks during proposed Project or alternative construction were calculated using emission factors generated by the EMFAC2007 on-road mobile source emission factor model for a truck fleet representative of the SCAB (CARB, 2007a). The EMFAC2007 model output shows that, on a per-mile basis, emission factors will steadily decline in future years as older trucks are replaced with newer, cleaner trucks that meet the required state and federal on-road engine emission standards. Although regulatory requirements may have changed between when EMFAC2007 was released and at the time of this writing, using EMFAC2007 provides a conservative estimate of emissions.

Other assumptions regarding on-road trucks during construction include:

- The average round-trip travel distances for trucks were assumed to be 130 miles for pile deliveries, 100 miles for concrete trucks, 15 miles for paving trucks, and 40 miles for all other supply and dump trucks (USACE and LAHD, 2008).
- Non-incidental truck idling times were assumed to range from 5 to 30 minutes per trip depending on the truck type (pile deliveries, general hauling, concrete, dump, flatbed, and water). Implementation of mitigation measures was assumed to lower idling times for all construction material delivery trucks to 5 minutes per trip, except for concrete trucks which were assumed to operate 20 minutes per trip after mitigation.

Tugboats

During construction, tugboats would be used to assist cargo ships delivering marine terminal cranes to the berths and, potentially, to transport dredged material on barges.

Tugboat main and auxiliary engine sizes and emission factors were obtained from the 2009 POLA Emissions Inventory (EI).

The fuel sulfur content for Port tug boats has been 15 ppm starting September 1, 2006. The fuel sulfur content limits are required for California harbor craft in accordance with California Diesel Fuel Regulations.

Other assumptions regarding tugboats during construction include:

- During dredging activities, a tugboat was assumed to complete two round trips per day hauling a barge for sediment disposal at an ocean disposal site. This emissions analysis is conservative, as dredge disposal is now expected to occur at an approved site within the Harbor, much closer to the proposed Project site. Two tugboats were assumed for each assist of a general cargo ship during marine terminal crane delivery.

General Cargo Ships

During construction, general cargo ships would be used to deliver marine terminal cranes to the berths. For crane delivery, a ship would arrive at the berth, remain at berth (hoteling) for about 5 working days while up to four cranes are side-shifted onto the wharf, and then depart.

Emissions from the main engines, auxiliary engines, and boilers on general cargo ships were calculated using Entec and CARB emission factors, as reported in the *Port of Los Angeles Inventory of Air Emissions 2009* (Starcrest, 2010). At low loads in the precautionary zone and within the harbor, the emission factors for main engines were adjusted higher, on a per kilowatt hour (kWh) basis, using low-load adjustment factors (Starcrest, 2010).

Cargo Ship main and auxiliary engine sizes, and maneuvering and hoteling emissions were determined by using USEPA's "Control of Emissions of Air Pollution from Category 3 Marine Diesel Engines" (USEPA, 2009a).

Within 40 nm of Point Fermin, the maximum sulfur content of fuel burned in propulsion and auxiliary engines and boilers was conservatively assumed to be 0.2 percent. Within 24 nautical miles of the California baseline, the maximum sulfur content was assumed to be 0.1 percent (13 CCR, Section 2299.2).

Because the earliest the cranes are expected to be installed is 2012 (four new cranes would be delivered to Berths 302-305 in 2012). It is conservatively assumed that AMP would not be available during the first crane deliveries. Ships would be hoteling 24 hours per day during the initial crane deliveries.

Other assumptions regarding general cargo ships during construction include:

- One ship is capable of transporting up to four cranes. As a result, one ship will be required for the construction phase of the proposed Project.
- During hoteling, ships were assumed to turn off the main engines but leave the auxiliary engines running for up to 5 hours, and the boilers running for duration of the ship call.

Fugitive Dust

Emissions of fugitive dust (PM_{10} and $PM_{2.5}$) from earth-moving activities would occur during backlands development. PM_{10} emissions were calculated using emission factors from the Western Regional Air Partnership's (WRAP) Fugitive Dust Handbook (WRAP, 2006). Fugitive dust from vehicle traffic on paved and non-paved roads was calculated using Section 13.2.1 and Section 13.2.2, respectively, of the USEPA's Compilation of Air Pollutant Emission Factors (AP-42) (USEPA, 2011b; USEPA, 2006a). Emissions of fugitive dust $PM_{2.5}$ were approximately 10 percent of the PM_{10} emissions based on CARB's size fraction profiles for PM.

Fugitive dust emissions from backland development were reduced by 60 percent from uncontrolled levels to reflect compliance with SCAQMD Rule 403 for unmitigated conditions. Additional dust control measures such as the use of soil stabilizers, reduced speed of on-site vehicles, and wheel washing is expected to result in 60 percent reduction of fugitive dust which represents the mitigated conditions. The dust-control methods for the proposed Project would be specified in the dust-control plan that must be submitted to the SCAQMD per Rule 403.

Fugitive dust emissions from earth-moving activities are proportional to the surface area of the land being disturbed. Peak daily emissions for backlands development were calculated assuming that 25 percent of the total backlands area would be disturbed at any one time during construction.

Worker Commute Trips

Emissions from worker trips during construction of the proposed Project or an alternative were calculated using EMFAC2007, which calculates emissions from vehicle exhaust, tire wear, and brake wear using SCAQMD default assumptions for vehicle fleet mix, travel distance, and average travel speeds. The peak number of worker vehicle trips was assumed to be 50 per day at 40 miles per round trip.

Berth 306 Automated Backlands

As discussed in the Chapter 2, Section 2.5.1.5, cargo handling operations associated with Berth 306 and the 41-acre backlands may become automated at some point in the future. While the timing for integration of automated operations on this parcel is subject to a number of constraints, for this construction analysis it is assumed that some minor additional utility and infrastructure construction would occur at a future date. During this time, delivery of the automated equipment for the backlands would also occur. Specifically, the construction would include moving light poles, adding curbing and booths for landside transfer operations, and delivery of automated stacking cranes, automated guided vehicles, and landside transfer cranes by ship. No more than one cargo ship per day would be used to deliver material and equipment, and no more than six cargo ships would be used on a given year. Because the level of activity for this phase of the project is not as intense as that for the initial construction of the new wharf and backland, the peak daily emissions for these activities would not be higher than the construction levels estimated for Phases 1 and 2 discussed in the impact analysis for the proposed Project and Alternatives 5 and 6.

3.2.4.1.2 Methodology for Determining Operational Emissions

Operational emission sources include container ships, tugboats, terminal equipment, on-road trucks, and trains. Because these sources would use diesel fuel, they would generate emissions of diesel exhaust in the form of CO, VOC, NO_X, SO_X, PM_{10}, and $PM_{2.5}$. In addition, when ships are using AMP, indirect emissions would be created by regional power plants burning fossil fuels to generate the electricity consumed by the hoteling ships. Worker commute trips would generate primarily gasoline vehicle exhaust and paved road dust emissions.

Information on proposed operational emission sources was obtained primarily from Port staff, APL staff, the proposed Project traffic study conducted as part of this EIS/EIR (Section 3.6, Ground Transportation), and the *Port of Los Angeles Inventory of Air Emissions 2009* (Starcrest, 2010).

Table 3.2-7b includes a synopsis of the regulations that were assumed in the unmitigated emissions calculations. Current in-place regulations are treated as Project elements rather than mitigation because they represent enforceable rules with or without Project approval. Only current regulations and agreements were assumed as part of the unmitigated Project emissions for the various analysis years.

CAAP measures planned for future implementation at a Project-level are treated as project mitigation in this study.

Table 3.2-7b: Regulations and Agreements Assumed as Part of the Unmitigated Operational Emissions

Container Ships	Tugboats	Terminal Equipment	Trucks	Trains
Vessel Speed Reduction Program –95 percent compliance to 20 nm, **MARPOL Annex VI –** 100 percent compliance **CARB ULSD –** marine gas oil or marine diesel oil at or below 0.1 percent sulfur (24nm of CA coast) **IMO ECA –** marine gas oil or marine diesel oil at or below 0.1 percent sulfur beginning in 2015 (200nm of CA coast) **Engine Standards for Marine Diesel Engines** Tier 2 – 2011, Tier 3-2016	**California Diesel Fuel Regulations** – 15 ppm sulfur starting in 2012. **Engine Standards for Marine Diesel Engines** – Tier 2 standards gradually phased in due to normal tugboat fleet turnover.	**CARB Regulation for Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards** New yard trucks and new non-yard trucks Either a certified on-road engine meeting the current model year standards or a certified final Tier 4 off-road diesel engine. In-use yard trucks BACT through accelerated fleet turnover. In-use non-yard trucks BACT or retrofits (replacement to Tier 4 off-road engines or installation of a Level 3 VDECS) **California Diesel Fuel Regulations** – 15-ppm sulfur.	**Emission Standards for On-road Trucks** – Tiered standards gradually phased in over all years due to normal truck fleet turnover. **California Diesel Fuel Regulations** – 15-ppm sulfur. **Heavy Duty Diesel Truck Idling Regulation** – On-terminal trucks are subject to idling limits. **Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling** – Diesel trucks are subject to idling limits. **CARB Drayage Regulation –** Starting in 2009, phase in state and federal emission standards **Clean Truck Program –** by October 2008, all pre-1989 trucks are banned from port services. By January 1, 2012, all trucks that do not meet 2007+ on-road HHDV standards are banned.	**Emission Standards for Locomotives** – Tier 0, 1, and 2 standards gradually phased in over all years due to normal locomotive fleet turnover. **2005 CARB/Railroad Statewide Agreement** – Reduced line haul locomotive idling times assumed to take effect starting in 2006. **Switch Locomotive Modernization Agreement** —– Tier 2 switch locomotive at the APL on-dock rail yard starting in 2008. This supersedes the Emission Standards for Locomotives (above). Applies only to the APL on-dock rail yard switch locomotive. **Non-road Diesel Fuel Rule** – 15-ppm sulfur starting January 1, 2012. Applies to all line-haul locomotives. **California Diesel Fuel Regulations** –15-ppm sulfur. Applies to all switch locomotives.

Note: This table is not a comprehensive list of all applicable regulations; rather, the table lists key regulations and agreements that substantially affect the emission calculations for the proposed Project emissions. A description of each regulation or agreement is provided in Section 3.2.3.
[1]Per 13 CCR 2299, the sulfur limit begins on November 19, 2008 for auxiliary engines, and on July 1, 2009 for main engines and auxiliary boilers.

The specific approaches to calculating emissions for the various emission sources during proposed Project or alternative operations are discussed below. The scope of analysis is limited to the SCAB in which the project is located in and to be consistent with thresholds established by the SCAQMD for that jurisdiction. The SCAQMD emission thresholds are discussed in Section 3.2.4.2. This methodology is consistent with other types of air quality analyses that address emissions within an area over which the regulating agency has control. However, the operational and geographical boundaries were determined differently for the GHG analysis as further described below.

The operational emission calculations are presented in Appendix E1.3.

Container Ships

Emissions from the main engines, auxiliary engines, and boilers on container ships were calculated using Entec and CARB emission factors, as reported in the *2009 Port of Los Angeles Inventory of Air Emissions* (2009 POLA EI) (Starcrest, 2010).

To estimate annual or average daily unmitigated emissions for all future study years as of 2012, all ship main engines were assumed to use marine gas oil (MGO) or marine diesel oil (MDO) with an average sulfur content of 0.1 percent in compliance with CARB regulation, within 24 nm of the CA coast. For study year 2015, the ship main engines were assumed to use MGO or MDO with an average sulfur content of 0.1 percent (1,000 ppm) within 200nm of the California coast. A sulfur content of 0.1 percent represents the sulfur limit for an emission control area (ECA) under MARPOL ANNEX VI.

For the CEQA baseline, between the fairway and the berth, and at-berth, 95 percent of ship main and auxiliary engines and boilers were assumed to use intermediate fuel oil with an average sulfur content of 2.7 percent. The remaining 5 percent of main and auxiliary engines and boilers were assumed to use marine diesel oil with an average sulfur content of 0.2 percent sulfur due to the port's voluntary Fuel Inventive Program. The Project Applicant provided the compliance rate for the terminal during the baseline period.

The emission factors and fuels for container ships were assumed to remain unchanged in future study years (2015, 2020, 2025, and 2027). Ship auxiliary boilers were assumed to operate at engine loads less than or equal to 20 percent as reported in the 2009 POLA EI (Starcrest, 2010). Main engines are assumed to be off during container ship docking. The methodology in the 2009 POLA EI was used to calculate ship emissions during transit and hoteling (Starcrest, 2010). This methodology uses assumptions regarding engine load factors and associated energy output during each trip segment. During transit, main engine load factors were determined using the propeller law, which states that the engine load factor is proportional to the speed of the ship cubed. At low loads, the emission factors for main engines were adjusted higher, on a per kWh basis, using low-load adjustment factors (Starcrest, 2010).

Other assumptions regarding container ships include:

- During transit, emissions from ships were calculated from the berth to the edge of SCAQMD waters (roughly a 50-mile, one-way trip).
- The VSRP compliance rate in the baseline period was assumed to be 95 percent without mitigation, which is the minimum compliance rate for VSRP recognition by POLA. The unmitigated compliance rate for all future analysis years was assumed to remain at the baseline level of 95 percent.
- During hoteling (without AMP), ships were assumed to turn off the main engines but leave the auxiliary engines and boilers running. With AMP, the auxiliary engines would also be turned off; but the boilers would remain running. The baseline assumes that no container ships use AMP. As specified by CARB, the following percentage of ships must use AMP at berth, 50 percent by 2014, 70 percent by 2017, and 80 percent by 2020.

- Hoteling durations were calculated based on future projected Port-average lifts per call, ship work rates, crane productivity, and mean cranes per ship. A 3-hour tie-up and untie time was included in the estimate (JWD, 2002).

As reported in the 2009 POLA EI, some arriving container ships are not able to proceed directly to the berth, but instead must wait at a designated anchorage point either inside or outside the breakwater until given clearance to proceed to the berth. Average anchorage times for each container ship size were provided by Starcrest for the baseline. The anchorage time was derived from actual data for APL ship visits for 2008 and 2009 provided by Starcrest and the Port (2010). Similar to hoteling, the main engine is assumed to be turned off during anchorage, while the auxiliary engines and boilers are assumed to remain running.

As shown in Table 3.2-8A, the assumed sizes of the container ships calling at the terminal were based on actual data for the baseline year (Berths 302-305), and a Port-projected fleet mix for study years 2012, 2015, 2020, 2025, and 2027. In the baseline year, 2 ship visits (1 percent) were in the 1,000 TEU size category, and 245 ship visits (99 percent) were in the 3,000-6,000 TEU size category. Ship size assumptions for the future analysis years and all alternatives are as included in Table 3.2-8A.

Table 3.2-8a: Baseline and Forecasted Ship Calls by Ship Size, TEU Throughput, and Daily/Hourly Activity

TEUs or Ship Size (No of Containers)	CEQA Baseline	*Forecast Year*				
		2012	**2015**	**2020**	**2025**	**2027**
CEQA Baseline, Proposed Project, and Alternatives 5 and 6						
Ships:						
1000	2	-	-	-	-	-
2000	-	-	-	-	-	-
3000	7	-	-	-	-	-
4000	59	26	78	78	52	26
5000	177	52	52	52	52	52
6000	2	156	156	156	104	156
7000	-	-	-	-	-	-
8,000-9,999	-	-	-	52	104	104
10,000-12,000	-	-	-	-	52	52
Annual Ship Calls	**247**	**234**	**286**	**338**	**364**	**390**
Annual TEUs (millions)	**1.128**	**1.906**	**2.702**	**2.912**	**3.122**	**3.206**
Peak Day Ship at Berth	**3**	**3**	**4**	**4**	**4**	**4**
Hrs/Day & Days/Week	**16 / 7**	**21 / 7**	**21 / 7**	**21 / 7**	**21 / 7**	**21 / 7**
NEPA Baseline, Alternative 1, and Alternative 2						
Ships:						
1000		-	-	-	-	-
2000		-	-	-	-	-
3000		-	-	-	-	-
4000		26	26	26	26	26
5000		52	52	52	52	52

Table 3.2-8a: Baseline and Forecasted Ship Calls by Ship Size, TEU Throughput, and Daily/Hourly Activity

TEUs or Ship Size (No of Containers)	CEQA Baseline	*Forecast Year*				
		2012	**2015**	**2020**	**2025**	**2027**
6000		156	156	156	104	156
7000		-	-	-	-	-
8,000-9,999		-	-	-	52	52
10,000-12,000		-	-	-	-	-
Annual Ship Calls		**234**	**234**	**234**	**286**	**286**
Annual TEUs (millions)		**1.906**	**1.948**	**2.034**	**2.119**	**2.153**
Peak Day Ship Calls		**3**	**3**	**3**	**3**	**3**
Hrs/Day & Days/Week		**21 / 7**	**21 / 7**	**21 / 7**	**21 / 7**	**21 / 7**
Alternative 3						
Ships:						
1000		-	-	-	-	-
2000		-	-	-	-	-
3000		-	-	-	-	-
4000		26	26	26	26	26
5000		52	52	52	52	52
6000		156	104	156	208	208
7000		-	-	-	-	-
8,000-9,999		-	52	52	52	52
10,000-12,000		-	-	-	-	-
Annual Ship Calls		**234**	**234**	**234**	**286**	**286**
Annual TEUs (millions)		**1.906**	**2.102**	**2.302**	**2.503**	**2.583**
Peak Day Ship Calls		**3**	**3**	**3**	**3**	**3**
Hrs/Day & Days/Week		**21 / 7**	**21 / 7**	**21 / 7**	**21 / 7**	**21 / 7**
Alternative 4						
Ships:						
1000		-	-	-	-	-
2000		-	-	-	-	-
3000		-	-	-	-	-
4000		26	26	26	26	26
5000		52	52	52	52	52
6000		156	104	156	208	156
7000		-	-	-	-	-
8,000-9,999		-	52	52	52	104
10,000-12,000		--	-	-	-	-
Annual Ship Calls		**234**	**234**	**234**	**286**	**286**
Annual TEUs (millions)		**1.906**	**2.263**	**2.480**	**2.696**	**2.783**
Peak Day Ship Calls		**3**	**3**	**3**	**3**	**3**
Hrs/Day & Days/Week		**21 / 7**	**21 / 7**	**21 / 7**	**21 / 7**	**21 / 7**

Tugboats

During Project operations, tugboats would be used to assist container ships while maneuvering and docking inside Port breakwater.

Tugboat emission factors for the baseline inventory were provided by Starcrest based on the 2009 POLA EI. Tugboat emission factors for the future study years 2012, 2015, 2020, 2025, and 2027 were calculated using zero hour emission factors from the CARB *Emissions Estimation Methodology for Commercial Harbor Craft Operating in California, Appendix B* (CARB, 2007c). Emission factors were calculated using deterioration factors for harbor craft diesel engines from the 2009 POLA EI. Low-sulfur diesel correction factors were applied to all pre-2011 emission factors to account for the use of low-sulfur diesel starting in 2009 per CARB's low sulfur fuel requirements for harbor craft. Replacement of the main engine was assumed to occur by January 1, 2013 and replacement of the auxiliary engine by January 1, 2014 according to CARB's In-Use Harbor Craft Replacement Regulation.

The fuel sulfur content limits used are those required for California harbor craft in accordance with California Diesel Fuel Regulations. The harbor craft sulfur content limit was 15 ppm for all study years.

Two tugboats were assumed for each arrival assist of a container ship.

Terminal Cargo-Handling Equipment

Terminal cargo-handling equipment (CHE) includes yard tractors, RTGs, top handlers, sidepicks, forklifts, and other miscellaneous equipment. All equipment is assumed to be diesel powered with the exception of a certain number of propane powered forklifts. The marine terminal cranes used to lift containers on and off container ships would be electric and, therefore, would have no direct emissions.

Emissions of CO, VOC, NO_X, PM_{10}, and $PM_{2.5}$ from diesel-powered terminal equipment were calculated using emission factors derived from the CARB OFFROAD2007 Emissions Model (CARB, 2006a). Although OFFROAD2007 does not have a direct module for cargo handling equipment, it contains data on the individual equipment in other modules. The OFFROAD model emission factors were determined using the actual terminal equipment population (including equipment horsepower, load factors, and ages) at the proposed Project site in the baseline period (Starcrest, 2010). Off-road equipment was assumed to be replaced with equipment complying with the CARB Regulation for Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards. This regulation requires that new off-road yard trucks are certified to the final Tier 4 off-road standards for the rated horsepower. Non-yard truck off-road equipment must also be certified to meet the Tier 4 or equivalent off-road emission standards for the model year and rated horsepower of the equipment. The latest year that any equipment model year would have to comply is 2016, therefore all CHE is assumed to comply with this regulation by 2016.

Emission factors for SO_X were determined from the fuel consumption rate of the terminal equipment and the sulfur content of the diesel fuel used in the equipment. The sulfur content in diesel fuel was assumed to be 15 ppm representing the maximum allowable sulfur content in diesel fuel sold in California.

To calculate emissions, the predicted terminal equipment usage for each future year was multiplied by emission factors derived from OFFROAD2007, or from compliance with the CARB regulation for those years after the regulation is fully implemented. The terminal equipment usage for the proposed Project site in each analysis year, including the CEQA baseline year, was provided by APL. Annual and peak daily activity (hours) by CHE type are presented in Table 3.2-8B.

Table 3.2-8b: Annual and Peak Day CHE Activity and Size Parameters

CHE Type / HP / Load Factor	CEQA Baseline	*Forecast Year*				
		2012	**2015**	**2020**	**2025**	**2027**
CEQA Baseline, Proposed Project, and Alternatives 5 and 6						
Annual (Peak Daily) Total Hours of Operation						
Wharf Crane (electric)	29,718 (176)	46,176 (176)	64,325 (256)	69,113 (288)	73,901 (320)	75,816 (320)
Forklift (diesel) / 110 / 0.2	5,960 (21)	6,807 (24)	7,696 (27)	7,931 (28)	8,165 (29)	8,259 (29)
RMG Cranes (electric)	9.453 (54)	18,720 (52)	23,305 (81)	24,515 (90)	25,724 (90)	26,208 (90)
Gantry Cranes / 600 / 0.2	0 (0)	640 (56)	13,175 (94)	16,482 (126)	19,789 (142)	21,112 (158)
Top Handlers / 332 / 0.24	13,767 (128)	24,778 (180)	43,484 (211)	48,419 (242)	53,354 (250)	55,328 (266)
Side Picks / 227 / 0.24	1,530 (15)	5,148 (23)	9,176 (23)	10,238 (31)	11,301 (31)	11,726 (31)
Yard Tractors / 230 / 0.16	291,100 (2,104)	571,350 (2,117)	784,805 (2,764)	841,119 (3.032)	897,433 (3,240)	919,958 (3,240)
Annual (Peak Daily) Total Gallons LPG Consumed						
Forklifts (LPG)	4,412 (16)	5,499 (20)	6,217 (22)	6,407 (23)	6,596 (23)	6,672 (24)
NEPA Baseline, Alternative 1, and Alternative 2						
Annual (Peak Daily) Total Hours of Operation						
Wharf Crane (electric)		46,176 (176)	47,247 (176)	49,033 (176)	50,818 (176)	51,532 (176)
Forklift (diesel) / 110 / 0.2		6,807 (24)	6,874 (24)	6,986 (25)	7,097 (25)	7,142 (25)
RMG Cranes (electric)		18,720 (54)	18,720 (54)	18,720 (54)	18,720 (63)	18,720 (72)
Gantry Cranes / 600 / 0.2		640 (56)	672 (56)	725 (64)	779 (64)	800 (64)
Top Handlers / 332 / 0.24		24,778 (180)	25,724 (180)	27,302 (188)	28,879 (202)	29,510 (208)
Side Picks / 227 / 0.24		5,148 (23)	5,990 (23)	7,394 (23)	8,798 (23)	9,360 (23)
Yard Tractors / 230 / 0.16		571,350 (2,117)	581,906 (2,117)	599,500 (2,117)	617,094 (2,060)	624,130 (2,153)
Annual (Peak Daily) Total Gallons LPG Consumed						
Forklifts (LPG)		5,499 (20)	6,217 (22)	6,407 (23)	6,596 (23)	6,672 (24)

Table 3.2-8b: Annual and Peak Day CHE Activity and Size Parameters

CHE Type / HP / Load Factor	CEQA Baseline	Forecast Year				
		2012	2015	2020	2025	2027
Alternative 3						
Annual (Peak Daily) Total Hours of Operation						
Wharf Crane (electric)		46,176 (176)	50,391 (224)	54,702 (224)	59,012 (224)	60,736 (224)
Forklift (diesel) / 110 / 0.2		6,807 (24)	6,981 (25)	7,158 (25)	7,336 (26)	7,407 (26)
RMG Cranes (electric)		18,720 (54)	19,804 (63)	20,912 (72)	22,021 (81)	22,464 (81)
Gantry Cranes / 600 / 0.2		640 (56)	3,984 (64)	7,404 (80)	10,824 (96)	12,192 (112)
Top Handlers / 332 / 0.24		24,778 (180)	31,696 (226)	38,769 (233)	45,843 (234)	48,672 (247)
Side Picks / 227 / 0.24		5,148 (23)	6,955 (23)	8,802 (23)	10,649 (23)	11,388 (23)
Yard Tractors / 230 / 0.16		571,350 (2,117)	622,822 (2372)	675,454 (2,432)	728,085 (2,479)	749,138 (2,505)
Annual (Peak Daily) Total Gallons LPG Consumed						
Forklifts (LPG)		5,499 (20)	5,639 (20)	5,783 (21)	5,927 (21)	5,984 (21)
Alternative 4						
Annual (Peak Daily) Total Hours of Operation						
Wharf Crane (electric)		46,176 (176)	53,966 (224)	58,693 (224)	63,421 (240)	65,312 (272)
Forklift (diesel) / 110 / 0.2		6,807 (24)	7,134 (25)	7,332 (26)	7,531 (27)	7,610 (27)
RMG Cranes (electric)		18,720 (54)	20,816 (72)	22,087 (81)	23,359 (81)	23,868 (90)
Gantry Cranes / 600 / 0.2		640 (56)	11,970 (100)	18,846 (121)	25,722 (142)	28,472 (163)
Top Handlers / 332 / 0.24		24,778 (180)	34,134 (210)	39,812 (234)	45,491 (247)	47,762 (255)
Side Picks / 227 / 0.24		5,148 (23)	7,551 (23)	9,009 (23)	10,467 (23)	11,050 (23)
Yard Tractors / 230 / 0.16		571,350 (2,117)	675,632 (2,477)	738,922 (2,535)	802,212 (2,677)	827,528 (2.956)
Annual (Peak Daily) Total Gallons LPG Consumed						
Forklifts (LPG)		5,499 (20)	5,763 (21)	5,924 (21)	6,084 (22)	6,148 (22)

Note: liquefied propane gas (LPG)

Automated Backlands

Future operations may eventually include automated systems for handling cargo at the newly developed Berth 306 and 41-acre backlands under the proposed Project and Alternatives 5 and 6. As noted in the Chapter 2, Section 2.5.1.5, developing and implementing automated operations in the B.306 expansion area would depend on a number of factors that affect economic and technological feasibility. The automated system would include fully electric shore-side gantry cranes, automated stacking cranes, and landside transfer cranes as well as diesel-electric automated guided vehicles. This electric and diesel-electric equipment would replace the diesel yard tractors, side picks, top picks, and rubber-tired gantry cranes used in the conventional system 41-acre backland. Included in Appendix E1.6 (CHE Emissions) is an estimate of CHE emissions in 2027 with and without an automated backland in the new 41 acres. This calculation indicates that emissions for the terminal with the automated backlands would be less than without it for criteria pollutants and toxic DPM. Therefore, the analysis of criteria pollutants and health risk is based on the conventional cargo handling system throughout the terminal for all years evaluated to present a conservative analysis.

The analysis of GHG is also quantified for the conventional handling system for the entire terminal. It is anticipated that under an automated cargo handling system the demand for power on the electric utility infrastructure would increase as diesel equipment is replaced with electric equipment. This would increase the emission of GHGs from electric power plants. However, this increase may be offset partially or fully by the reduction in GHG emissions from diesel equipment that was replaced with electric. Since diesel GHG emission factors are substantially higher per kW-hour than electric power plant emissions,[5] an increase in electric power demand does not necessarily mean that the project GHG emissions would increase. In comparing an automated system with the conventional system regarding GHG emissions, the level of increase or decrease in GHG emissions would depend on the change in power demand and the level of GHG emissions from the power plants relative to the diesel GHG emissions that are offset. It is anticipated that the GHG emissions calculated in this Draft EIS/EIR for the conventional cargo handling system would have similar GHG emissions as an automated cargo handling system. Rough estimates indicate that GHG emissions for the proposed Project in 2027 with an automated cargo handling system on the Berth 306 backlands would generate GHG emissions that are one to three percent above the proposed Project GHG emissions in 2027 with fully conventional cargo handling systems. See construction emission calculations for automated backlands in Appendix E1.1 and total GHG emissions included in Appendix E1.10.

Trucks

Emissions from on-road, heavy-duty diesel trucks hauling containers during proposed Project and alternative operations were calculated using emission factors generated by the EMFAC2007 on-road mobile source emission factor model (CARB, 2007a). EMFAC2007 was run by Starcrest using the Port fleet mix for the baseline and future proposed Project or alternative years. The Port's fleet mix reflects the Port's Clean Truck Program, which banned pre-1989 trucks from Port services in October 2008 and all

[5] Diesel cargo handling equipment is assumed to have a CO_2 emission factor of 568.3 g/hp-hr. This is equivalent to 1,680 lb/MW-hr. The 2007 CO_2eq emission factor for DWP is 1,227 lb/MW-hr, substantially lower than diesel, and is expected to decrease as more renewable energy sources are added to DWP's generating capacity. Example GHG emission calculations for the automated backlands are included in Appendix E1.1.

trucks that do not meet 2007+ on-road HHDV standards by January 1, 2012. The EMFAC2007 model output shows that, on a per-mile basis, emission factors will steadily decline in future years as older trucks are replaced with newer, cleaner trucks that meet the required state and federal on-road engine emission standards, and comply with the Port's Clean Truck Program. Truck activity was provided by the traffic consultant, and is shown in Table 3.2-8C.

Table 3.2-8c: Annual and Peak Day Truck Trips and Operating Hours

Parameter	CEQA Baseline	*Forecast Year*				
		2012	**2015**	**2020**	**2025**	**2027**
CEQA Baseline, Proposed Project, and Alternative 5						
Annual Truck Trips	998,728	1,701,940	2,412,720	2,600,240	2,879,170	3,003,160
Peak Day Truck Trips	5,093	6,438	9,127	9,836	10,892	11,361
Truck Gate Operating Hours (hours/day by days/week)	20hr/day 4 x week, 10hr/day 2 x week					
NEPA Baseline, Alternative 1, and Alternative 2						
Annual Truck Trips		1,701,940	1,739,620	1,815,820	1,892,020	1,922,500
Peak Day Truck Trips		6,438	6,581	6,869	7,157	7,273
Truck Gate Operating Hours (hours/day by days/week)		20hr/day 4 x week, 10hr/day 2 x week				
Alternative 3						
Annual Truck Trips		1,701,940	1,876,960	2,055,920	2,234,880	2,306,460
Peak Day Truck Trips		6,438	7,100	7,777	8,454	8,725
Truck Gate Operating Hours (hours/day by days/week)		20hr/day 4 x week, 10hr/day 2 x week				
Alternative 4						
Annual Truck Trips		1,701,940	2,020,720	2,214,200	2,407,660	2,485,050
Peak Day Truck Trips		6,438	7,644	8,376	9,108	9,401
Truck Gate Operating Hours (hours/day by days/week)		20hr/day 4 x week, 10hr/day 2 x week				
Alternative 6						
Annual Truck Trips		1,701,940	2,412,720	2,600,240	2,787,760	2,862,760
Peak Day Truck Trips		6,438	9,127	9,836	10,546	10,830
Truck Gate Operating Hours (hours/day by days/week)		20hr/day 4 x week, 10hr/day 2 x week				

Other assumptions regarding on-road trucks during operations include:

- The average one-way truck trip distances from the proposed Project site were assumed to be 15 to 16 miles to nonrail yard destinations, depending on the alternative. The average one-way truck trip distance to off-dock rail yards was assumed to be 5 miles to ICTF (Union Pacific), and 18.5 Miles to Hobart Railyard (BNSF).
- In the CEQA baseline, 2012 and 2015, trucks were assumed to travel 10 percent of the trip distance at 10 mph, 60 percent at 25 mph, and 30 percent at 55 mph. In 2020,

2025 and 2027, trucks were assumed to travel 10 percent of the trip distance at 10 mph, 50 percent at 25 mph, and 40 percent at 55 mph.

- Truck idling time is assumed to be 10 minutes at the in-gate and 1 minute at the out-gate. Off-terminal idling at the off dock rail yards is assumed to be 9.5 minutes, and idling in the local community is assumed to be 10 minutes per round trip (Starcrest, 2010).
- PM_{10} and $PM_{2.5}$ emissions from paved road dust were calculated and added to the EMFAC2007 emissions from truck exhaust, tire wear, and brake wear. Road dust emission factors for on-terminal driving, off-terminal local streets, and freeways were derived from an emission factor equation published by the Midwest Research Institute (MRI, 1996).

Trains

Emissions associated with hauling containers by rail include yard locomotive emissions during switching activities at the rail yards, line-haul locomotive emissions during transport within the SCAB and idling at the rail yards, and emissions from APL rail yard equipment used to load and unload containers onto the railcars. All of these emission sources would use diesel fuel.

Locomotive future year emission factors were developed as a function of USEPA nationwide locomotive emission standard implementation schedule, the same factors used in the 2009 POLA EI (Starcrest, 2010). In general, locomotive emission factors decline in future years as older locomotives are gradually replaced with newer locomotives meeting USEPA-tiered emission standards.

The emission factors for the yard locomotives at the terminal rail yard were based on PHL's current switch engine fleet which contains 16 Tier 2 compliant locomotives and 6 genset locomotives (genset emissions are better than Tier 2). These locomotives were in service during the CEQA baseline period and were assumed to be in place for the duration of the proposed Project or alternative (Starcrest, 2010).

Idling times for line-haul locomotives at the rail yards also were assumed to be 3.5 hours per round trip, based on the 2009 POLA EI, for both APL and off-dock rail yards.

Starting January 1, 2007, yard locomotives started using diesel fuel with a maximum sulfur content of 15 ppm, in accordance with California Diesel Fuel Regulations. Starting June 1, 2007, the USEPA Non-road Diesel Fuel Rule limited the sulfur content to 500 ppm for line-haul locomotives. Starting January 1, 2012, the Rule will further limit the sulfur content to 15 ppm for line-haul locomotives (USEPA, 2004b). For the CEQA baseline period, line haul locomotives are assumed to use 50 percent low-sulfur diesel (15 ppm S) and 50 percent out-of-state diesel (350 ppm S) (Starcrest, 2010). Fuel sulfur content for all locomotive fuels in 2012 and beyond is assumed to be 15 ppm. The number of line haul locomotives used annually and per peak day are presented in Table 3.2-8D.

Table 3.2-8d: Annual and Peak Day Rail Locomotive Operations

CHE Type / HP / Load Factor		CEQA Baseline	Forecast Year				
			2012	2015	2020	2025	2027
CEQA Baseline, Proposed Project, and Alternative 5							
Annual	On Dock	4,295	5,420	8,296	8,941	8,499	8,499
	Off Dock	979	1,561	2,212	2,384	3,005	3,315
	Total Locomotives	**5,274**	**6,981**	**10,508**	**11,325**	**11,504**	**11,813**
Peak Day	On Dock	15	18	26	28	28	28
	Off Dock	4	4	6	6	8	10
	Total Locomotives	**19**	**22**	**32**	**34**	**36**	**38**
NEPA Baseline, Alternative 1, and Alternative 2							
Annual	On Dock		5,420	5,468	6,487	6,591	6,631
	Off Dock		1,561	1,595	1,665	1,735	1,763
	Total Locomotives		**6,981**	**7,063**	**8,152**	**8,326**	**8,394**
Peak Day	On Dock		18	18	20	20	21
	Off Dock		4	4	4	5	5
	Total Locomotives		**22**	**22**	**24**	**25**	**26**
Alternative 3							
Annual	On Dock		5,420	6,571	7,763	7,969	8,062
	Off Dock		1,561	1,721	1,885	2,049	2,115
	Total Locomotives		**6,981**	**8,292**	**9,648**	**10,018**	**10,177**
Peak Day	On Dock		18	20	26	26	26
	Off Dock		4	4	6	6	6
	Total Locomotives		**22**	**24**	**32**	**32**	**32**
Alternative 4							
Annual	On Dock		5,420	7,702	7,948	7,727	7,975
	Off Dock		1,561	1,853	2,030	2,208	2,279
	Total Locomotives		**6,981**	**9,555**	**9,978**	**9,934**	**10,254**
Peak Day	On Dock		18	26	26	26	28
	Off Dock		4	6	6	6	6
	Total Locomotives		**22**	**32**	**32**	**32**	**34**

Table 3.2-8d: Annual and Peak Day Rail Locomotive Operations

CHE Type / HP / Load Factor		CEQA Baseline	*Forecast Year*				
			2012	**2015**	**2020**	**2025**	**2027**
Alternative 6 Annual (Peak Daily) Total Hours of Operation							
Annual	On Dock		5,420	8,296	8,941	8,946	9,187
	Off Dock		1,561	2,212	2,384	2,556	2,625
	Total Locomotives		**6,981**	**10,508**	**11,325**	**11,503**	**11,812**
Peak Day	On Dock		18	26	28	30	30
	Off Dock		4	6	6	8	8
	Total Locomotives		**22**	**32**	**34**	**38**	**38**

Other assumptions regarding rail hauling during operations include:

- The average one-way train trip distance is assumed to be 105 miles, which is the average travel distance from the APL on-dock rail yard rail yard to the edge of the SCAB.
- The distribution of containers moving through on-dock rail (APL on-dock rail yard ICTF), and off-dock rail yards for each proposed Project year was provided by the traffic study. For all future analysis years, the container throughput at the on-dock rail yard from the terminal was capped at the current physical capacity of the rail yard (except Alternative 6 which includes expanded rail yard capacity).
- Each on-dock eastbound (outbound) train was assumed to carry 466 TEUs, each on-dock westbound (inbound) train was assumed to carry 446 TEUs, and each off-dock train (either direction) was assumed to carry 494 TEUs. The on-dock estimates were provided by APL, while the off dock estimate is from the 2009 Port of Los Angeles Air Emissions Inventory (Starcrest, 2010). Four (4) locomotives were assumed for each train.

AMP Power Generation

Regional emissions associated with electricity generation for AMP as a control measure were calculated using criteria pollutant emission factors provided by the SCAQMD in the *CEQA Air Quality Handbook* (SCAQMD, 1993). Although the emissions could be generated by power plants inside and outside the SCAB, the emissions were conservatively assumed in this study to be produced entirely within the SCAB.

An emission factor of 1,227 lbs of CO_2/MWh was obtained from LADWP from their report to CCAR for 2007 data. According to the LADWP 2007 Power Source Disclosure, the 2007 emission factor was representative of 6 percent renewable energy resources (with the remaining from coal, natural gas, hydroelectric, and nuclear). This emission factor was adjusted in 2020 to account for the CARB RPS requirement of 33 percent renewables.

The amount of electricity required by hoteling container ships was estimated using average auxiliary engine sizes and load factors provided by Starcrest (Starcrest, 2010), and average hoteling times calculated as described above. As shown in Table 3.2-9, AMP was applied to the study years, in accordance with CARB's *Airborne Toxic Control Measure for Auxiliary Diesel Engines Operated on Ocean-Going Vessels at Berth in a California Port* as follows:

Table 3.2-9: AMP Power Generation

Project Year	Unmitigated Compliance Rate (by percent)
Project Year Baseline	0
Project Year 2012	0
Project Year 2015	50
Project Year 2020	80
Project Year 2025	80
Project Year 2027	80

Source: 17 CCR 93118.3 (CARB, 2007d).

Worker Commute Trips

Emissions from worker trips during proposed Project operation were calculated using worker trips provided by the traffic consultant and emission factors from EMFAC2007. Additional emission factors from the Midwest Research Institute (MRI, 1996) for paved road dust were included for PM_{10} and $PM_{2.5}$.

Greenhouse Gases

GHG emissions associated with the proposed Project and alternatives were calculated based on methodologies provided in the *California Climate Action Registry General Reporting Protocol,Version 3.1* (CCAR, 2009). The General Reporting Protocol is the guidance document that the Port and other CCAR members must use to prepare annual Port-wide GHG inventories for the CCAR. Therefore, for consistency, the General Reporting Protocol also was used in this study. However, to adapt the Protocol for NEPA/CEQA purposes, a modification to the Protocol operational and geographical boundaries was necessary.

The proposed Project or alternative-related construction sources for which GHG emissions were calculated include:

- Off-road diesel construction equipment
- On-road trucks
- Marine cargo vessels used to deliver equipment to the site
- Tugboats used to maneuver delivery vessels and marine construction equipment
- Worker commute vehicles

The proposed Project or alternative-related operational emission sources for which GHG emissions were calculated include:

- Ships
- Tugboats
- Terminal equipment
- On-road trucks
- Trains
- Fugitive HFC emissions from refrigerated containers (reefers)
- AMP electricity consumption
- On-terminal electricity consumption
- Worker commute vehicles

The adaptation of the General Reporting Protocol methodologies to these proposed Project or alternative-specific emission sources is described in Appendix E1.10.

GHG Operational and Geographical Boundaries

For the purposes of this Draft EIS/EIR, GHG emissions were calculated for all proposed Project or alternative-related sources. CCAR has not developed a protocol for determining the operational or geographical boundaries for some port-related emissions sources, such as ships. For those sources that travel out of California (trucks, trains, and ships), GHG emissions were based on the following routes:

- The average one-way truck trip distances from the terminal were assumed to be 15 to 16 miles to nonrail yard destinations, depending on alternative. The average one-way truck trip distance to off-dock rail yards was assumed to be 5 miles to ICTF, and 18.5 Miles to Hobart.
- For trains, the average travel distance between the APL on-dock rail yard and the eastern border of California was estimated to be 342 miles.[6]
- For cargo ships, ocean transit along a 170-nautical mile shipping route between the Port and the California 3-mile jurisdictional boundary west of Point Conception. The analysis conservatively assumed that all Project ships would follow this "northern" route. The northern route represents the longest distance that container ships would travel to and from the Port while in "State Waters" (defined as 0 to 3 miles offshore).
- All electrical power production was assumed to be generated within the state for calculated emissions associated with electric power demand.

This approach is consistent with the CCAR goal of reporting all GHG emissions within the State of California (CCAR, 2007). This document acknowledges that GHG emissions extend beyond state borders. However, origin and destination data for out-of-state emissions over the life of the project do not exist and would be speculative on a project-specific level. Emissions outside state boundaries are discussed in the Cumulative Impacts, Chapter 4.

---

[6] The rail lines beyond the Hobart and ELA yards are the outer geographic limits from Port of Los Angeles terminals. Therefore, for NEPA purposes we would not be analyzing/ including GHG emissions that distant from the container terminal.

3.2.4.1.3 Health Risk Assessment Methodology

An HRA spanning 70 years was conducted pursuant to a previous project Protocol reviewed and approved by both CARB and SCAQMD (POLA, 2005), the Sunnyvale decision, and in accordance with recent changes to Port protocols and procedures for conducting HRA's (POLA, 2011c). The period 2012-2081 was used as the 70-year exposure period with the greatest combined diesel particulate matter (DPM) emissions from proposed Project construction and operation. The HRA was used to evaluate potential health impacts to the public from TACs generated by proposed Project or alternative operations. The Hotspots Analysis and Reporting Program (HARP), version 1.4c (CARB, 2009), was used to perform health risk calculations based on output from the AERMOD dispersion model. The complete HRA report is included in Appendix E3 of this EIS/EIR.

The main sources of TACs from proposed Project or alternative operations would be DPM emissions from ships, tugboats, terminal equipment, locomotives, and trucks. Proposed Project or alternative construction emissions were also included in the HRA. As shown in Appendix E3, the contribution from proposed Project or alternative construction to the cancer and chronic health risk results would be minor relative to proposed Project or alternative operational emissions. However, construction-related emissions would be the main source of acute health risk impacts.

For health effects resulting from long-term exposure, CARB considers DPM as representative of the total health risks associated with the combustion of diesel fuel. TAC emissions from nondiesel sources (such as alternative fuel engines) and noninternal combustion sources (such as auxiliary boilers) also were evaluated in the HRA, although their impacts were minor in comparison to DPM. Since the proposed Project would generate emissions of DPM, Impact AQ-7 also discusses the effects of ambient PM on increased mortality and morbidity.

The HRA evaluated three different types of health effects: individual lifetime cancer risk, chronic noncancer hazard index, and acute noncancer hazard index. Individual lifetime cancer risk is the additional chance for a person to contract cancer after a lifetime of exposure to Project emissions. The "lifetime" exposure duration assumed in this HRA is 70 years for a residential receptor and 40 years for an occupational receptor[7].

The chronic hazard index is a ratio of the long-term average concentrations of TACs in the air to established reference exposure levels. A chronic hazard index below 1.0 indicates that adverse noncancer health effects from long-term exposure are not expected. Similarly, the acute hazard index is a ratio of the short-term average concentrations of TACs in the air to established reference exposure levels. An acute hazard index below 1.0 indicates that adverse noncancer health effects from short-term exposure are not expected.

For the determination of significance from a CEQA standpoint, this HRA determined the incremental increase in health effects values due to the proposed Project or alternative by estimating the net change in impacts between the proposed Project or alternative and CEQA baseline conditions. For the determination of significance from a NEPA standpoint, this HRA determined the incremental increase in health effects values due to

[7] The 40-year exposure period for the assessment of occupational cancer risk is 2012-2051 for the proposed Project, alternatives, and NEPA baseline and 2008-2047 for the CEQA baseline.

the proposed Project or alternative by estimating the net change in impacts between the proposed Project or alternative and NEPA baseline. Both of these incremental health effects values (proposed Project or alternative minus CEQA baseline, and proposed Project or alternative minus NEPA baseline) were compared to the significance thresholds for health risk described in Section 3.2.4.2.

To estimate residential cancer risk impacts, VOC and DPM emissions were projected over a 70-year period, from 2012 through 2081. To estimate occupational cancer risk impacts, VOC and DPM emissions were projected over a 40-year period, from 2012 through 2051. These 70-year and 40-year projections of emissions were done for the proposed Project, the alternatives, CEQA baseline[8], and NEPA baseline to enable a proper calculation of the CEQA and NEPA cancer risk increments. To calculate the 70-year and 40-year emissions, estimates of activity levels and emission factors were made for each year from 2012 through 2081. The extent of this analysis assumes exposure beyond the lease termination date for the terminal, and therefore is a conservative estimate of proposed Project and alternative impacts. Yearly equipment activity levels between the Project analysis years were interpolated for the proposed Project, alternatives, and NEPA baseline. Activity levels after 2027 were held constant at their 2027 values. Where applicable, yearly emission factors were allowed to change with time in accordance with normal fleet turnover rates (for terminal equipment, trucks, line haul locomotives, and tugboats), and existing regulations and agreements listed in Tables 3.2-6 and 3.2-7. For the CEQA baseline, activity levels and emission factors were held constant at the baseline period values for all years.

CEQA Analysis of Health Risk Impacts in Comparison Against a Future CEQA Baseline

The CEQA Guidelines state that the baseline for environmental analysis is normally "the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published" (14 Cal. Code Regs. Section 15125*: Sunnyvale West Neighborhood Association v. City of Sunnyvale City Council*, 190 Cal.App.4th 1351). Therefore, this document generally evaluates the significance of Air Quality impacts under CEQA in comparison with a static CEQA baseline consisting of conditions existing during the period of July 1, 2008 through June 31, 2009 ("NOP CEQA baseline"), as described below in Section 3.2.4.1.4.

However, neither CEQA nor the CEQA Guidelines mandate a uniform, inflexible rule for determination of the existing conditions baseline. Rather, a lead agency has the discretion to decide exactly how existing physical conditions without the project can most realistically be measured. For instance, environmental conditions can vary from year to year and in some cases it may be necessary to consider conditions over a range of time periods. The *Sunnyvale West Neighborhood Association* case, and a subsequent decision, *Pfeiffer v. City of Sunnyvale City Council*, 200 Cal.App.4th 1522, make clear that CEQA review which includes comparison to the NOP CEQA baseline may also include "secondary" discussions of foreseeable changes and expected future conditions, where such a secondary analysis is helpful to an intelligent understanding of the project's environmental impacts.

[8] The 70-year emissions projection for the CEQA Baseline was done for 2008-2077, as this is the 70-year period projected forward from the CEQA Baseline year.

As discussed in analysis of CEQA Impact AQ-7, below, the Project's Cancer Risk impacts would be less than significant when compared to the NOP CEQA baseline. However, the Cancer Risk impacts of the Project would be significant if compared against expected future conditions surrounding the Project. Therefore, to fully apprise the public and decision makers of the Project's environmental impacts, this document compares the Project's Health Risk impacts against both the NOP CEQA baseline and also against a future CEQA baseline.

The future CEQA baseline used for analysis of the Project's Health Risk Impacts incorporate the effects of reduced emissions that would result from planned future air quality regulations, thereby providing a somewhat clearer exposure scenario for the health risk analysis, but (to provide the most conservative analysis) differs from the No Project Alternative in that it does not include a growth factor for existing site activities. The CEQA Health Risk Impact analysis will be presented in comparison against both the NOP baseline and future CEQA baseline, and feasible mitigation measures and/or project requirements will be considered to address impacts where possible in either case.

Particulates: Morbidity and Mortality

Of great concern to public health are the particles small enough to be inhaled into the deepest parts of the lung. Respirable particles (particulate matter less than about 10 micrometers in diameter [PM_{10}]) can accumulate in the respiratory system and aggravate health problems such as asthma, bronchitis, and other lung diseases. Children, the elderly, exercising adults, and those suffering from asthma are especially vulnerable to adverse health effects of PM_{10} and $PM_{2.5}$.

The proposed Project and alternatives would emit PM during Project construction and operation. This discussion addresses potential health effects caused by DPM emissions and discusses existing standards and thresholds developed by regulatory agencies to address health impacts.

Health Effects of PM Emissions

Epidemiological studies substantiate the correlation between the inhalation of ambient PM and increased mortality and morbidity (CARB, 2002 and CARB, 2008b). In 2006, CARB conducted a study to assess the potential health effects associated with exposure to air pollutants arising from ports and goods movement in the State (CARB, 2006a, CARB, 2006b and CARB, 2008b). CARB's assessment evaluated numerous studies and research efforts, and focused on PM and ozone as they represent a large portion of known risk associated with exposure to outdoor air pollution. CARB's analysis of various studies allowed large-scale quantification of the health effects associated with emission sources. CARB's assessment quantified premature deaths and increased cases of disease linked to exposure to PM and ozone from ports and goods movement. Table 3.2-10 presents the statewide PM and ozone health effects identified by CARB (CARB, 2006a).

Table 3.2-10: Annual 2005 Statewide PM and Ozone Health Effects Associated with Ports and Goods Movement in California[a]

Health Outcome	Cases Per Year	Uncertainty Range (Cases per Year) [b]
Premature Death	2,400	720 to 4,100
Hospital Admissions (respiratory causes)	2,000	1,200 to 2,800
Hospital Admissions (cardiovascular causes)	830	530 to 1,300
Asthma and Other Lower Respiratory Symptoms	62,000	24,000 to 99,000
Acute Bronchitis	5,100	-1,200 to 11,000
Work Loss Days	360,000	310,000 to 420,000
Minor Restricted Activity Days	3,900,000	2,200,000 to 5,800,000
School Absence Days	1,100,000	460,000 to 1,800,000

Source: CARB, 2006b

Notes:

a) Does not include the contributions from particle sulfate formed from SO_X emissions, which is being addressed with several ongoing emissions, measurement, and modeling studies.

b) Range reflects uncertainty in health concentration-response functions, but not in emissions or exposure estimates. A negative value as a lower bound of the uncertainty range is not meant to imply that exposure to pollutants is beneficial; rather, it is a reflection of the adequacy of the data used to develop these uncertainty range estimates.

In addition, although epidemiologic studies are numerous, few toxicology studies have investigated the responses of human subjects specifically exposed to DPM, and the available epidemiologic studies have not measured the DPM content of the outdoor pollution mix. CARB has made quantitative estimates of the public health impacts of DPM based on the assumption that DPM is as toxic as the general ambient PM mixture (CARB, 2006d).

CARB's study concluded that there are significant uncertainties involved in quantitatively estimating the health effects of exposure to outdoor air pollution. Uncertain elements include emission and population exposure estimates, concentration-response functions, baseline rates of mortality and morbidity that are entered into concentration response functions, and occurrence of additional not-quantified adverse health effects (CARB, 2008b). Many of these elements have a factor-of-two uncertainty. Numerous new studies, ongoing and proposed, will likely increase scientific knowledge and provide better estimates of DPM health effects.

It should be noted that PM in ambient air is a complex mixture that varies in size and chemical composition, as well as varying spatially and temporally. Different types of particles may cause different effects with different time courses, and perhaps only in susceptible individuals. The interaction between PM and gaseous co-pollutants adds additional complexity because in ambient air pollution, a number of pollutants tend to co-occur and have strong inter-relationships with each other (e.g., PM, SO_2, NO_2, CO, and ozone) (AQMD, 2011; CARB, 2006a; and CARB, 2006b).

Nevertheless, various studies have been published over the past 10 years that substantiate the correlation between the inhalation of ambient PM and increased cases of premature death from heart and/or lung diseases (Pope et al., 1995, 2002; Jerrett et al. 2005, Krewski et al., 2001). Studies such as these and studies that have followed since serve as the fundamental basis for PM air quality standards promulgated by AQMD, CARB, USEPA, and the World Health Organization.

Existing CEQA Thresholds

Concentration Thresholds. Regulatory agencies set protective health-based short and long-term ambient concentration standards designed “in consideration of public health, safety, and welfare, including, but not limited to, health, illness, irritation to the senses, aesthetic value, interference with visibility, and effects on the economy" (Health and Safety Code Section 39606[a][2]). Ambient Air Quality Standards (AAQS) specify concentrations and durations of exposure to air pollutants that reflect the relationships between the intensity and composition of air pollution and undesirable effects. The fundamental objective of an AAQS is to provide a basis for preventing or abating adverse health or welfare effects of air pollution.

In developing the AAQS, federal, state, and local air quality regulatory agencies consider existing health science literature and recommendations from Office of Environmental Health Hazard Assessment (OEHHA). Standards are set to ensure that sensitive population sub-groups are protected from exposure to levels of pollutants that may cause adverse health effects. In the case of PM, CAAQS are peer reviewed by the Air Quality Advisory Committee (AQAC), an external scientific peer review committee, comprised of world-class scientists in the PM field.

Within the South Coast Air Basin, the SCAQMD furthermore identifies localized ambient significance thresholds. These ambient concentration thresholds target those pollutants the SCAQMD has determined are most likely to cause or contribute to an exceedance of the NAAQS or CAAQS. The localized standards for PM are more stringent than either the NAAQS or the CAAQS. SCAQMD localized significance thresholds for PM_{10} and $PM_{2.5}$are 10.4 $\mu g/m^3$ for construction and 2.5 $\mu g/m^3$for operation. These values were developed based on CARB guidance and epidemiological studies showing significant toxicity (resulting in mortality and morbidity) related to exposure to fine particles. The proposed Project conducted dispersion analysis to determine ambient air concentrations and determined localized significance (Section 3.2.4.4).

Emission Thresholds. PM emissions also affect air quality on a regional basis. When fugitive dust enters the atmosphere, the larger particles of dust typically fall quickly to the ground, but smaller particles less than 10 microns in diameter may remain suspended for longer periods, giving the particles time to travel across a regional area affecting receptors at some distance from the original emissions source.

For this reason, the SCAQMD established mass daily thresholds for construction and operational activities for PM. The mass daily thresholds are emissions-based thresholds used to assess the potential significance of criteria air pollutants on the regional level. Emissions that exceed the regional significance thresholds are mass daily emissions that may have significant adverse regional effects. The proposed Project quantified mass daily emissions and determined significance (Section 3.2.4.3).

HRA Thresholds. SCAQMD specifies thresholds for cancer risk and noncancer chronic and acute hazard impacts. The cancer risk calculation methodology accounts for the cancer potency of a pollutant and the expected dose for exposure pathways. For chronic noncancer and acute exposures, maximum annual concentrations and peak daily concentrations, respectively are compared with the OEHHA Reference Exposure Levels (REL), which are used as indicators of potential adverse noncancer health effects. The RELs are concentrations, at or below which no adverse health effects are anticipated in the general human population and are based on the most sensitive relevant adverse health effect reported in the medical and toxicological literature. RELs are designed to protect the most sensitive individuals in the population by the inclusion of margins of safety.

Risk assessment and health impact determination methodologies rely on risk assessment health values published by OEHHA, which in turn are based on results of numerous toxicology and epidemiology studies. For DPM, OEHHA has established health values for cancer and noncancer chronic effects to be used in quantification of health impacts. The proposed Project quantified both cancer risk and noncancer chronic impacts from DPM exposure, per OEHHA risk assessment methodology.

In addition, the Port has adopted SCAQMD's CEQA threshold of 10 in a million excess cancer risk and a 1.0 Hazard Index in evaluating new projects (Section 3.2.4.3). The thresholds set by USEPA, CARB, and SCAQMD for localized, regional and toxic impacts are designed to account for health impacts, such as premature deaths, cardiac and respiratory hospitalizations, asthma, lost work/school days. The proposed Project has quantified localized, regional and toxic impacts of DPM (Section 3.2.4.3).

Quantifying Morbidity and Mortality

The Port has developed a methodology for assessing morbidity and mortality in CEQA documents which generally follows the approach used by CARB to estimate state-wide health impacts from ports and goods movement in California (CARB 2006b), incorporating the recent draft methodology for mortality published by CARB (2008b). In the 2006 analysis, CARB focused on PM and ozone because these are the criteria pollutants for which sufficient evidence of mortality and morbidity effects exists. Modeling changes in ozone concentrations usually requires information on emissions from all sources within a region (for example, the South Coast Air Basin), and is not considered appropriate for project-level analyses. Therefore, this methodology for project-level studies conducted for Port CEQA documents will focus on the health effects associated with changes in PM concentrations. Focusing on PM is also consistent with recent CARB studies of mortality and morbidity impacts from California ports (CARB 2006a; 2006b; and, 2008b).

The SCAQMD's localized significance threshold for a 24-hour $PM_{2.5}$ concentration is 2.5 $\mu g/m^3$ for operational impacts (SCAQMD, 2011). This value is only 7 percent of the 24-hour NAAQS and 21 percent of the annual CAAQS (there is no 24-hour CAAQS for $PM_{2.5}$). This value is based on CARB guidance and epidemiological studies showing significant toxicity (resulting in mortality and morbidity) related to exposure to fine particles. Because mortality and morbidity studies represent major inputs used by CARB and USEPA to set California and National Ambient Air Quality Standards, project-level mortality and morbidity will be presented in Port CEQA documents as a further elaboration of local PM impacts which are already addressed. Therefore, mortality and morbidity will be quantified only if a $PM_{2.5}$ concentration significance finding is identified as part of the air quality impact analysis. More specifically, mortality and morbidity will be quantified if dispersion modeling of ambient air quality concentrations during Project operation (Impact AQ-4) identifies a significant impact for daily $PM_{2.5}$. The zone of influence is the 2.5 $\mu g/m^3$ isopleth identified during the dispersion modeling.

3.2.4.1.4 CEQA Baseline

Section 15125 of the CEQA Guidelines requires EIRs to include a description of the physical environmental conditions in the vicinity of a project that exist at the time of the NOP. These environmental conditions normally constitute the baseline physical conditions by which the CEQA lead agency determines if an impact is significant. The CEQA baseline generally used in this document to analyze Air Quality impacts (the NOP CEQA baseline) takes into account the throughput for the 12-month period preceding July 2009 (July 2008 through the end of June 2009) in order to provide a representative characterization of activity levels throughout the year. The CEQA baseline conditions are described in Section 2.6.1. The CEQA baseline for this proposed Project includes approximately 1.13 million TEUs per year, 998,728 annual truck trips, and 247 annual ship calls that occurred on the 291-acre APL Terminal in the year prior to and including June 2009.

The NOP CEQA baseline represents the setting at a fixed point in time and differs from the No Project Alternative (Alternative 1) in that the No Project Alternative addresses what is likely to happen at the proposed Project site over time, starting from the existing conditions. Therefore, the No Project Alternative allows for growth at the proposed Project site that could be expected to occur without additional approvals, whereas the NOP CEQA baseline does not.

For the reasons discussed in the previous section, this document analyzes the Project's Health Risk Impacts not only in comparison against the NOP CEQA baseline, but also in comparison against a future CEQA baseline.

3.2.4.1.5 NEPA Baseline

For purposes of this Draft EIS/EIR, the evaluation of significance under NEPA is defined by comparing the proposed Project or other alternative to the NEPA baseline. The NEPA baseline conditions are described in Section 2.6.2. Briefly, the NEPA baseline condition for determining significance of impacts includes the full range of construction and operational activities the applicant could implement and is likely to implement absent a federal action, in this case the issuance of a USACE permit. The NEPA baseline includes minor terminal improvements in the upland area (i.e., conversion of a portion of the dry container storage unit area to reefers and utility infrastructure), operation of the 291-acre container terminal, and assumes that by 2027, the terminal (Berths 302 to 305) handles up to approximately 2.15 million TEUs annually and accommodates 286 annual ships calls and 2,336 on-way rail trips, without any federal action. Because the NEPA baseline is dynamic, it includes different levels of terminal operations at each study year (2012, 2015, 2020, 2025, and 2027).

Unlike the CEQA baseline, which is defined by conditions at a point in time, the NEPA baseline is not bound by statute to a "flat" or "no-growth" scenario. Therefore, the USACE could project increases in operations over the life of a project to properly describe the NEPA baseline condition. Normally, any federal permit decision would focus on direct impacts of the proposed Project to the aquatic environment, as well as indirect and cumulative impacts in the uplands determined to be within the scope of federal control and responsibility. Significance of the proposed Project or alternative under NEPA is defined by comparing the proposed Project or alternative to the NEPA baseline (i.e., the increment).

The NEPA baseline, for purposes of this Draft EIS/EIR, is the same as the No Federal Action Alternative. Under the No Federal Action Alternative, only minor terminal improvements (utility infrastructure, and conversion of dry container storage to refrigerated container storage) would occur, but no new cranes would be added, and the terminal configuration would remain as it was configured in 2008 (291 acres, 12 A-frame cranes, and a 4,000-ft wharf). However, forecasted increases in cargo throughput and annual ship calls would still occur as container growth occurs.

Table 3.2-11 presents the maximum daily criteria pollutant associated with NEPA baseline construction. Because the construction emissions of criteria pollutants represent a peak day, they could conceivably occur during any year of construction.

Table 3.2-11: Peak Daily Construction Emissions – NEPA Baseline

Emission Source	Peak Daily Emissions (lb/day)[c,d]					
	VOC	CO	NO_X	SO_X	PM_{10}[a]	$PM_{2.5}$[a]
NEPA Baseline						
Reefer Area Expansion	13	52	119	0	11	6
Utility Infrastructure	5	18	49	0	2	2
Worker Commute	1	11	1	0	0	0
Peak Daily NEPA Baseline Emissions[b]	**19**	**80**	**169**	**0**	**13**	**8**

Notes:
a) Emissions of PM_{10} and $PM_{2.5}$ assume that fugitive dust is controlled in accordance with SCAQMD Rule 403 by watering disturbed areas 3 times per day.
b) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.
c) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared.

The average daily and peak daily operational emissions associated with the NEPA baseline are presented in Tables 3.2-12 and 3.2-13, respectively. In addition to accounting for potential increases in cargo throughput and ship calls, the NEPA baseline emissions account for changes in emission factors due to existing regulations that effectively reduce emissions as trucks, cars, ships, rail locomotives, and cargo handling equipment are replaced over time with newer equipment meeting more stringent emission standards.

Table 3.2-12: Average Daily Operational Emissions –– NEPA Baseline

Emission Source	Average Daily Emissions (lb/day)[a,c]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2012						
Ships – Transit and Anchoring	123	229	1,977	51	36	29
Ships – Hoteling	56	142	1,563	91	37	29
Tugboats	3	15	57	0	2	2
Trucks	117	358	1,336	3	74	22
Trains	75	280	1,495	1	42	39
Terminal Equipment	25	172	686	1	21	19
Worker Trips	20	208	17	0	33	7
Total – Project Year 2012[b]	**419**	**1,404**	**7,130**	**148**	**245**	**147**
Project Year 2015						
Ships – Transit and Anchoring	123	229	1,977	51	36	29

Table 3.2-12: Average Daily Operational Emissions –– NEPA Baseline

Emission Source	Average Daily Emissions (lb/day)[a,c]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Ships – Hoteling	30	80	845	64	23	18
Tugboats	3	16	18	0	0	0
Trucks	149	457	1,531	3	79	26
Trains	62	283	1,363	1	36	33
Terminal Equipment	27	181	724	1	23	21
Worker Trips	17	173	14	0	34	7
Total – Project Year 2015[b]	**411**	**1,419**	**6,472**	**120**	**231**	**134**
Project Year 2020						
Ships – Transit and Anchoring	123	229	1,977	51	36	29
Ships – Hoteling	16	46	450	50	15	12
Tugboats	3	17	19	0	0	0
Trucks	163	525	1,518	3	88	32
Trains	47	323	1,214	1	28	26
Terminal Equipment	12	169	50	1	2	2
Worker Trips	14	128	9	0	37	8
Total – Project Year 2020[b]	**379**	**1,437**	**5,237**	**107**	**206**	**108**
Project Year 2025						
Ships – Transit and Anchoring	157	291	2,501	64	46	37
Ships – Hoteling	15	43	420	47	14	11
Tugboats	4	22	25	0	1	1
Trucks	122	393	1,044	3	90	32
Trains	36	332	956	1	21	19
Terminal Equipment	14	184	54	1	2	2
Worker Trips	12	100	7	0	40	8
Total – Project Year 2025[b]	**360**	**1,364**	**5,007**	**118**	**213**	**110**
Project Year 2027						
Ships – Transit and Anchoring	157	291	2,501	64	46	37
Ships – Hoteling	15	44	426	48	14	11
Tugboats	5	22	25	0	1	1
Trucks	125	403	1,078	4	92	33
Trains	33	335	859	1	19	17
Terminal Equipment	15	190	56	1	2	2
Worker Trips	10	88	6	0	39	8
Total – Project Year 2027[b]	**360**	**1,373**	**4,951**	**118**	**212**	**109**

a) Emissions represent annual emissions divided by 365 days per year of operation.
b) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.
c) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

The average daily emissions in Table 3.2-12 represent the annual emissions divided by 365 days per year. Average daily emissions are a good indicator of terminal operations over the long term since terminal operations can vary substantially from day-to-day depending on container movement.

The NEPA baseline peak daily emissions in Table 3.2-13 are compared to future Project and alternative peak daily emissions to determine NEPA significance for the proposed Project and alternatives, respectively. The NEPA baseline conditions are described in Section 2.6.2. Peak daily emissions represent theoretical upper-bound estimates of activity levels at the terminal. Therefore, in contrast to average daily emissions, peak daily emissions would occur infrequently, therefore represent a more conservative set of assumptions.

Table 3.2-13: Peak Daily Operational Emissions –– NEPA Baseline

Emission Source	Peak Daily Emissions (lb/day)[a]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2012						
Ships – Transit and Anchoring	205	381	3,278	84	60	48
Ships – Hoteling	87	223	2,461	140	58	46
Tugboats	5	23	89	0	4	3
Trucks	161	494	1,844	4	102	30
Trains	86	319	1,703	1	48	44
Terminal Equipment	47	280	1,115	1	36	33
Worker Trips	29	296	24	0	47	10
Total – Project Year 2012	**620**	**2,016**	**10,515**	**231**	**354**	**214**
Project Year 2015						
Ships – Transit and Anchoring	205	381	3,278	84	60	48
Ships – Hoteling	48	127	1,349	98	35	28
Tugboats	5	25	29	0	1	1
Trucks	205	631	2,114	4	109	36
Trains	70	319	1,535	1	40	37
Terminal Equipment	50	288	1,149	1	39	36
Worker Trips	24	241	19	0	48	10
Total – Project Year 2015	**606**	**2,013**	**9,474**	**190**	**333**	**196**
Project Year 2020						
Ships – Transit and Anchoring	205	381	3,278	84	60	48
Ships – Hoteling	24	70	682	73	22	18
Tugboats	5	27	30	0	1	1
Trucks	226	724	2,096	5	121	44
Trains	50	346	1,297	1	30	28
Terminal Equipment	18	244	72	2	3	2
Worker Trips	19	173	13	0	50	10

Table 3.2-13: Peak Daily Operational Emissions –– NEPA Baseline

Emission Source	Peak Daily Emissions (lb/day)[a]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Total – Project Year 2020	**546**	**1,964**	**7,469**	**165**	**286**	**151**
Project Year 2025						
Ships – Transit and Anchoring	236	430	3,658	92	67	54
Ships – Hoteling	20	57	557	63	18	15
Tugboats	6	28	31	0	1	1
Trucks	169	542	1,442	5	124	44
Trains	39	362	1,038	1	23	21
Terminal Equipment	19	254	75	1	3	3
Worker Trips	15	130	9	1	52	11
Total – Project Year 2025	**504**	**1,803**	**6,810**	**162**	**288**	**148**
Project Year 2027						
Ships – Transit and Anchoring	236	430	3,658	92	67	54
Ships – Hoteling	20	57	557	63	18	15
Tugboats	6	29	32	0	1	1
Trucks	173	556	1,488	5	127	46
Trains	36	376	957	1	21	19
Terminal Equipment	21	268	79	2	3	3
Worker Trips	14	118	8	1	52	11
Total – Project Year 2027	**506**	**1,834**	**6,780**	**163**	**289**	**147**

a) Emissions assume maximum theoretical daily equipment activity levels. Such levels would rarely occur during day-to-day terminal operations. Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

Tables 3.2-14 and 3.2-15 present estimates of the GHG emissions generated within California borders from construction and operation, respectively, of the NEPA baseline. The operational emission sources for which baseline GHG emissions were calculated include terminal equipment and on-terminal electricity usage. The GHG emission calculation methodology is described in Appendix E1.10.

Table 3.2-14: Greenhouse Gas Construction Emissions - NEPA Baseline

Emission Source	CO_2	CH_4	N_2O	CO_2e
	Total Emissions (Metric Tons per Year)			
NEPA Baseline				
Reefer Area Expansion	161	0.01	0.01	4,708
Utility Infrastructure	127	0.01	0.00	129
Worker Commute	443	0.02	0.01	446
NEPA Baseline Total	731	0.04	0.02	737

Notes:

a) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

b) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

c) One metric ton equals 1,000 kilograms, 2,205 lbs, or 1.1 U.S. (short) tons.

d) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; and 310 for N_2O.

Table 3.2-15: Annual Operational Greenhouse Gas Emissions – NEPA Baseline

Emission Source	Annual Emissions (metric tons)				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e
Project Year 2012					
Ships – Transit and Anchoring	48,660	1	2	-	49,413
Ships – Hoteling	21,378	0	1	-	21,749
Tugboats	340	0	0	-	345
Trucks	59,452	0	0	-	59,497
Trains	43,445	1	4	-	44,572
Terminal Equipment	13,376	0	0	-	13,429
Reefer Refrigerant Losses	-	-	-	1	841
AMP Usage	-	-	-	-	-
On-Terminal Electricity Usage	22,448	1	0	-	22,506
Worker Trips	5,340	0	1	-	5,525
Total – Project Year 2012	**214,440**	**4**	**8**	**1**	**217,876**
Project Year 2015					
Ships – Transit and Anchoring	48,661	1	2	-	49,414
Ships – Hoteling	14,331	0	1	-	14,606
Tugboats	340	0	0	-	345
Trucks	60,769	0	0	-	60,814
Trains	43,938	1	4	-	45,078
Terminal Equipment	13,669	0	0	-	13,723
Reefer Refrigerant Losses	-	-	-	1	859
AMP Usage	5,431	0	0	-	5,442
On-Terminal Electricity Usage	22,945	1	0	-	23,004
Worker Trips	5,059	0	0	-	5,184
Total – Project Year 2015	**215,143**	**4**	**8**	**1**	**218,469**

Table 3.2-15: Annual Operational Greenhouse Gas Emissions – NEPA Baseline

Emission Source	Annual Emissions (metric tons)				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e
Project Year 2020					
Ships – Transit and Anchoring	48,660	1	2	-	49,413
Ships – Hoteling	10,764	0	1	-	10,994
Tugboats	340	0	0	-	345
Trucks	62,137	0	0	-	62,184
Trains	50,485	1	4	-	51,795
Terminal Equipment	14,157	0	0	-	14,213
Reefer Refrigerant Losses	-	-	-	1	897
AMP Usage	6,608	0	0	-	6,621
On-Terminal Electricity Usage	17,483	0	0	-	17,529
Worker Trips	4,410	0	0	-	4,477
Total – Project Year 2020	**215,045**	**4**	**8**	**1**	**218,469**
Project Year 2025					
Ships – Transit and Anchoring	61,848	1	3	-	62,805
Ships – Hoteling	10,075	0	1	-	10,290
Tugboats	416	0	0	-	422
Trucks	64,745	0	0	-	64,794
Trains	51,670	1	4	-	53,011
Terminal Equipment	14,645	0	0	-	14,703
Reefer Refrigerant Losses	-	-	-	1	935
AMP Usage	6,171	0	0	-	6,183
On-Terminal Electricity Usage	18,217	0	0	-	18,264
Worker Trips	4,380	0	0	-	4,461
Total – Project Year 2025	**232,166**	**4**	**9**	**1**	**235,867**
Project Year 2027					
Ships – Transit and Anchoring	61,848	1	3	-	62,805
Ships – Hoteling	10,228	0	1	-	10,446
Tugboats	416	0	0	-	422
Trucks	65,788	0	0	-	65,837
Trains	52,118	1	4	-	53,471
Terminal Equipment	14,840	0	0	-	14,899
Reefer Refrigerant Losses	-	-	-	1	950
AMP Usage	6,264	0	0	-	6,277
On-Terminal Electricity Usage	18,511	0	0	-	18,559
Worker Trips	4,204	0	0	-	4,274
Total – Project Year 2027	**234,217**	**4**	**9**	**1**	**237,940**

Notes:

a) 1 metric ton equals 1000 kilograms, 2,205 lbs, or 1.1 U.S. (short) tons.

b) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; 1,300 for HFC-134a.

c) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

3.2.4.2 Thresholds of Significance

The following thresholds were used in this study to determine the significance of the air quality impacts of the proposed Project and alternatives both from a CEQA and NEPA perspective. They were based primarily on the standards established by the City of Los Angeles in the *L.A. CEQA Thresholds Guide* (City of Los Angeles, 2006), except as noted below (AQ-9), there is no GHG significance threshold used for the NEPA evaluation. The *L.A. CEQA Thresholds Guide* essentially incorporates by reference the CEQA Air Quality Handbook and associated significance thresholds developed by the SCAQMD.

3.2.4.2.1 Construction Thresholds

The *L.A. CEQA Thresholds Guide* references the SCAQMD *CEQA Air Quality Handbook* (SCAQMD, 1993) and USEPA *AP-42* for calculating and determining the significance of construction emissions (USEPA, 2006a). The SCAQMD thresholds are updated as necessary to address new regulations and standards on the SCAQMD web page (SCAQMD, 2011a). Updates to AP-42 are included on the USEPA web page (USEPA, 2011b). Each lead city department has the responsibility to determine the appropriate standards. Proposed Project-related factors to be used in a case-by-case evaluation of significance include the following:

Combustion emissions from construction equipment:

- Type, number of pieces, and usage for each type of construction equipment
- Estimated fuel usage and type of fuel (diesel, gasoline, natural gas) for each type of equipment
- Emission factors for each type of equipment

Fugitive Dust:

- Grading, excavation, and hauling
    - Amount of soil to be disturbed on-site or moved off-site
    - Emission factors for disturbed soil
    - Duration of grading, excavation, and hauling activities
    - Type and number of pieces of equipment to be used

Other mobile source emissions:

- Number and average length of construction worker trips to the proposed Project site, per day
- Duration of construction activities

For the purposes of this study, the air quality thresholds of significance for construction activities are based on emissions and concentration thresholds established by the SCAQMD (2011). Construction-related air emissions would be considered significant if:

AQ-1: The proposed Project or alternative would result in construction-related peak daily emissions that exceed any of the SCAQMD thresholds of significance in

Table 3.2-16. For determining CEQA significance, these thresholds are compared to the peak daily proposed Project or alternative construction emissions. For determining NEPA significance, these thresholds are compared to the net change in peak daily proposed Project or alternative construction emissions relative to NEPA baseline construction emissions.

Table 3.2-16: SCAQMD Thresholds for Construction Emissions

Air Pollutant	Emission Threshold (pounds/day)
Volatile organic compounds (VOC)	75
Carbon monoxide (CO)	550
Nitrogen oxides (NO_X)	100
Sulfur oxides (SO_X)	150
Particulates (PM_{10})	150
Particulates ($PM_{2.5}$)	55

Source: SCAQMD, 2011

AQ-2: Project or alternative construction would result in off-site ambient air pollutant concentrations that exceed the SCAQMD thresholds of significance in Table 3.2-17.[9] However, to evaluate proposed Project or alternative impacts to ambient NO_2 levels, the analysis replaced the use of the current SCAQMD NO_2 thresholds with the revised and more stringent 1-hour Federal ambient air quality standard of 188 $\mu g/m^3$ (0.100 ppm). In addition, to evaluate the proposed Project NEPA and alternative impacts to ambient $PM_{2.5}$ levels, the analysis used the significant impact level (SIL) for annual $PM_{2.5}$ from the Federal Prevention of Significant Deterioration (PSD) regulation of 0.3 µg/m.[3,10] Off-site ambient air dispersion modeling was not completed for SO_2 because the mass daily emission were below the regional significance thresholds and the region is also in attainment with the SOx NAAQS; ambient concentrations are therefore expected to be negligible. Although Los Angeles County is a nonattainment area for lead, lead is not a pollutant of concern for this project and modeling was not required.

[9]These ambient concentration thresholds target those pollutants the SCAQMD has determined are most likely to cause or contribute to an exceedance of the NAAQS or CAAQS. Although the thresholds represent the levels at which the SCAQMD considers the impacts to be significant, the thresholds are not necessarily the same as the NAAQS or CAAQS.

[10] The PSD SIL for annual $PM_{2.5}$, under 40 CFR parts 51 and 52 was effective as of December 20, 2010.

Table 3.2-17: SCAQMD Thresholds for Ambient Air Quality Concentrations Associated with Project Construction

Air Pollutant[a]	Ambient Concentration Threshold
Nitrogen Dioxide (NO_2)[b]	
1-hour average (state)	0.18 ppm (339 $\mu g/m^3$)
1-hour average (federal)[c]	0.100 ppm (188 $\mu g/m^3$)
Annual average (state)	0.030 ppm (57 $\mu g/m^3$)
Annual average (federal)	0.0534 ppm (100 $\mu g/m^3$)
Particulates (PM_{10} or $PM_{2.5}$)[d]	
24-hour average	10.4 $\mu g/m^3$
Annual average (PM_{10} only)	1.0 $\mu g/m^3$
Annual average ($PM_{2.5}$ only)[e]	0.3 $\mu g/m^3$
Carbon Monoxide (CO)[f]	
1-hour average	20 ppm (23,000 $\mu g/m^3$)
8-hour average	9.0 ppm (10,000 $\mu g/m^3$)

Notes:

a) The SCAQMD has also established concentration thresholds for SO_2 sulfates, and lead; but construction emissions of these pollutants would be negligible, thus concentration standards would not be exceeded.

b) To evaluate Project impacts to ambient NO_2 levels, the analysis included the use of both the current SCAQMD NO_2 threshold (0.18 ppm) and the newer, more stringent 1-hour Federal ambient air quality standard (0.100 ppm). To attain the Federal standard, the 3-year average of the 98th percentile of the daily maximum 1-hour averages at a receptor must not exceed 0.100 ppm.

c) Federal 1-hour average NO_2 concentration is based on the NAAQS because it is more stringent than the SCAQMD thresholds.

d) The PM_{10} and $PM_{2.5}$ thresholds are incremental thresholds; the maximum predicted impact from construction activities (without adding the background concentration) is compared to these thresholds.

e) To evaluate NEPA impacts to ambient $PM_{2.5}$ levels, the analysis used the SIL for annual $PM_{2.5}$ from the Federal PSD regulation.

f) The CO thresholds are absolute thresholds; the maximum predicted impact from construction activities is added to the background concentration for the proposed Project vicinity and compared to the threshold.

Sources: SCAQMD,2011a; USEPA, 2010a and b.

3.2.4.2.2 Operation Thresholds

The *L.A. CEQA Thresholds Guide* provides specific significance thresholds for operational air quality impacts that also are based on SCAQMD standards (City of Los Angeles, 2006). For the purposes of this study, a project would create a significant impact if it would result in one or more of the following:

AQ-3: Operational emissions that would exceed 10 tons per year of VOCs or any of the SCAQMD peak day emission thresholds of significance in Table 3.2-18. Construction and operational emissions overlap during certain analysis years and the combined emissions are also discussed. For determining CEQA significance, these thresholds are compared to the net change in proposed Project or alternative emissions relative to CEQA baseline conditions. For determining NEPA significance, these thresholds are compared to the net change in proposed Project or alternative emissions relative to NEPA baseline emissions.

Table 3.2-18: SCAQMD Thresholds for Operational Emissions

Air Pollutant	Peak Day Emission Threshold (pounds/day)
Volatile organic compounds (VOC)	55
Carbon monoxide (CO)	550
Nitrogen oxides (NO_X)	55
Sulfur oxides (SO_X)	150
Particulates (PM_{10})	150
Particulates ($PM_{2.5}$)	55

Source: SCAQMD, 2011; City of Los Angeles, 2006

AQ-4: Project or alternative operations would result in off-site ambient air pollutant concentrations that exceed any of the SCAQMD thresholds of significance in Table 3.2-19.[11] Construction and operational emissions overlap during certain analysis years and the combined emissions are also discussed. However, to evaluate proposed Project and alternative impacts to ambient NO_2 levels, the analysis replaced the use of the current SCAQMD NO_2 thresholds with the more stringent revised 1-hour Federal and annual California ambient air quality standards of 188 and 57 μg/m^3, respectively. In addition, to evaluate proposed Project and alternative NEPA impacts to ambient $PM_{2.5}$ levels, the analysis used the SIL for annual $PM_{2.5}$ from the Federal PSD regulation of 0.3 μg/m^3.[12]

AQ-5: The proposed Project or alternative-generated on-road traffic would result in either of the following conditions at an intersection or roadway within 0.25 mile of a sensitive receptor.

- The proposed Project or alternative causes or contributes to an exceedance of the California 1-hour or 8-hour CO standards of 20 or 9.0 ppm, respectively.
- The incremental increase due to the proposed Project or alternative is equal to or greater than 1.0 ppm for the California 1-hour CO standard, or 0.45 ppm for the 8-hour CO standard.

AQ-6: The proposed Project or alternative would create an objectionable odor at the nearest sensitive receptor.

AQ-7: The proposed Project or alternative would expose receptors to significant levels of toxic air contaminants. The determination of significance shall be made as follows:

- Maximum Incremental Cancer Risk for Residential Receptors ≥10 in 1 million

[11] These ambient concentration thresholds target those pollutants the SCAQMD has determined are most likely to cause or contribute to an exceedance of the NAAQS or CAAQS. Although the thresholds represent the levels at which the SCAQMD considers the impacts to be significant, the thresholds are not necessarily the same as the NAAQS or CAAQS.

[12] The PSD SIL for annual $PM_{2.5}$, under 40 CFR parts 51 and 52 was effective as of December 20, 2010.

- Cancer Burden > 0.5 excess cancer cases in areas where the maximum incremental cancer risk for residential receptors ≥1 in one million.
- Noncancer Hazard Index ≥1.0 (project increment)

AQ-8: The proposed Project would conflict with or obstruct implementation of an applicable AQMP.

Table 3.2-19: SCAQMD Thresholds for Ambient Air Quality Concentrations Associated with Project Operations

Air Pollutant[c]	Ambient Concentration Thresholds[a,b,c]
Nitrogen Dioxide (NO_2)	
1-hour average (federal)[d]	0.100 ppm (188 μg/m^3) (98th percentile)
1-hour average (state)	0.18 ppm (339 μg/m^3)
Annual average (state)	0.030 ppm (57 μg/m^3)
Annual average (federal)	0.0534 ppm (100 μg/m^3)
Particulates (PM_{10} or $PM_{2.5}$)	
24-hour average	2.5 μg/m^3
Annual average (PM_{10} only)	1.0 μg/m^3
Annual average ($PM_{2.5}$ only)	0.3 μg/m^3
Carbon Monoxide (CO)	
1-hour average	20 ppm (23,000 μg/m^3)
8-hour average	9.0 ppm (10,000 μg/m^3)
Sulfur Dioxide (SO_2)	
1-hour average (state)	0.25 ppm (655 μg/m^3)
1-hour average (federal)[e]	0.075 ppm (196 μg/m^3) (99th percentile)
24-hour average (state)	0.04 ppm (105 μg/m^3)

Source: SCAQMD, 2011; USEPA, 2010a and 2010b.

Notes:

a) The CO thresholds, annual average NO_2 thresholds, and State SO_2 thresholds are absolute thresholds; the maximum predicted impact from proposed Project operations is added to the background concentration for the proposed Project vicinity and compared to the threshold.

b) The PM_{10} and $PM_{2.5}$ thresholds are incremental thresholds. For CEQA significance, the maximum increase in concentration relative to the CEQA baseline is compared to the threshold. For NEPA significance, the maximum increase in concentration relative to the NEPA baseline is compared to the threshold.

c) The SCAQMD has also established concentration thresholds for sulfates and lead; but operational emissions of these pollutants would be negligible, thus concentration standards would not be exceeded.

d) To evaluate Project impacts to ambient 1-hour NO_2 levels, the analysis both the current SCAQMD 1-hour State NO_2 threshold and the more stringent revised 1-hour Federal ambient air quality standard of 188 μg/m^3. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at a receptor must not exceed 0.100 ppm.

e) To attain the SO_2 Federal 1-hour standard, the 3-year average of the 99th percentile of the daily maximum 1-hour averages at a receptor must not exceed 0.075 ppm.

AQ-9 The proposed Project or alternative would produce GHG emissions that exceed CEQA thresholds.

CEQA Threshold. The Office of Planning and Research (OPR)'s determination of significance is based on whether the project would generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. This evaluation is conducted by determining if the project conflicts with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs.

The SCAQMD adopted an interim GHG significance threshold of 10,000 metric tons of CO_2e per year for stationary sources. In addition, the CARB adopted an interim GHG significance threshold of 7,000 for industrial sources, excluding transportation and construction emissions. Neither is applicable to the proposed Project or alternative sources, the majority of which fall under the category of transportation and construction.

To date, there is little guidance and no local, regional, state, or federal regulations to establish a threshold of significance to determine the proposed Project or alternative-specific impacts of GHG emissions on global warming. In addition, the City of Los Angeles has not established such a threshold. Therefore, the Port of Los Angeles, for purposes of this proposed Project only, is utilizing the following as its CEQA threshold of significance**:**

CEQA Impacts. The proposed Project would result in a significant CEQA impact if CO_2e emissions exceed CEQA baseline emissions. In absence of further guidance, this threshold is thought to be the most conservative because any increase over baseline is designated as significant. Furthermore, the proposed Project or alternative would be significant under CEQA if it would conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

NEPA Effects. The USACE has established the following position under NEPA:

There are no science-based GHG significance thresholds, nor has the Federal government or the state adopted any by regulations. In the absence of an adopted or science-based GHG standard, the USACE will not utilize the Port of Los Angeles' proposed AQ-9 CEQA standard, propose a new GHG standard, or make a NEPA impact determination for GHG emissions anticipated to result from the proposed Project or any of the alternatives. Rather, in compliance with the NEPA implementing regulations, the anticipated emissions relative to the NEPA baseline will be disclosed for the proposed Project and each alternative without expressing a judgment as to their significance.

On February 18, 2010, the Council on Environmental Quality (CEQ) released *Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions* (CEQ, 2010). This guidance states that if a proposed action would be reasonably anticipated to cause direct emissions of 25,000 metric tons or more of CO_2 equivalent ($MTCO_2e$) on an annual basis, agencies should consider this an indicator that a quantitative and qualitative assessment may be meaningful to decision makers and the public. Based on previous Port container terminal projects, it was assumed that the proposed Project or the alternatives could exceed 25,000 $MTCO_2e$. Therefore a quantitative assessment was conducted for this EIS/EIR. It is important to note that CEQ does not propose this emissions reference point as an indicator of a threshold of significant effects.

3.2.4.3 Impact Determination

3.2.4.3.1 Proposed Project

Impact AQ-1: The proposed Project would result in construction-related emissions that exceed an SCAQMD threshold of significance in Table 3.2-16.

Table 3.2-20a presents the maximum daily criteria pollutant emissions associated with construction of the proposed Project, before mitigation. Maximum emissions for each construction phase were determined by totaling the daily emissions from those construction activities that overlap in the proposed construction schedule (Table 2-2 in Chapter 2). Table 3.2-20b presents the overlap of project-related construction and operations in 2012 (the peak year of construction emissions).

As noted in the construction methodology discussion in Section 3.2.4.1.1, some additional construction activity may occur at a future date (assumed to be 2020 for this analysis) to implement automated cargo handling systems on the Berth 306 backlands. The level of construction would be less than that in 2012 and 2013, approximately 40 percent of the 2012 peak daily emissions are expected to occur during this later construction of the automated backlands. However, the unmitigated construction emissions would still be significant for NOx and VOC, construction mitigation measures would be required, and mitigated emissions remain significant. In addition, combined construction and operational emissions in that future year (assumed to be 2020) would also be significant.

Table 3.2-20a: Peak Daily Emissions Associated with Proposed Project Construction Activities – Proposed Project Without Mitigation

Emission Source	Peak Daily Emissions (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}[a]	$PM_{2.5}$[a]
Project Year 2012						
Phase 1a - Wharf Construction	73	268	692	1	113	45
Phase 1b - Backland Construction	37	153	331	0	53	22
Phase 1h - Crane Installation[b]	101	95	794	37	97	90
Phase 1e - Building Construction	13	54	127	0	23	9
Phase 1f - Reefer Area Expansion	13	52	119	0	11	6
Phase 1g - Utility Infrastructure	5	18	49	0	2	2
All Phases - Worker Commute	1	11	1	0	16	4
Peak Daily 2012 – CEQA Impact [c]	**243**	**651**	**2,113**	**38**	**313**	**176**
Peak Daily 2012 – NEPA Impact [c,e]	**224**	**571**	**1,944**	**38**	**300**	**169**
Thresholds	75	550	100	150	150	55
CEQA Significant?	**Yes**	**Yes**	**Yes**	No	**Yes**	**Yes**
NEPA Significant?	**Yes**	**Yes**	**Yes**	No	**Yes**	**Yes**
Project Year 2013						
Phase 1a - Wharf Construction	73	268	692	1	112	45
Phase 1b - Backland Construction	37	153	331	0	53	22
Phase 1c - AMP Installation (Berth 306)	5	20	46	0	7	3
Phase 1e - Building Construction	13	54	127	0	22	9
Phase 2 - Grading, Paving, Striping	12	47	116	0	13	6
All Phases - Worker Commute	1	11	1	0	16	4
Peak Daily 2013 – CEQA Impact [c]	**141**	**553**	**1,313**	**2**	**223**	**88**
Peak Daily 2013 – NEPA Impact [c,e]	**79**	**289**	**738**	**1**	**119**	**48**
Thresholds	75	550	100	150	150	55
CEQA Significant?	**Yes**	**Yes**	**Yes**	No	**Yes**	**Yes**
NEPA Significant?	**Yes**	No	**Yes**	No	No	No

Notes:

a) Emissions of PM_{10} and $PM_{2.5}$ assume that fugitive dust is controlled in accordance with SCAQMD Rule 403 by watering disturbed areas 3 times per day.

b) One general cargo ship delivers four shoreside cranes in Phase I

c) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

d) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Construction is assumed to occur during most of Year 2012. This is assumed as it is conservative (i.e. worst-case). Future studies might use updated data, assumptions, and emission factors that are not currently available.

e) The CEQA Impact equals total Project construction emissions minus CEQA baseline construction emissions (which are zero). The NEPA impact equals total Project construction emissions minus NEPA baseline construction emissions as reported in Table 3.2-11.

Table 3.2-20b: Peak Daily[a] Combined Construction and Operational Emissions Without Mitigation–Proposed Project

Emission Source	Peak Daily Emissions (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2012						
Operational Emission Sources						
Ships – Transit[b] and Anchoring	205	381	3,278	84	60	48
Ships – Hoteling	87	223	2,461	140	58	46
Tugboats	5	23	89	0	4	3
Trucks[b]	161	494	1,844	4	102	30
Trains[b]	86	319	1,703	1	48	44
Terminal Equipment	47	280	1,115	1	36	33
Worker Trips	29	296	24	0	47	10
Construction Emission Sources						
Wharf Construction	73	268	692	1	113	45
Backland Construction	37	153	331	0	53	22
Crane Installation[b]	101	95	794	37	97	90
Building Construction	13	54	127	0	23	9
Reefer Area Expansion	13	52	119	0	11	6
Utility Infrastructure	5	18	49	0	2	2
Worker Commute	1	11	1	0	16	4
Total – Project Year 2012[c]	**863**	**2,667**	**12,627**	**268**	**670**	**392**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(61)	(872)	(499)	(5,126)	(445)	(471)
Thresholds	75	550	100	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	620	2,016	10,515	231	354	214
Project minus NEPA Baseline[f]	224	571	1,944	38	300	169
Thresholds	75	550	100	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	**Yes**	**Yes**

Notes:

a) Emissions assume the simultaneous occurrence of maximum theoretical daily equipment activity levels. Such levels would rarely occur during day-to-day terminal operations.

b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.

c) Hoteling emissions include regional power plant emissions from AMP electricity generation.

d) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.

e) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Construction is assumed to occur during most of Year 2012. This is assumed as it is conservative (i.e. worst-case). Future studies might use updated data, assumptions, and emission factors that are not currently available.

f) Emissions represent proposed Project construction emissions minus NEPA baseline construction emissions as shown in Table 3.2-11.

CEQA Impact Determination

As shown in Table 3.2-20a, the unmitigated peak daily construction emissions would exceed the SCAQMD daily emission thresholds for VOC, CO, NO_X, PM_{10}, and $PM_{2.5}$ under CEQA during the 2012 peak year of construction and during 2013. Therefore, unmitigated proposed Project construction emissions would be significant under CEQA for VOC, CO, NO_x, PM_{10}, and $PM_{2.5}$ prior to mitigation.

The largest contributors to peak daily construction emissions are haul trucks (including pile deliveries) and concrete trucks during wharf construction; cold plane equipment during reefer area expansion; a general cargo ship and tugboat during the crane installation; and cold plane equipment during grading, paving and striping activities.

As shown in Table 3.2-20b, operational emissions in 2012 relative to Impact AQ-1 are less than the CEQA baseline and the addition of construction emissions does not increase emissions over the CEQA baseline. Therefore impacts would be less than significant during construction and operational overlap.

Mitigation Measures

Table 3.2-21 summarizes all construction mitigation measures and regulatory requirements assumed in the mitigated emission calculations. Additional mitigation measures that apply to construction activities are listed following the table. Table 3.2-22a presents the maximum daily criteria pollutant emissions associated with construction of the proposed Project, after the application of **MM AQ-1 through MM AQ-8**. Table 3.2-22b presents the peak daily combined construction and operational emissions after the application of **MM AQ-1** through **MM AQ-8**.

Table 3.2-21: Regulations, Agreements, and Mitigation Measures Assumed in the Construction Emissions with Mitigation

Off-Road Construction Equipment	On-Road Trucks	Tugboats	General Cargo Ships	Fugitive Dust
PART 1. Regulations and Agreements Included in the Mitigated Emission Calculations				
Emission Standards for Non-road Diesel Engines – Tier 1, 2, 3, and 4 standards gradually phased in over all years due to normal construction equipment fleet turnover. **California Diesel Fuel Regulations** – 15-ppm sulfur starting September 1, 2006. **CARB Portable Diesel-Fueled Engines Air Toxic Control Measure (ATCM)** – Effective September 12, 2007, all portable engines having a maximum rated horsepower of 50 bhp and greater and fueled with diesel shall meet weighted fleet average PM emission standards.	**Emission Standards for On-road Trucks** – Tiered standards gradually phased in over all years due to normal truck fleet turnover. **California Diesel Fuel Regulations** – 15-ppm sulfur starting September 1, 2006. **Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling** – Diesel trucks are subject to idling limits starting February 1, 2005.	**California Diesel Fuel Regulations** – 500-ppm sulfur starting January 1, 2006, and 15-ppm sulfur starting September 1, 2006. From January 1, 2011 on: All harbor craft with C1 or C2 marine engines must utilize a USEPA Tier-3 engine, or cleaner. *Three exception conditions from this measure may apply*	**VSRP** --- comply with the expanded Vessel Speed Reduction Program (VSRP) of 12 knots between 40 nautical miles (nm) from Point Fermin and the Precautionary Area. These ships must also use low-sulfur fuel (maximum sulfur content of 0.2 percent) in auxiliary engines, main engines, and boilers within 40 nm of Point Fermin.	**SCAQMD Rule 403 Compliance** – 60 percent reduction in fugitive dust due to watering three times per day. **SCAQMD Rule 1403 Compliance** – Work practices will limit asbestos emissions from demolition or renovations.

[a]These mitigation measures were not included in the calculations because their effectiveness has not been established.

The following mitigation measures would reduce criteria pollutant emissions associated with Project construction. Mitigation measures **(MM AQ-1 through MM AQ-8**) would apply to all construction activities. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5.

MM AQ-1 ***Harbor Craft Used during Construction***

1) All harbor craft with C1 or C2 marine engines must utilize a USEPA Tier-3 engine, or cleaner. This measure shall be met , unless the contractor is able to provide proof that one of the following circumstances exists:

   - A piece of specialized equipment is unavailable in a controlled form, or within the required Tier level, within the state of California, including through a leasing agreement;
   - A contractor has applied for necessary incentive funds to put controls on a piece of uncontrolled equipment planned for use on the project, but the application process is not yet approved, or the application has been approved, but funds are not yet available;
   - A contractor has ordered a control device for a piece of equipment planned for use on the project, or the contractor has ordered a new piece of controlled equipment to replace the uncontrolled equipment, but that order has not been completed by the manufacturer or dealer. In addition, for this exemption to apply, the contractor must attempt to lease controlled equipment to avoid using uncontrolled equipment, but no dealer within 200 miles of the project has the controlled equipment available for lease.

MM AQ-2: ***Cargo Ships Used During Construction***

1) All ships & barges used primarily to deliver construction-related materials to a LAHD-contractor construction site shall comply with the expanded Vessel Speed Reduction Program (VSRP) of 12 knots between 40 nautical miles (nm) from Point Fermin and the Precautionary Area.
2) These ships must also use low-sulfur fuel (maximum sulfur content of 0.2 percent) in auxiliary engines, main engines, and boilers within 40 nm of Point Fermin. This condition is superseded by CARB regulations for ships operating within 24 nm of the shoreline where the maximum allowable sulfur content is 0.1 percent. This mitigation measure goes above and beyond CARB's rule in that it requires 0.2 percent sulfur fuel between 25 and 40 nm, whereas the CARB rule requires 0.1 percent sulfur fuel, but only applies to vessels within 24 nm of the shoreline.

MM AQ-3: ***Fleet Modernization for On-Road Trucks Used During Construction***

1) Trucks hauling material such as debris or any fill material will be fully covered while operating off Port property.
2) Idling will be restricted to a maximum of 5 minutes when not in use.

3) USEPA Standards:[13]

a. For On-road trucks with a gross vehicle weight rating (GVWR) of at least 19,500 pounds (except for Import Haulers and Earth Movers): Comply with USEPA 2007 on-road emission standards for PM_{10} and NOx (0.01 grams per brake horsepower-hour (g/bhp-hr) and 1.2 g/bhp-hr or better, respectively).

b. For Import Haulers with a GVWR of at least 19,500 pounds used to move dirt and debris to and from the construction site via public roadways: Comply with USEPA 2004 on-road emission standards for PM_{10} and NOx (0.10 g/bhp-hr and 2.0 g/bhp-hr, respectively).

c. For Earth Movers with a GVWR of at least 19,500 pounds used to move dirt and debris within the construction site: Comply with USEPA 2004 on-road emission standards for PM_{10} and NOx (0.10 g/bhp-hr and 2.0 g/bhp-hr, respectively).

MM AQ-4: ***Fleet Modernization for Construction Equipment (except Vessels, Harbor Craft and On-Road Trucks***

All dredging equipment shall be electric, unless contractor can demonstrate that such equipment is not feasible for a specific activity.

1) Construction equipment will incorporate, where feasible, emissions-savings technology such as hybrid drives and specific fuel economy standards.

2) Idling will be restricted to a maximum of 5 minutes when not in use.

3) Equipment Engine Specifications:[14]

a. Prior to January 1, 2015: All off-road diesel-powered construction equipment greater than 50 hp will meet Tier 3 off-road emission standards at a minimum. In addition, this equipment will be retrofitted with a CARB-verified Level 3 DECS.

b. From January 1, 2015 on: All off-road diesel-powered construction equipment greater than 50 hp will meet Tier 4 off-road emission standards at a minimum.

MM AQ-5: ***Construction Best Management Practices (BMPs)***

LAHD shall implement BMPs to reduce air emissions from all LAHD-sponsored construction projects, including:

---

[13] The USEPA standards apply to new equipment; however, a typical fleet would be comprised of both new equipment meeting USEPA standards and older equipment. This mitigation measure requires that all equipment used at the site meet USEPA standards for new equipment, thereby reducing emissions from a typical fleet that includes older equipment. For comparison, the California Air Resources Board's In-Use Heavy-Duty Diesel-Fueled Vehicles regulation (California Code of Regulations, Title 13, Section 2025) does not require in-use vehicles with a GVWR greater than 26,000 pounds to meet 2010 engine emission standards until 2015 at the earliest.

[14] This mitigation measure accelerates the CARB emission standards and therefore reduces emissions more than simply following the CARB regulations.

1) Use of diesel oxidation catalysts and catalyzed diesel particulate traps.
2) Maintain equipment according to manufacturers' specifications.
3) Restrict idling of construction equipment and on-road heavy-duty trucks to a maximum of 5 minutes when not in use.
4) Install high-pressure fuel injectors on construction equipment vehicles.
5) Maintain a minimum buffer zone of 300 meters between truck traffic and sensitive receptors.
6) Enforce truck parking restrictions.
7) Provide on-site services to minimize truck traffic in or near residential areas, including, but not limited to, the following services: meal or cafeteria services, automated teller machines, etc.
8) Re-route construction trucks away from congested streets or sensitive receptor areas.
9) Provide dedicated turn lanes for movement of construction trucks and equipment on- and off-site.
10) Use electric power in favor of diesel power where available.

MM AQ-6: ***Additional Fugitive Dust Controls.***

1) SCAQMD Rule 403 requires a Fugitive Dust Control Plan be prepared and approved for construction sites. Construction contractors are required to obtain a 403 Permit from SCAQMD prior to construction.
2) Applicable Rule 403 measures/BMPs to reduce dust shall be included in the contractor's Fugitive Dust Control Plan, at a minimum.

MM AQ-7: ***General Mitigation Measure***

For any of the above mitigation measures (MM AQ-1 through MM AQ-6), if a CARB-certified technology becomes available and is shown to be as good as or better in terms of emissions performance than the existing measure, the technology would replace the existing measure pending approval by the Port. **Measures will be set at the time a specific construction contract is advertised for bids.**

MM AQ-8: ***Special Precautions near Sensitive Sites***

All construction activities located within 1,000 feet of sensitive receptors (defined as schools, playgrounds, daycares, and hospitals) shall notify each of these sites in writing at least 30 days before construction activities begin.

Table 3.2-22a: Peak Daily Emissions Associated with Proposed Project Construction Activities – Proposed Project With Mitigation

Emission Source	Daily Emissions (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}[a]	$PM_{2.5}$[a]
Project Year 2012						
Wharf Construction	69	260	334	1	87	21
Backland Construction	37	152	218	0	40	9
Crane Installation[b]	72	95	598	18	78	72
Building Construction	13	54	109	0	19	5
Reefer Area Expansion	13	52	90	0	7	2
Utility Infrastructure	5	18	41	0	0	0
Worker Commute	1	11	1	0	16	4
Peak Daily 2012 – CEQA Impact [c,e]	**211**	**641**	**1,392**	**20**	**246**	**114**
Peak Daily 2012 – NEPA Impact [e]	**192**	**561**	**1,223**	**20**	**232**	**106**
Thresholds	***75***	***550***	***100***	***150***	***150***	***55***
CEQA Significant?	**Yes**	**Yes**	**Yes**	No	**Yes**	**Yes**
NEPA Significant?	**Yes**	**Yes**	**Yes**	No	**Yes**	**Yes**
Project Year 2013						
Wharf Construction	69	260	334	1	87	21
Backland Construction	37	152	218	0	40	9
AMP Installation (Berth 306)	5	20	42	0	5	1
Building Construction	13	54	109	0	19	5
Grading, Paving, Striping	12	47	89	0	10	3
Worker Commute	1	11	1	0	16	4
Peak Daily 2013 – CEQA Impact [c,e]	**137**	**543**	**794**	**2**	**175**	**44**
Peak Daily 2013 – NEPA Impact [e]	**75**	**279**	**219**	**1**	**70**	**3**
Thresholds	***75***	***550***	***100***	***150***	***150***	***55***
CEQA Significant?	**Yes**	No	**Yes**	No	**Yes**	No
NEPA Significant?	**Yes**	No	**Yes**	No	No	No

Notes:

a) Emissions of PM_{10} and $PM_{2.5}$ assume that fugitive dust is controlled in accordance with SCAQMD Rule 403to achieve a 60 percent reduction relative to uncontrolled levels..

b) One general cargo ship delivers four shoreside cranes in Phase I

c) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

d) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Construction is assumed to occur during most of Year 2012. This is assumed as it is conservative (i.e. worst-case). Future studies might use updated data, assumptions, and emission factors that are not currently available.

e) The CEQA Impact equals total Project construction emissions minus CEQA baseline construction emissions (which are zero). The NEPA impact equals total Project construction emissions minus NEPA baseline construction emissions as reported in Table 3.2-11.

Table 3.2-22b: Peak Daily[a] Combined Construction and Operational Emissions With Mitigation – Proposed Project

Emission Source	Peak Daily Emissions (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2012						
Operational Emission Sources						
Ships – Transit[b] and Anchoring	205	381	3,278	84	60	48
Ships – Hoteling	87	223	2,461	140	58	46
Tugboats	5	23	89	0	4	3
Trucks[b]	161	494	1,844	4	102	30
Trains[b]	86	319	1,703	1	48	44
Terminal Equipment	47	280	1,115	1	36	33
Worker Trips	29	296	24	0	47	10
Construction Emission Sources						
Wharf Construction	69	260	334	1	86	21
Backland Construction	37	152	218	0	39	9
Crane Installation[b]	72	95	598	18	78	72
Building Construction	13	54	109	0	18	5
Reefer Area Expansion	13	52	90	0	7	2
Utility Infrastructure	5	18	41	0	0	0
Worker Commute	1	11	1	0	16	4
Total – Project Year 2012[c]	**831**	**2,657**	**11,907**	**251**	**599**	**328**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(94)	(882)	(1,219)	(5,143)	(516)	(534)
Thresholds	75	550	100	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	620	2,016	10,515	231	354	214
Project minus NEPA Baseline[f]	192	561	1,223	20	232	106
Thresholds	75	550	100	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	**Yes**	**Yes**

Notes:
a) Emissions assume the simultaneous occurrence of maximum theoretical daily equipment activity levels. Such levels would rarely occur during day-to-day terminal operations.
b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.
c) Hoteling emissions include regional power plant emissions from AMP electricity generation.
d) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.
e) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Construction is assumed to occur during most of Year 2012. This is assumed as it is conservative (i.e. worst-case). Future studies might use updated data, assumptions, and emission factors that are not currently available.
f) Emissions represent proposed Project construction emissions minus NEPA baseline construction emissions as shown in Table 3.2-11.

Residual Impacts

Although reductions would be achieved with mitigation, impacts under CEQA would be significant and unavoidable during construction for VOC, CO, NO_X, PM_{10} and $PM_{2.5}$.

NEPA Impact Determination

Without mitigation, the peak daily construction emissions shown in Table 3.2-20a would exceed the thresholds for VOC, CO, NO_X, PM_{10}, and $PM_{2.5}$ under NEPA in 2012. Emissions would also exceed the threshold for VOC and NOx in 2013. Therefore, unmitigated proposed Project construction emissions would be significant under NEPA for VOC, CO, NO_x, PM_{10}, and $PM_{2.5}$ prior to mitigation.

As shown in Table 3.2-20b, the overlap of construction and operations in 2012 would further increase emissions of VOC, CO, NOx, PM_{10} and $PM_{2.5}$ over SCAQMD thresholds.

Mitigation Measures

Table 3.2-21 summarizes all construction mitigation measures and regulatory requirements assumed in the mitigated emission calculations. Table 3.2-22a presents the maximum daily criteria pollutant emissions associated with construction of the proposed Project, after the application of **MM AQ-1 through MM AQ-8**. Table 3.2-22b presents the maximum daily combined criteria pollutant emissions associated with construction and operation of the proposed Project after mitigation.

Residual Impacts

Although reductions would be achieved with mitigation, impacts would be significant and unavoidable during construction under NEPA for VOC, CO, NO_X, PM_{10} and $PM_{2.5}$.

Impact AQ-2: Proposed Project construction would result in off-site ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-17.

Dispersion modeling of on-site Project construction emissions was performed to assess the impact of the proposed Project on local ambient air concentrations. A summary of the dispersion modeling results is presented here; the complete dispersion modeling report is included in Appendix E2. Table 3.2-23a presents the maximum off-site ground level concentrations of NO_2, CO, PM_{10}, and $PM_{2.5}$ from construction without mitigation. Table 3.2-23b presents concentrations of NO_2, CO, PM_{10} and $PM_{2.5}$ during 2012 when peak construction activity would overlap with terminal operations.

As noted in the construction methodology discussion in Section 3.2.4.1.1, some additional construction activity may occur at a future date to implement automated cargo handling systems on the Berth 306 backlands. The level of construction would be less than that in 2012 and 2013, approximately 40 percent of the 2012 peak daily emissions are expected to occur during this later construction of the automated backlands. However, anticipated unmitigated construction concentrations would still be significant for PM_{10} and NO_x, with additional significant concentration impacts for $PM_{2.5}$ expected when the future construction is overlapped with future operations. Therefore, construction mitigation measures would be required, and mitigated concentrations would remain significant.

CEQA Impact Determination

Table 3.2-23a shows that the maximum off-site 24-hour $PM_{2.5}$ concentration increment and the maximum 1-hour and 8-hour CO concentrations would not exceed the SCAQMD thresholds. The maximum off-site 24-hour and annual PM_{10} concentration increments would exceed SCAQMD significance thresholds. In addition, the maximum off-site 1-hour and state annual NO_2 concentration, including background, would exceed the SCAQMD significance threshold.

Without mitigation, maximum off-site ambient pollutant concentrations associated with the construction of the proposed Project would be significant for PM_{10} (24-hour and annual average) and NO_2 (1-hour and state annual average). Therefore, significant impacts under CEQA would occur prior to mitigation.

Table 3.2-23b shows the overlap of construction and operational-related concentrations in 2012. In addition to the impact noted above for construction alone, the overlap of construction and operations would result in a significant impact for 24-hour $PM_{2.5}$.

Mitigation Measures

To reduce the level of impact during construction, **MM AQ-1 through MM AQ-8** would be applied. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. Table 3.2-24a presents the maximum off-site ground level concentrations of NO_2, CO, PM_{10}, and $PM_{2.5}$ from peak daily and annual construction phases of the terminal after mitigation.

From a CEQA perspective, with implementation of these mitigation measures, off-site ambient concentrations from construction activities would be significant for PM_{10} (annual average) and NO_2 (1-hour average) but less than significant for CO. Table 3.2-24b presents the combined construction and operational concentrations in 2012 after mitigation. Concentrations of 24-hour $PM_{2.5}$ would be reduced to a less than significant level after mitigation but concentrations of 24-hour and annual PM_{10} as well as 1-hour and state annual NO_2 would remain significant.

Residual Impacts

Impacts under CEQA would be significant and unavoidable during construction for annual and 1-hour NO_2 and annual and 24-hour PM_{10}.

NEPA Impact Determination

Table 3.2-23a shows that without mitigation, maximum off-site ambient pollutant concentrations associated with the construction of the proposed Project would be significant for PM_{10} (24-hour and annual average) and NO_2 (1-hour average), in addition to $PM_{2.5}$ (annual). Table 3.2-23b shows the overlap of construction and operational-related concentrations in 2012. The overlap of construction and operations would result in an additional significant impact for 24-hour $PM_{2.5}$. Therefore, significant impacts under NEPA would occur.

Mitigation Measures

To reduce the level of impact during construction **MM AQ-1 through MM AQ-8** would be applied. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. Table 3.2-24a presents the maximum off-site ground level concentrations of NO_2, CO, PM_{10}, and $PM_{2.5}$ from peak daily and annual construction phases of the terminal after mitigation.

Table 3.2-24a shows that from a NEPA perspective, with implementation of these mitigation measures, off-site ambient concentrations from construction activities would be significant for PM_{10} (annual average), NO_2 (1-hour average), and $PM_{2.5}$ (annual average) but less than significant for CO. Table 3.2-24b presents the combined construction and operational concentrations in 2012 after mitigation. Emissions of 24-hour $PM_{2.5}$ would be reduced to a less than significant level after mitigation but concentrations of 24-hour PM_{10} would remain significant.

Residual Impacts

Impacts under NEPA would be significant and unavoidable during construction, for 1-hour NO_2, 24-hour and annual PM_{10}, and 24-hour and annual $PM_{2.5}$ for combined concentrations (operational and construction).

Table 3.2-23a: Maximum Off-site Ambient Concentrations –Proposed Project Construction without Mitigation

Pollutant	Averaging Time	Background Concentration ($\mu g/m^3$)	Maximum Concentration (without Background) ($\mu g/m^3$)	Total Ground- Level Concentration ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
NO_2	Federal 1-hour[a]	147	195	**342**	188
	State 1-hour[b]	235	237	**472**	338
	Federal annual[c]	40	25	66	100
	State annual[c]	40	25	**66**	57
CO[f]	1-hour	4,600	348	4,948	23,000
	8-hour	2,878	68	2,946	10,000
PM_{10}[d]	24-hour	NA	**11.5**	NA	10.4
	Annual	NA	**4.5**	**NA**	1.0
$PM_{2.5}$[d]	24-hour	NA	5.5	NA	10.4
	Federal annual[e]	NA	**2.2**	NA	0.3[e]

Notes:

a) The high 8th highest modeled 1-hour NO_2 was added to the design value background concentration for comparison with the federal 1-hour standard.

b) The high 1st highest modeled 1-hour NO_2 was added to the background concentration for comparison with the state 1-hour standard.

c) The 1st highest modeled annual average NO_2 was added to the background concentration for comparison with the federal and state annual average standard.

d) The PM_{10} and $PM_{2.5}$ thresholds are incremental thresholds, therefore the high 1st highest modeled 24-hour and annual PM_{10} and 24-hour $PM_{2.5}$ were compared to the incremental threshold.

e) SCAQMD does not list a Significant Impact Level for annual $PM_{2.5}$, therefore the modeled annual average $PM_{2.5}$ was compared to the Prevention of Significant Deterioration (PSD) Significant Impact Level (SIL) of 0.3 $\mu g/m^3$ for the determination of NEPA significance only.

f) The high 1st highest modeled 1-hour and 8-hour CO values were respectively added to the background concentration for comparison with the federal 1-hour and 8-hour standards.

g) In accordance with SCAQMD guidance offsite haul truck transport emissions are considered offsite emissions and were not included in the modeling (SCAQMD, 2005). However, tugboat emissions associated with barge tending and dredging operations while at the construction site and onsite truck emissions were included in the modeling.

Table 3.2-23b: Maximum Off-site Ambient Concentrations –Proposed Project Construction and Operations without Mitigation

Pollutant	Averaging Time	Background Concentration (μg/m^3)	Maximum Concentration (without Background) (μg/m^3)	Total Ground-Level Concentration (μg/m^3)	SCAQMD Threshold (μg/m^3)
NO_2	Federal 1-hour[a]	147	197	**343**	188
	State 1-hour[b]	235	246	**481**	338
	Federal annual[c]	40	38	78	100
	State annual[c]	40	38	**78**	57
CO[f]	1-hour	4,600	590	5,190	23,000
	8-hour	2,878	103	2,981	10,000
PM_{10}[d]	24-hour	NA	**20.7**	NA	10.4
	Annual	NA	**6.6**	NA	1.0
$PM_{2.5}$[d]	24-hour	NA	**10.9**	NA	10.4
	Federal annual[e]	NA	**3.7**	NA	0.3[e]

Notes:

a) The high 8th highest modeled 1-hour NO_2 was added to the design value background concentration for comparison with the federal 1-hour standard.

b) The high 1st highest modeled 1-hour NO_2 was added to the background concentration for comparison with the state 1-hour standard.

c) The 1st highest modeled annual average NO_2 was added to the background concentration for comparison with the federal and state annual average standard.

d) The PM_{10} and $PM_{2.5}$ thresholds are incremental thresholds, therefore the high 1st highest modeled 24-hour and annual PM_{10} and 24-hour $PM_{2.5}$ were compared to the incremental threshold.

e) SCAQMD does not list a Significant Impact Level for annual $PM_{2.5}$, therefore the modeled annual average $PM_{2.5}$ was compared to the PSD SIL of 0.3 μg/m^3 for the determination of NEPA significance only.

f) The high 1st highest modeled 1-hour and 8-hour CO values were respectively added to the background concentration for comparison with the federal 1-hour and 8-hour standards.

g) In accordance with SCAQMD guidance offsite haul truck transport emissions are considered offsite emissions and were not included in the modeling (SCAQMD, 2005). However, tugboat emissions associated with barge tending and dredging operations while at the construction site and onsite truck emissions were included in the modeling.

Table 3.2-24a: Maximum Off-site Ambient Concentrations –Proposed Project Construction with Mitigation

Pollutant	Averaging Time	Background Concentration (μg/m^3)	Maximum Concentration (without Background) (μg/m^3)	Total Ground-Level Concentration (μg/m^3)	SCAQMD Threshold (μg/m^3)
NO_2	Federal 1-hour[a]	147	120	**267**	188
	State 1-hour[b]	235	144	**380**	338
	Federal annual[c]	40	16	56	100
	State annual[c]	40	16	56	57
CO[f]	1-hour	4,600	343	4,943	23,000
	8-hour	2,878	67	2,945	10,000
PM_{10}[d]	24-hour	NA	8.8	NA	10.4
	Annual	NA	**3.5**	NA	1.0
$PM_{2.5}$[d]	24-hour	NA	3.0	NA	10.4
	Federal annual[e]	NA	**1.2**	NA	0.3[e]

Notes:

a) The high 8th highest modeled 1-hour NO_2 was added to the design value background concentration for comparison with the federal 1-hour standard.

b) The high 1st highest modeled 1-hour NO_2 was added to the background concentration for comparison with the state 1-hour standard.

c) The 1st highest modeled annual average NO_2 was added to the background concentration for comparison with the federal and state annual average standard.

d) The PM_{10} and $PM_{2.5}$ thresholds are incremental thresholds, therefore the high 1st highest modeled 24-hour and annual PM_{10} and 24-hour $PM_{2.5}$ were compared to the incremental threshold.

e) SCAQMD does not list a Significant Impact Level for annual $PM_{2.5}$, therefore the modeled annual average $PM_{2.5}$ was compared to the PSD SIL of 0.3 μg/m^3 for the determination of NEPA significance only.

f) The high 1st highest modeled 1-hour and 8-hour CO values were respectively added to the background concentration for comparison with the federal 1-hour and 8-hour standards. In accordance with SCAQMD guidance offsite haul truck transport emissions are considered offsite emissions and were not included in the modeling (SCAQMD, 2005). However, tugboat emissions associated with barge tending and dredging operations while at the construction site and onsite truck emissions were included in the modeling

Table 3.2-24b: Maximum Off-site Ambient Concentrations –Proposed Project Construction and Operations with Mitigation

Pollutant	Averaging Time	Background Concentration ($\mu g/m^3$)	Maximum Concentration (without Background) ($\mu g/m^3$)	Total Ground-Level Concentration ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
NO_2	Federal 1-hour[a]	147	197	**343**	188
	State 1-hour[b]	235	201	**436**	338
	Federal annual[c]	40	38	78	100
	State annual[c]	40	38	**78**	57
CO[f]	1-hour	4,600	583	5,183	23,000
	8-hour	2,878	102	2,980	10,000
PM_{10}[d]	24-hour	NA	**16.5**	NA	10.4
	Annual	NA	**5.5**	NA	1.0
$PM_{2.5}$[d]	24-hour	NA	7.2	NA	10.4
	Federal annual[e]	NA	**2.5**	NA	0.3[e]

Notes:

a) The high 8th highest modeled 1-hour NO_2 was added to the design value background concentration for comparison with the federal 1-hour standard.

b) The high 1st highest modeled 1-hour NO_2 was added to the background concentration for comparison with the state 1-hour standard.

c) The 1st highest modeled annual average NO_2 was added to the background concentration for comparison with the federal and state annual average standard.

d) The PM_{10} and $PM_{2.5}$ thresholds are incremental thresholds, therefore the high 1st highest modeled 24-hour and annual PM_{10} and 24-hour $PM_{2.5}$ were compared to the incremental threshold.

e) SCAQMD does not list a Significant Impact Level for annual $PM_{2.5}$, therefore the modeled annual average $PM_{2.5}$ was compared to the PSD SIL of 0.3 $\mu g/m^3$ for the determination of NEPA significance only.

f) The high 1st highest modeled 1-hour and 8-hour CO values were respectively added to the background concentration for comparison with the federal 1-hour and 8-hour standards.

g) In accordance with SCAQMD guidance, offsite haul truck transport emissions are considered off-site emissions and were not included in the modeling (SCAQMD, 2005). However, tugboat emissions associated with barge tending and dredging operations while at the construction site and onsite truck emissions were included in the modeling.

Impact AQ-3: The proposed Project would result in operational emissions that exceed 10 tons per year of VOCs or an SCAQMD threshold of significance in Table 3.2-18.

Table 3.2-25 presents the unmitigated average daily criteria pollutant emissions associated with operation of the proposed Project. The average daily emissions represent the annual emissions divided by 365 days per year. Average daily emissions are a good indicator of terminal operations over the long term since terminal operations can vary substantially from day-to-day depending on ship arrivals. Emissions were estimated for five Project study years: 2012, 2015, 2020, 2025 and 2027. Comparisons to the CEQA and NEPA baseline emissions are presented to determine CEQA and NEPA significance, respectively.

The operational emissions associated with the proposed Project assume the following activity levels:

- Annual container volumes for Berths 302-306 are estimated to be 1,906,000 TEUs in 2012; 2,702,000 TEUs in 2015; 2,912,000 TEUs in 2020, 3,122,000 TEUs in 2025, and 3,206,000 TEUs in 2027.

- Annual ship calls to Berths 302-306 are estimated to be 234 visits in 2012, 286 visits in 2015, 338 visits in 2020, 364 visits in 2025, and 390 visits in 2027.

Table 3.2-25: Average Daily[a] Operational Emissions Without Mitigation – Proposed Project

Emission Source	Average Daily Emissions (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2012						
Ships – Transit[b] and Anchoring	123	229	1,977	51	36	29
Ships – Hoteling	56	142	1,563	91	37	29
Tugboats	3	15	57	0	2	2
Trucks[b]	117	358	1,336	3	74	22
Trains[b]	75	280	1,495	1	42	39
Terminal Equipment	25	172	686	1	21	19
Worker Trips	20	208	17	0	33	7
Total – Project Year 2012[c]	**419**	**1,404**	**7,130**	**148**	**245**	**147**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(80)	(462)	(15)	(2,442)	(317)	(287)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	419	1,404	7,130	148	245	147
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2015						
Ships – Transit[b] and Anchoring	143	268	2,312	60	42	34
Ships – Hoteling	40	106	1,126	85	30	24
Tugboats	4	20	23	0	0	0
Trucks[b]	207	638	2,135	4	110	37
Trains[b]	89	410	1,977	2	52	48
Terminal Equipment	43	262	1,069	1	35	32
Worker Trips	26	260	20	1	52	11
Total – Project Year 2015[c]	**553**	**1,963**	**8,662**	**153**	**322**	**185**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	54	97	1,517	(2,437)	(240)	(249)
Thresholds	55	550	55	150	150	55
Significant?	No	No	**Yes**	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	411	1,419	6,472	120	231	134
Project minus NEPA	141	544	2,190	32	91	51

Table 3.2-25: Average Daily[a] Operational Emissions Without Mitigation – Proposed Project

Emission Source	Average Daily Emissions (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Baseline						
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	**Yes**	No	No	No
Project Year 2020						
Ships – Transit[b] and Anchoring	177	329	2,836	73	52	42
Ships – Hoteling	21	61	597	67	20	16
Tugboats	5	25	28	0	1	1
Trucks[b]	235	755	2,185	5	126	46
Trains[b]	63	440	1,648	2	38	35
Terminal Equipment	18	244	73	2	3	2
Worker Trips	21	192	14	1	55	11
Total – Project Year 2020[c]	**540**	**2,046**	**7,382**	**149**	**294**	**153**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	41	180	237	(2,441)	(268)	(281)
Thresholds	55	550	55	150	150	55
Significant?	No	No	**Yes**	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	379	1,437	5,237	107	206	108
Project minus NEPA Baseline	161	609	2,145	41	89	45
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	No	No
Project Year 2025						
Ships – Transit[b] and Anchoring	212	393	3,366	86	62	49
Ships – Hoteling	17	48	474	53	16	12
Tugboats	6	28	31	0	1	1
Trucks[b]	184	590	1,572	5	135	48
Trains[b]	48	449	1,281	2	28	26
Terminal Equipment	21	276	83	2	3	3
Worker Trips	18	149	10	1	59	12
Total – Project Year 2025[c]	**505**	**1,933**	**6,818**	**148**	**304**	**152**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	6	67	(327)	(2,442)	(258)	(283)
Thresholds	55	550	55	150	150	55

Table 3.2-25: Average Daily[a] Operational Emissions Without Mitigation – Proposed Project

Emission Source	**Average Daily Emissions (lb/day)[d]**					
	VOC	**CO**	**NO_X**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	360	1,364	5,007	118	213	110
Project minus NEPA Baseline	145	568	1,812	30	91	42
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	No	No
Project Year 2027						
Ships – Transit[b] and Anchoring	232	428	3,667	94	67	54
Ships – Hoteling	17	50	492	54	16	13
Tugboats	6	30	34	0	1	1
Trucks[b]	192	616	1,654	5	140	50
Trains[b]	44	461	1,166	2	25	23
Terminal Equipment	23	289	87	2	3	3
Worker Trips	17	139	10	1	62	13
Total – Project Year 2027[c]	**530**	**2,014**	**7,109**	**158**	**315**	**157**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	31	149	(36)	(2,432)	(247)	(277)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	360	1,373	4,951	118	212	109
Project minus NEPA Baseline	170	641	2,158	39	103	48
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	No	No

Notes:

a) Emissions represent annual emissions divided by 365 days per year of operation.
b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.
c) Hoteling emissions include regional power plant emissions from AMP electricity generation.
d) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.
e) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.
f) Project emissions in 2012 are lower than the CEQA baseline due to the impact of the regulations described in Table 3.2-7 and the smaller growth in terminal throughput in 2012 compared to future study years. See explanation of Project emission trends in Section3.2.4.1.1.

Without mitigation, the VSRP compliance rate was assumed to be 95 percent for all study years. This represents the required compliance rate for designation by the Port as being in compliance with the VSRP. The following assumption and activity data were used in quantification of unmitigated operational emissions:

Fraction of all TEUs moving through on-dock rail:

- CEQA Baseline: 35.3 percent
- 2012-2020: 35 percent
- 2025: 33.2 percent
- 2027: 32.4 percent

Fraction of all TEUs moving through off-dock rail yards (Carson ICTF, Los Angeles rail yards, or Inland Empire rail yards):

- CEQA Baseline: 10.6 percent
- 2012-2020: 10 percent
- 2025: 11.8 percent
- 2027: 12.6 percent

Fraction of all TEUs hauled by truck to non-rail yard destinations:

- CEQA Baseline: 64.7 percent
- 2012-2020: 65 percent
- 2025: 66.8 percent
- 2027: 67.6 percent

Peak daily truck trips:

- CEQA Baseline: 5,093
- 2012: 6,438
- 2015: 9,127
- 2020: 9,836
- 2025: 10,892
- 2027: 11,361

Annual one-way train trips:

- CEQA Baseline: 1,676
- 2012: 2,197
- 2015: 2,627
- 2020: 2,831
- 2025: 2,876
- 2027: 2,953

Table 3.2-26 summarizes peak daily unmitigated emissions estimated for the proposed Project operations in years 2012, 2015, 2020, 2025 and 2027. Peak daily emissions represent theoretical upper-bound estimates of activity levels at the terminal. Therefore, in contrast to average daily emissions, peak daily emissions would occur infrequently and are based upon a lesser known and therefore more theoretical set of conservative assumptions. Comparisons to the CEQA and NEPA baseline emissions are presented to determine CEQA and NEPA significance, respectively.

Table 3.2-26: Peak Daily[a] Operational Emissions Without Mitigation – Proposed Project

Emission Source	Peak Daily Emissions (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2012						
Ships – Transit[b] and Anchoring	205	381	3,278	84	60	48
Ships – Hoteling	87	223	2,461	140	58	46
Tugboats	5	23	89	0	4	3
Trucks[b]	161	494	1,844	4	102	30
Trains[b]	86	319	1,703	1	48	44
Terminal Equipment	47	280	1,115	1	36	33
Worker Trips	29	296	24	0	47	10
Total – Project Year 2012[c]	**620**	**2,016**	**10,515**	**231**	**354**	**214**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(304)	(1,523)	(2,611)	(5,163)	(761)	(648)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	620	2,016	10,515	231	354	214
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2015						
Ships – Transit[b] and Anchoring	409	762	6,556	168	120	96
Ships – Hoteling	60	159	1,686	123	44	35
Tugboats	9	50	58	0	1	1
Trucks[b]	286	880	2,948	6	153	51
Trains[b]	99	453	2,186	2	57	53
Terminal Equipment	66	374	1,515	2	52	48
Worker Trips	35	347	27	1	69	14
Total – Project Year 2015[c]	**965**	**3,026**	**14,976**	**301**	**496**	**297**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	40	(513)	1,850	(5,093)	(619)	(565)
Thresholds	55	550	55	150	150	55

Table 3.2-26: Peak Daily[a] Operational Emissions Without Mitigation – Proposed Project

Emission Source	Peak Daily Emissions (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Significant?	No	No	**Yes**	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	606	2,013	9,474	190	333	196
Project minus NEPA Baseline	358	1,013	5,502	111	163	102
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	**Yes**	**Yes**
Project Year 2020						
Ships – Transit[b] and Anchoring	471	860	7,316	183	134	107
Ships – Hoteling	25	71	697	78	23	18
Tugboats	10	53	60	0	1	1
Trucks[b]	325	1,043	3,017	7	174	63
Trains[b]	68	480	1,797	2	42	38
Terminal Equipment	26	344	104	2	4	3
Worker Trips	29	263	19	1	76	16
Total – Project Year 2020[c]	**955**	**3,115**	**13,011**	**273**	**454**	**248**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	30	(424)	(115)	(5,121)	(662)	(615)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	546	1,964	7,469	165	286	151
Project minus NEPA Baseline	408	1,151	5,542	108	168	97
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	**Yes**	**Yes**
Project Year 2025						
Ships – Transit[b] and Anchoring	578	1,054	8,956	222	164	131
Ships – Hoteling	28	82	806	84	26	21
Tugboats	11	56	63	0	2	1
Trucks[b]	254	815	2,171	7	187	67
Trains[b]	54	509	1,448	2	31	29
Terminal Equipment	30	387	117	2	4	4
Worker Trips	24	204	14	1	81	17
Total – Project Year 2025[c]	**978**	**3,107**	**13,575**	**319**	**495**	**269**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	54	(432)	449	(5,075)	(621)	(593)
Thresholds	55	550	55	150	150	55
Significant?	No	No	**Yes**	No	No	No

Table 3.2-26: Peak Daily[a] Operational Emissions Without Mitigation – Proposed Project

Emission Source	Peak Daily Emissions (lb/day)[d]					
	VOC	**CO**	**NO_X**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
NEPA Impacts						
NEPA Baseline Emissions	504	1,803	6,810	162	288	148
Project minus NEPA Baseline	475	1,304	6,765	156	207	122
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2027						
Ships – Transit[b] and Anchoring	578	1,054	8,956	222	164	131
Ships – Hoteling	28	82	806	84	26	21
Tugboats	12	57	64	0	2	1
Trucks[b]	265	851	2,283	7	194	70
Trains[b]	50	537	1,351	2	29	27
Terminal Equipment	32	401	121	2	5	4
Worker Trips	22	188	13	1	84	17
Total – Project Year 2027[c]	**987**	**3,170**	**13,594**	**319**	**502**	**271**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	62	(369)	469	(5,075)	(614)	(592)
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	**Yes**	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	506	1,834	6,780	163	289	147
Project minus NEPA Baseline	481	1,336	6,815	156	212	124
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Notes:

a) Emissions assume the simultaneous occurrence of maximum theoretical daily equipment activity levels. Such levels would rarely occur during day-to-day terminal operations.

b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.

c) Hoteling emissions include regional power plant emissions from AMP electricity generation.

d) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.

e) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

f) See explanation of Project emission trends in Section3.2.4.1.1.

The peak daily emission estimates for proposed Project operations include the following assumptions that were chosen to identify a maximum theoretical activity scenario:

- Ships at berth: The peak day scenario assumes that the largest combination of ships in the Project's fleet that could be simultaneously accommodated at the wharf would call at the terminal. The specific ship activity assumed for each analysis year is (a) in 2012, one 6,000 TEU capacity vessel arrives and hotels, another 6,000 TEU capacity vessel hotels and departs; (b) in 2015, one 6,000 TEU capacity vessel arrives/departs and hotels, and another 6,000 TEU capacity vessel hotels and departs; (c) in 2020, two 9,000 TEU capacity vessels arrive and hotel, and two 6,000 TEU capacity vessels hotel and depart; (d) and in 2025 and 2027, two 10,000 TEU capacity vessels arrive and hotel, and two 10,000 TEU capacity vessels hotel and depart. The time each vessel is assumed to hotel equals 24 hours minus the ship's transit time between the SCAB overwater boundary and the berth. Without mitigation, the emissions also assume that each ship uses MGO or MDO fuel with a sulfur content of 0.1 percent.
- Trains: Of the annual TEUs moved to or from ships through the APL Terminal, 45 percent are moved by rail, with generally 35 percent of the annual TEUs moved are through the APL Terminal rail yard, and the other 10 percent moved through off-dock rail yards. The exceptions to this distribution are (1) the CEQA Baseline, when 45.9 percent of the TEUs were moved by rail (35 percent on-dock and 10.9 percent off-dock); (2) 2025 proposed Project with 33.2 percent on-dock and 11.8 percent off-dock; and (3) 2027 proposed Project with 32.4 percent on-dock and 12.6 percent off-dock. The peak month throughput, which represents approximately 9.1 percent of annual throughput, was used to calculate peak day rail activity for each year. Following the train calculation methodology described in Section 3.2.1.1, the number of locomotives (typically 4 locomotives per train) needed to move APL containers in the peak day were: 15 in the CEQA Baseline, 22 in 2012, 232 in 2015, 34 in 2020, 36 in 2025, and 838 in 2027.
- Trucks: Peak day truck trips generated by the proposed Project were provided by the traffic study for each analysis year. The peak day represents a weekday during a peak month of container throughput. This equates to about 40 percent more truck trips on the peak day compared to an average day for 2012, 2015, 2020, 2025 and 2027.
- Terminal equipment: Activity, horsepower, and load factors for diesel CHE, and fuel usage for LPG forklifts were provided by APL for both the peak day and annual equipment. The peak day equates to between 25 and 30 percent more operating hours compared to an average day for 2012, 2015, 2020, 2025, and 2027.

As noted in the Methodology discussion in Section 3.2.4.1.2, operational emissions of criteria pollutants from cargo handling equipment would be lower with an automated cargo handling system than with the conventional handling system analyzed above. Therefore, potential impacts associated with the automated cargo handling system would be less than shown above.

Project Emissions Trends

The proposed Project and alternatives operational emissions are assessed in 2012, 2015, 2020, 2025, and 2027. While the terminal activity increases in each study year, the regulations described in Section 3.2.3 and Table 3.2-7 cause emission factors from Project sources (ships, tugboats, locomotives, cargo-handling equipment, heavy-duty trucks, and on-road vehicles) to decrease. In addition, as equipment ages, engine efficiency decreases and emission factors increase over the brand-new equipment rating. The combination of increased activity, decreasing emission factors, and aging equipment results in emissions that do not always decrease or increase consistently over time. Activity for each Project source is determined based on the terminal TEU throughput, shown in Table 2-1 in Chapter 2, Project Description.

The main drivers of the operational emissions inventories presented for the Project and alternatives under Impact AQ-4 are the following:

- Containerships and tugboats
  - Emission factors for containerships are assumed to comply with MARPOL Annex VI SOx emission limits.
  - Containership sizes increase from a maximum of 6,000 TEU in the CEQA baseline, 2012, and 2015 to 9,000 TEU in 2020, and 10,000 TEU in 2025 and 2027.
  - Emission factors are reduced in 2012-2027 over the CEQA baseline due to the use of 0.1 percent sulfur MGO for all containerships. Emission factors (in units of grams per kilowatt-hour) decrease specifically for NOx (6 percent), SOx (96 percent), PM_{10} and $PM_{2.5}$ (86 percent). Ship and tugboat emission factors are assumed to remain constant after 2012.
  - Tugboat emission factors decline according to the CARB Harbor Craft Regulation.
  - AMP reduces hoteling emissions according to the following schedule: 50 percent in 2015, 80 percent in 2020-2027.
- Locomotives
  - Emission factors are taken from the USEPA *Technical Highlights: Emission Factors for Locomotives* (USEPA, 2009d).
  - Line haul emission factors for NOx decrease 14 percent over the CEQA baseline. Emission factors decrease 10 percent in 2015, 23 percent in 2020, 25 percent in 2025, and 12 percent in 2027 over the previous study year. Emission factors for VOC, PM_{10} and $PM_{2.5}$ follow a similar trend with some differences in the magnitude of the decrease. CO emission factors do not change, and the SOx emission factor decreases by 92 percent in 2012 over the baseline, which assumes 50 percent use of ULSD (15 ppm sulfur) and 50 percent use of out-of-state diesel (350 ppm sulfur). Emission factors for switch engines decrease over time as well similar to line haul emission factors.
  - Each switch engine operates 3.6 hours per day in the CEQA baseline; 2.9 hours/day in 2012, 2015 and 2020; 4.3 hours per day in 2025, and 4.7 hours per day in 2027.

- Annual locomotives increase 32 percent over the baseline in 2012. Locomotives increase 51 percent in 2015, 8 percent in 2020, 2 percent in 2025, and 3 percent in 2027 over the previous study year.

- Cargo Handling Equipment
  - CHE emission factors are assumed to comply with the CARB Mobile Cargo-Handling Equipment at Ports and Intermodal Rail Yards Regulation.
  - Annual CHE activity increases 90 percent in 2012 over the baseline. Activity increases over the previous study year 46 percent in 2015, 8 percent in both 2020 and 2025, and 3 percent in 2027. Peak day activity increases 9 percent in 2012 over the baseline. Activity increases 31 percent in 2015, 14 percent in 2020, 7 percent in 2025, 7 percent in 2025, and 2 percent in 2027.
  - CHE emission factors decrease significantly in 2020 for all criteria pollutants (fleet average decrease of 28 percent for CO, 78 percent for HC, 95 percent for NOx, 96 percent for PM_{10} and $PM_{2.5}$). In all other study years emission factors increase between 2 percent and 14 percent due to fleet aging.
- Heavy-duty Trucks (HHDT)
  - Emission factors for HHDT are assumed to comply with the Clean Truck Program and the CARB drayage truck regulation
  - Annual HHDT trips increase by 70 percent over the baseline in 2012, and then increase 42 percent in 2015, 8 percent in 2020, 11 percent in 2025, and 4 percent in 2027 (over the previous study year). Peak day HHDT trips increase similarly, with the exception of 2012, which has 26 percent more HHDT trips than the baseline peak day.
  - The on-road driving NOx emission factor for HHDT decreases 71 percent in 2012 over the baseline, and then increases in 2015 by 15 percent due to fleet aging. Additional fleet improvements are anticipated to cause the emission factor to decrease 6 percent in 2020 and 41 percent in 2025 over the previous study year. The emission factor increases again by 2 percent over the previous study year due to fleet aging. The emission factors for other criteria pollutants follow similar trends, although the percent changes are not always identical.

CEQA Impact Determination

From a CEQA perspective, proposed Project unmitigated peak daily emissions would not exceed CEQA baseline emissions for any criteria pollutants in 2012, would exceed the NOx threshold in 2015, 2025 and 2027, and would exceed the VOC threshold in 2027. The 10 tons per year VOC threshold would not be exceeded in any study year (see Appendix E1). Therefore, from a CEQA perspective, the unmitigated air quality impacts associated with proposed Project operations would be significant for NOx in 2015, 2025 and 2027 and VOC in 2027.

Mitigation Measures

Mitigation measures to reduce air pollutant emissions from sources associated with the operation of the proposed Project would be implemented. Table 3.2-27 details how the Project mitigation measures compare to those identified in the San Pedro Bay Ports CAAP. Table 3.2-28 summarizes all operational mitigation measures and regulatory requirements included in the mitigated emission calculations.

Table 3.2-29 presents the mitigated average daily criteria pollutant emissions associated with operation of the proposed Project, after the application of **MM AQ-9 through MM AQ-16.** As discussed above, the effects of **MM AQ-11**, **MM AQ-12**, and **MM AQ-16** were not included in the emission calculations because their effectiveness has not been established. **LM AQ-1 and LM AQ-2** are lease measures that may reduce future emissions; however, because implementation may change over the life of the lease, these measures were not included in emissions calculations.

Table 3.2-27: Comparison between San Pedro Bay Ports 2010 CAAP Update Control Measures and Proposed Project Mitigation Measures

CAAP Measure #	CAAP Measure Name	CAAP Measure Description	EIS/EIR Mitigation Measure (MM)	Discussion
HDV-1	Performance Standards for On-Road Heavy-Duty Vehicles (HDVs)	This measure requires that all trucks servicing both ports comply with 2007 USEPA heavy-duty on-road emissions standards, in addition to safety and security requirements, by January 1, 2012. Incentives, grants, and financing were provided to support the required fleet turnover. This comprehensive program will maximize the associated emissions reductions and greatly reduce health risk concerns associated with trucks. The measure is being implemented through port tariffs and lease agreements.	**MM AQ-16:** Truck idling reduction measure. Within 6 months of the effective date of the Permit, the terminal operator shall ensure that truck idling is reduced to less than 30 minutes in total or 10 minutes at any given time while on the terminal through measures that include, but are not limited to, the following (1) operator shall maximize the durations when the main gates are left open, including during off-peak hours, (2) operator shall implement an appointment-based system for receiving and delivering containers to minimize truck queuing (trucks lining up to enter and exit the terminal's gate), and (3) operator shall design the main entrance and exit gates to exceed the average hourly volume of trucks that enter and exit the gates to ensure queuing is minimized.	**MM AQ-16** The terminal operator will be responsible for ensuring gate restrictions and tracking.
HDV-2	Alternative Fuel Infrastructure for Heavy-Duty Natural Gas Vehicles	In order to encourage use of alternative fueled trucks, the ports will support development of alternative-fuel infrastructure in the port complex.	No applicable measure.	**HDV-2** This will be implemented directly by the Ports. The Port of Long Beach, in conjunction with the Port of Los Angeles, recently released a RFP seeking proposals to design, construct and operate a public Liquid Natural Gas (LNG) fueling and maintenance facility on Port of Los Angeles property.
OGV-1	OGV Vessel Speed Reduction (VSR)	OGVs that call at the SPB Ports shall not exceed 12 knots (kts) within 20 nautical miles (nm) of Point Fermin (extending to 40 nm in future).	**MM AQ-10:** Vessel Speed Reduction Program. Vessels that call at the Berths 302-306 terminal shall comply with the expanded VSRP of 12 kts within 40 nm of Point Fermin and the Precautionary Area – 95 percent starting January 1, 2014.	**MM AQ-10** complies with OGV-1, which targets a 95 percent compliance rate through lease provisions.

Table 3.2-27: Comparison between San Pedro Bay Ports 2010 CAAP Update Control Measures and Proposed Project Mitigation Measures

CAAP Measure #	CAAP Measure Name	CAAP Measure Description	EIS/EIR Mitigation Measure (MM)	Discussion
OGV-2	Reduction of At-Berth OGV Emissions	The use of shore power to reduce hoteling emissions implemented at all container and cruise terminals and one liquid bulk terminal at the Port of Los Angeles	**MM AQ-9:** Alternative Maritime Power (AMP). APL ships calling at the Berths 302-306 terminal shall use AMP while hoteling in the Port in the following percentages: 70 percent starting in 2017; 95 percent in 2026.	**MM AQ-9** complies with CAAP OGV-2.
OGV-3	OGV Auxiliary Engine Fuel Standards	This measure reduces emissions from the auxiliary engines and auxiliary boilers of OGVs during their approach and departure from the ports, by switching to ≤0.2 percent sulfur distillate fuel (MGO or MDO) within 40 nm from Point Fermin. Compliance with the CARB rule limit of ≤0.1 percent sulfur distillate fuel (MGO or MDO) starts on January 1, 2012.	No applicable measure.	CARB and IMO ECA requirements have removed the need for OGV-3.
OGV-4	OGV Main Engine Fuel Standards	This measure reduces emissions from main engines of OGVs during their approach and departure from the ports, by switching to ≤0.2 percent sulfur distillate (MGO or MDO) fuel within 40 nm from Point Fermin; Compliance with the CARB rule limit of ≤0.1 percent sulfur distillate fuel (MGO or MDO) starts on January 1, 2012	No applicable measure	See above discussion for OGV-3.
OGV-5	Cleaner OGV Engines	Focuses on the early introduction and preferential deployment of vessels that comply with the Annex VI NOx and SOx standards for ECAs into the fleet that calls at the ports of Long Beach and Los Angeles. Measure seeks to maximize the number of vehicles meeting the IMO NOx limit of 3.4 g/kW-hr.	**MM AQ-11:** Cleaner OGV Engines. Targets compliance with IMO Tier 3 NOx standards by 2016.	**MM AQ-11** fully complies with OGV-5.

Table 3.2-27: Comparison between San Pedro Bay Ports 2010 CAAP Update Control Measures and Proposed Project Mitigation Measures

CAAP Measure #	CAAP Measure Name	CAAP Measure Description	EIS/EIR Mitigation Measure (MM)	Discussion
OGV-6	OGV Engine Emission Reduction Technology Improvements	This measure seeks to encourage demonstration and deployment of cleaner OGV engine technologies that are validated through the Technology Advancement Program (TAP) or by the regulatory agencies. The goal of this measure is to reduce DPM and NOx emissions of in-use vessels.	**MM AQ-12**: OGV Engine Emission Reduction Technology Improvements. Seeks to reduce emissions from large marine diesel engines using new technologies developed through the TAP program including: selective catalytic reduction technology, direct water injection, exhaust gas recirculation fuel water emulsion, in-line fuel emulsification technology, humid air motor, diesel particulate filters (DPFs) or exhaust scrubbers exhaust gas recirculation, common rail selective catalytic reduction, low NOx burners for boilers, continuous water injection, implement fuel economy standards by vessel class and engine slide valves	**MM AQ-12** fully complies with OGV-6
CHE-1	Performance Standards for CHE	By the end of 2010, all yard tractors will meet, at a minimum, the USEPA 2007 on-road or Tier 4 off-road standards. By the end of 2012, all pre-2007 on-road or pre-2004 off-road top picks, forklifts, reach stackers, RTGs, and straddle carriers <= 750 hp will meet at a minimum the USEPA 2007 on-road or Tier 4 off-road engine standards. By the end of 2015, all CHE with engines >750hp will meet at a minimum the USEPA Tier 4 off-road engine standards. Until equipment is replaced with Tier 4, all CHE with engines >750hp will be equipped with the cleanest available VDECs.	**MM AQ-13:** Yard Tractors. All yard tractors operated at the Berths 302-306 terminal shall meet USEPA Tier 4 non-road or 2007 on-road emission standards by the end of 2013.	**MM AQ-13** complies with CHE-1.
			MM AQ-14: Yard Equipment (Terminal). - By the end of 2012, all terminal equipment less than 750 hp other than yard tractors shall meet the USEPA Tier 4 on-road or Tier 4 non-road engine standards. - The highest VDECS available must be installed on all Tier 3 equipment by the end of 2012. - By the end of 2015, all Tier 3 terminal equipment other than yard tractors shall meet 2010 on-road standards.	**MM AQ-14** complies with CHE-1.
			MM AQ-15: Yard Equipment (Rail Yard). Equivalent to **MM AQ-14.**	**MM AQ-15** complies with CHE-1.

Table 3.2-27: Comparison between San Pedro Bay Ports 2010 CAAP Update Control Measures and Proposed Project Mitigation Measures

CAAP Measure #	CAAP Measure Name	CAAP Measure Description	EIS/EIR Mitigation Measure (MM)	Discussion
HC-1	Performance Standards for Harbor Craft	All harbor craft operating in the ports of Long Beach and Los Angeles are required to comply with the CARB harbor craft (HC) regulation. In addition, by 2008 all HC home-ported in the San Pedro Bay will meet USEPA Tier 2 standards for harbor craft, or equivalent reductions. After Tier 3 engines become available between 2009 and 2014, within five years all HC homebased in the San Pedro Bay will be repowered with the new engines. All tugs will use shore power while at their home port location.	No mitigation assumed	This measure is a Port-wide measure. Terminal operators and shipping lines do not have a direct contractual relationship with tugboat operators and may be limited in providing the infrastructure necessary to implement HC-1. The Ports of Los Angeles and Long Beach shall implement HC-1 through a Port-wide Program as described in the CAAP. The Project air quality analysis assumes that a portion of the Port tugboat fleet will be re-powered through the CARB Carl Moyer Program.
RL-1	PHL Rail Switch Engine Modernization	This measure will be implemented through the second amendment to the operating agreement between the Port of Los Angeles, Port of Long Beach, and Pacific Harbor Line (PHL). By 2008, all existing switch engines in the ports have been replaced with at least Tier 2 engines and will use emulsified fuels as available or other equivalently clean alternative diesel fuels. Any new switch engine acquired after the initial replacement must meet USEPA Tier 3 standards or a NOx standard of 3 g/bhp-hr and a DPM standard of 0.0225 g/bhp-hr All switch engines will have 15-minute idling limit devices installed and operational.	No mitigation assumed.	

Table 3.2-27: Comparison between San Pedro Bay Ports 2010 CAAP Update Control Measures and Proposed Project Mitigation Measures

CAAP Measure #	CAAP Measure Name	CAAP Measure Description	EIS/EIR Mitigation Measure (MM)	Discussion
RL-2	Class 1 Line-haul and Switcher Fleet Modernization	Effects only existing Class 1 railroad operations on Port property. Lays out stringent goals for switcher, helper, and long haul locomotives operating on Port properties. By 2011, all diesel-powered Class 1 switcher and helper locomotives entering Port facilities will be 90 percent controlled for PM and NO_X, will use 15-minute idle restrictors, and after January 1, 2007, the use of ultra-low sulfur diesel (ULSD) fuels. -minute idle restrictors. Specifically, by 2010, all Class I locomotives will meet emissions equivalent to Tier 2 standards. By 2023, all Class I locomotives will meet emissions equivalent to Tier 3 standards.	No mitigation assumed.	RL-2 affects only existing Class 1 rail yards (Class I rail yards are BNSF and UP). The Ports of Los Angeles and Long Beach shall implement RL-2 through a Port-wide Program as described in the CAAP. The Port is meeting with the Class I rail yards to discuss implementation of the Port-wide Program RL-3 effects all new or redeveloped rail yards. Mitigation for the Project on-dock rail yard is applied under RL-3 below.
RL-3	New and Redeveloped Near-Dock Rail Yards	New rail facilities, or modifications to existing rail facilities located on Port property, will incorporate the cleanest locomotive technologies, meet the requirements specified in CAAP-RL2, utilize "clean" CHE and HDV, and utilize available "green-container" transport systems.	No mitigation assumed.	The Project analysis assumes the APL on-dock rail yard remains at its current physical capacity.

Table 3.2-28: Regulations, Agreements, and Mitigation Measures Assumed as Part of the Proposed Project with Mitigation Emissions

Container Ships	Tugboats	Terminal Equipment	Trucks	Trains
Vessel Speed Reduction Program – 95 percent compliance to 20nm through 2012 (assumed to remain at this level until **MM AQ-10** takes effect in 2014 out to 40nm).	**California Diesel Fuel Regulations** – 500-ppm sulfur starting January 1, 2006, and 15-ppm sulfur starting September 1, 2006. **Engine Standards for Marine Diesel Engines** – Tier 2 standards gradually phased in due to normal tugboat fleet turnover.	**CARB Regulation for Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards** – Tier 4 standards phased in according to the regulation **California Diesel Fuel Regulations** – 15-ppm sulfur starting September 1, 2006 .	**Emission Standards for On-road Trucks** – Tiered standards gradually phased in over all years due to normal truck fleet turnover. **California Diesel Fuel Regulations** – 15-ppm sulfur starting September 1, 2006. **AB 2650** – On-terminal trucks are subject to idling limits. **Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling** – Diesel trucks are subject to idling limits **CARB Drayage Regulation –** Starting in 2009, phase in state and federal emission standards **Clean Truck Program –** by October 2008, all pre-1989 trucks are banned from port services. By January 1, 2012, all trucks that do not meet 2007+ on-road HHDV standards are banned.	**Emission Standards for Locomotives** – Tier 0, 1, and 2 standards gradually phased in over all years due to normal locomotive fleet turnover. **2012 CARB/Railroad Statewide Agreement** – Reduced line haul locomotive idling times assumed to take effect starting in 2006. **Switch Locomotive Modernization Agreement** – Tier 2 switch locomotive starting in 2008. This supersedes the Emission Standards for Locomotives (above). Applies only to the APL on-dock rail yard switch locomotive.. **Non-road Diesel Fuel Rule** – 500-ppm sulfur starting June 1, 2007, and 15-ppm sulfur starting January 1, 2012. Applies to all line-haul locomotives. **California Diesel Fuel Regulations** – 15-ppm sulfur starting January 1, 2007. Applies to all switch locomotives.
MM AQ-9: Alternative Maritime Power (AMP) –70 percent compliance by 2017; 95 percent compliance by 2026. **MM AQ-10: Expanded VSR Program** – 95 percent compliance by 2014 out to 40nm.		**MM AQ-13: Yard Tractors** – By the end of 2013, all yard tractors operated at the terminal shall meet USEPA Tier 4 non-road or 2007 on-road emission standards. **MM AQ-14: Yard Equipment (Terminal)** – By end of 2012 all diesel equipment less than 750 hp shall meet the USEPA Tier 4 on-road or Tier 4 non-road engine standards. By the end of 2012 all Tier 3 equipment shall have the highest available VDECS installed. By the end of 2015, all Tier 3 equipment must meet 2010 on-road standards. **MM AQ-15 – Yard Equipment (Rail Yard)** Equivalent to **MM AQ-14.**		

Table 3.2-28: Regulations, Agreements, and Mitigation Measures Assumed as Part of the Proposed Project with Mitigation Emissions

Container Ships	Tugboats	Terminal Equipment	Trucks	Trains
MM AQ-11: Cleaner OGV Engines **MM AQ-12: Engine Emissions Reduction Technology Improvements** **LM AQ-1: Periodic Review of New Technology and Regulations** – potentially applies to all source types. **LM AQ-2: Substitution Mitigation Measure** – potentially applies to all source types.			**MM AQ-16: Truck Idling Reduction Measure**	

Notes:

a) Regional power plant emissions from AMP generation were calculated using emission factors provided by the SCAQMD. These factors were assumed constant for all Project study years and, therefore, do not assume any future changes in applicable regulations.

b) These mitigation measures were not included in the calculations because their effectiveness has not been established.

The following mitigation measures would reduce criteria pollutant emissions associated with proposed Project operations. These mitigation measures will be implemented by the responsible parties identified in Section 3.2.4.5.

SHIPS

MM AQ-9: ***Alternative Maritime Power (AMP).*** APL ships calling at Berths 302-306 must use AMP at the following percentages while hoteling in the Port:

- 2017: 70 percent of total ship calls
- 2026: 95 percent of total ship calls

While the terminal is expected to meet 95 percent AMP, certain events such as equipment failure may mean less than 95 percent of ships would comply with this measure in certain years (the Port expects compliance to be 92 to 93 percent in such cases). A compliance change of 2 to 3 percent would not affect significance findings in this analysis.

Use of AMP would enable ships to turn off their auxiliary engines during hoteling, leaving the boiler as the only source of direct emissions. An increase in regional power plant emissions associated with AMP electricity generation is also assumed. Including the emissions from ship boilers and regional power plants, a ship hoteling with AMP reduces its criteria pollutant emissions 71 to 93 percent, depending on the pollutant, compared to a ship hoteling without AMP and burning residual fuel in the boilers.

MM AQ-10: ***Vessel Speed Reduction Program.*** All ships calling at Berths 302-306 shall comply with the expanded VSRP of 12 knots between 40 nm from Point Fermin and the Precautionary Area in the following implementation schedule:

- 2014 and thereafter: 95 percent

Currently, the VSR program is a voluntary program. This mitigation measure requires APL to participate in the VSR program at higher rates than it currently is achieving. The average cruise speed for a container vessel ranges from about 18 to 25 knots, depending on the size of a ship (larger ships generally cruise at higher speeds). For a ship with a 24-knot cruise speed, for example, a reduction in speed to 12 knots reduces the main engine load factor from 83 percent to 10 percent, due to the cubic relationship of load factor to speed. The corresponding reduction in overall container ship transit emissions (main engine, auxiliary engines, and boiler), from the SCAQMD overwater boundary to the berth, is approximately 19 percent for VOC, 37 percent for CO, 56 percent for NO_X, 58 percent for SO_X, and 53 percent for PM_{10}.

MM AQ-11: Cleaner OGV Engines.

The Tenant shall seek to maximize the number of vessels calling at the Berths 302-306 terminal that meet the IMO NOx limit of 3.4 g/kW-hr. The IMO Tier 2 NOx standards came into effect January 1, 2011 for new vessels. IMO Tier 3 NOx standards will become effective January 1, 2016 for new vessels operating in Emission Control Areas. When ordering new ships bound for the Port of Los Angeles, the purchaser shall confer with the ship designer and engine manufacturer to determine the feasibility of incorporating all emission reduction technology and/or design options.

On an individual OGV basis, a 15 percent reduction in NOx emissions will result from compliance with the IMO Tier 2 standard compared to Tier 1 standard and an 80 percent reduction in NOx emissions will result from compliance with the IMO Tier 3 standard compared to Tier 1 standard. However for the purposes of this analysis the benefits of this measure are not quantified.

MM AQ-12: ***OGV Engine Emissions Reduction Technology Improvements.*** When using or retrofitting existing ships bound for the Port of Los Angeles, the Tenant shall determine the feasibility of incorporating all emission reduction technology and/or design options . Such technology shall be designed to reduce criteria pollutant emissions (NO_X and DPM). Some examples of potential methods for reducing emissions from large marine diesel engines include:

- Direct Water Injection
- Fuel Water Emulsion
- Humid Air Motor
- Exhaust Gas Recirculation
- Selective Catalytic Reduction
- Continuous Water Injection
- Slide Valves

This measure focuses on reducing DPM and NO_X emissions from the existing fleet of vessels. This measure is coupled with the Port's Technology Advancement Program (TAP) which will evaluate potential technologies. The Tenant will work with the Port in their effort to streamline the evaluation process of emissions reduction technologies under the TAP program and the verification process through CARB in order to achieve the greatest level of emissions reduction from ocean going vessels as quickly as possible.

Because the effectiveness of this measure has not been established, this measure is not quantified in this study.

YARD EQUIPMENT

MM AQ-13: ***Yard Tractors at Berths 302-306 Terminal.*** By the end of 2013, all yard tractors operated at the terminal shall meet USEPA Tier 4 non-road or 2007 on-road emission standards.

In 2013, this measure would require the all yard tractors to meet the equivalent of the Tier 4 diesel engine standards. This study assumes that this requirement would be met by replacing the yard tractor engines or adding diesel emission controls to meet the equivalent of the Tier 4 diesel engine standards.

MM AQ-14: ***Yard Equipment at Berth 302-306 Rail Yard.*** All diesel-powered equipment operated at the Berths 302-306 terminal rail yard shall implement the requirements discussed below in **MM AQ-15.**

MM AQ-15: ***Yard Equipment at Berths 302-306 Terminal.***

- By the end of 2012: all terminal equipment equipped with Tier 1 and 2 engines less than 750hp must meet 2010 on-road or Tier 4 standards by 2012.
- By the end of 2012, the highest available Verified Diesel Emissions Controls (VDECs) shall be installed on all Tier 3 equipment.
- By the end of 2015: all terminal equipment equipped with Tier 3 engines shall meet USEPA Tier 4 non-road engine standards.

For other types of terminal equipment, this measure would provide a health risk benefit if some of the equipment purchased in accordance with this measure were alternative fueled. However, this study conservatively assumed that all equipment purchased in accordance with this measure would be diesel fueled. For diesel-fueled equipment, this measure would provide a short-term reduction in criteria pollutant emissions (roughly until 2015, although it varies by equipment type) compared to unmitigated emissions. Eventually, however, the CARB Regulation for Mobile Cargo-Handling Equipment (CHE) at Ports and Intermodal Rail Yards (discussed in Section 3.2.3.2) would cause the unmitigated fleet to “catch up” to the mitigated fleet, at which point there would be no substantial difference in emissions.

TRUCKS

MM AQ-16: ***Truck Idling Reduction Measure.*** Within six months of the effective date of the lease agreement and thereafter for the remaining term of the Permit and any holdover, the terminal operator shall ensure that truck idling is reduced to less than 30 minutes in total or 10 minutes at any given time while on the terminal through measures that include but are not limited to, the following:

1) The operator shall maximize the durations when the main gates are left open, including during off-peak hours (6pm to 7am)
2) The operator shall implement an appointment-based system for receiving and delivering containers to minimize truck queuing (trucks lining up to enter and exit the terminal's gate)
3) The operator shall design the main entrance and exit gates to exceed the average hourly volume of trucks that enter and exit the gates (truck flow capacity) to ensure queuing is minimized.

This measure could potentially reduce on-terminal truck idling emissions. Because the project design includes an improved entrance, the impact on truck idling time at the gate is included in both the unmitigated and mitigated scenarios.

LEASE MEASURES

The following measures are lease measures that would be included in the lease for Berths 302-306 due to projected future emissions levels associated with the proposed Project. The measures do not meet all of the criteria for CEQA or NEPA mitigation measures but are considered important lease measures to reduce future emissions. These lease obligations are distinct from the requirement of CEQA or NEPA mitigation measures to address impacts of potential subsequent discretionary Project approvals.

LM AQ-1: ***Periodic Review of New Technology and Regulations.*** The Port shall require the Berths 302-306 tenant to review, in terms of feasibility and benefits, any Port-identified or other new emissions-reduction technology, and report to the Port. Such technology feasibility reviews shall take place at the time of the Port's consideration of any lease amendment or facility modification for the proposed Project site. If the technology is determined by the Port to be feasible in terms of cost, technical and operational feasibility, the tenant shall work with the Port to implement such technology.

Potential technologies that may further reduce emission and/or result in cost-savings benefits for the tenant may be identified through future work on the CAAP, Technology Advancement Program, Zero Emissions Technology Program, and terminal automation. Over the course of the lease, the tenant and the Port shall work together to identify potential new technologies. Such technology shall be studied for feasibility, in terms of cost, technical and operational feasibility, and emissions reduction benefits.

As partial consideration for the Port agreement to issue the permit to the tenant, the tenant shall implement not less frequently than once every 7 years following the effective date of the permit, new air quality technological advancements, subject to mutual agreement on operational feasibility and cost sharing, which shall not be unreasonably withheld.

The effectiveness of this measure depends on the advancement of new technologies and the outcome of future feasibility or pilot studies. As discussed in Section 3.2.4.1, if the tenant requests future Project changes that would require environmental clearance and a lease amendment, future CAAP mitigation measures would be incorporated into the new lease at that time.

LM AQ-2: ***Substitution of New Technology.*** If any kind of technology becomes available and is shown to be as good or as better in terms of emissions reduction performance than the existing measure, the technology could replace the existing measure pending approval by the Port of Los Angeles. The technology's emissions reductions must be verifiable through USEPA, CARB, or other reputable certification and/or demonstration studies to the Port's satisfaction.

Table 3.2-29: Average Daily[a] Operational Emissions With Mitigation – Proposed Project

Emission Source	Average Daily [e] Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	PM_{25}
Project Year 2012						
Ships – Transit[b] and Anchoring	123	229	1,977	51	36	29
Ships – Hoteling[c]	56	142	1,563	91	37	29
Tugboats	3	15	57	0	2	2
Trucks[b]	117	358	1,336	3	74	22
Trains[b]	75	280	1,495	1	42	39
Terminal Equipment	25	172	686	1	21	19
Worker Trips	20	208	17	0	33	7
Total – Project Year 2012[d]	**419**	**1,404**	**7,130**	**148**	**245**	**147**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(80)	(462)	(15)	(2,442)	(317)	(287)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	419	1,404	7,130	148	245	147
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2015						
Ships – Transitb and Anchoring	149	270	1,946	49	38	31
Ships – Hotelingc	40	106	1,126	85	30	24
Tugboats	4	20	23	0	0	0
Trucksb	207	638	2,135	4	110	37
Trainsb	89	410	1,977	2	52	48
Terminal Equipment	29	246	270	1	12	11
Worker Trips	26	260	20	1	52	11
Total – Project Year 2015[d]	**545**	**1,949**	**7,496**	**142**	**295**	**161**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	46	84	351	(2,448)	(267)	(274)
Thresholds	55	550	55	150	150	55
Significant?	No	No	**Yes**	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	411	1,419	6,472	120	231	134
Project minus NEPA Baseline	134	530	1,025	21	63	26
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	**Yes**	No	No	No

Table 3.2-29: Average Daily[a] Operational Emissions With Mitigation – Proposed Project

Emission Source	Average Daily [e] Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	PM_{25}
Project Year 2020						
Ships – Transit[b] and Anchoring	184	331	2,364	59	47	37
Ships – Hoteling[c]	21	61	597	67	20	16
Tugboats	5	25	28	0	1	1
Trucks[b]	235	755	2,185	5	126	46
Trains[b]	63	440	1,648	2	38	35
Terminal Equipment	19	249	75	2	3	2
Worker Trips	21	192	14	1	55	11
Total – Project Year 2020[d]	**548**	**2,052**	**6,911**	**135**	**289**	**149**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	49	186	(234)	(2,455)	(273)	(286)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	379	1,437	5,237	107	206	108
Project minus NEPA Baseline	169	615	1,674	27	84	40
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	No	No
Project Year 2025						
Ships – Transit[b] and Anchoring	221	392	2,757	68	55	44
Ships – Hoteling[c]	17	48	474	53	16	12
Tugboats	6	28	31	0	1	1
Trucks[b]	184	590	1,572	5	135	48
Trains[b]	48	449	1,281	2	28	26
Terminal Equipment	22	281	84	2	3	3
Worker Trips	18	149	10	1	59	12
Total – Project Year 2025[d]	**514**	**1,936**	**6,211**	**130**	**297**	**146**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	15	71	(935)	(2,460)	(265)	(288)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	360	1,364	5,007	118	213	110
Project minus NEPA Baseline	154	572	1,204	12	84	36
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	No	No

Table 3.2-29: Average Daily[a] Operational Emissions With Mitigation – Proposed Project

Emission Source	Average Daily [e] Emissions (lb/day)					
	VOC	CO	NO_X	SO_X	PM_{10}	PM_{25}
Project Year 2027						
Ships – Transit[b] and Anchoring	241	426	2,994	73	59	47
Ships – Hoteling[c]	9	30	255	45	11	9
Tugboats	6	30	34	0	1	1
Trucks[b]	192	616	1,654	5	140	50
Trains[b]	44	461	1,166	2	25	23
Terminal Equipment	19	264	80	2	3	2
Worker Trips	17	139	10	1	62	13
Total – Project Year 2027[d]	**527**	**1,967**	**6,192**	**128**	**302**	**146**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	28	101	(953)	(2,462)	(260)	(288)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	360	1,373	4,951	118	212	109
Project minus NEPA Baseline	168	594	1,241	10	89	37
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	No	No

Notes:

a) Emissions represent annual emissions divided by 365 days per year of operation.

b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.

c) Hoteling emissions include regional power plant emissions from AMP electricity generation.

d) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.

e) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Table 3.2-30 presents the mitigated peak-daily criteria pollutant emissions associated with operation of the proposed Project, after the application of **MM AQ-9 through MM AQ-16**. In most cases, the mitigation effectiveness of these measures on peak daily emissions is similar to that of average daily emissions.

Table 3.2-30: Peak Daily[a] Operational Emissions With Mitigation – Proposed Project

Emission Source	Peak Daily Emissions (lb/day)[e]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2012						
Ships – Transit[b] and Anchoring	205	381	3,278	84	60	48
Ships – Hoteling[c]	87	223	2,461	140	58	46
Tugboats	5	23	89	0	4	3
Trucks[d]	161	494	1,844	4	102	30
Trains[d]	86	319	1,703	1	48	44
Terminal Equipment	47	280	1,115	1	36	33
Worker Trips	29	296	24	0	47	10
Total – Project Year 2012[d]	**620**	**2,016**	**10,515**	**231**	**354**	**214**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(304)	(1,523)	(2,611)	(5,163)	(761)	(648)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	620	2,016	10,515	231	354	214
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2015						
Ships – Transit[b] and Anchoring	425	761	5,411	133	107	85
Ships – Hoteling[c]	59	157	1,663	121	44	35
Tugboats	9	50	58	0	1	1
Trucks[d]	286	880	2,948	6	153	51
Trains[d]	99	453	2,186	2	57	53
Terminal Equipment	48	354	486	2	22	20
Worker Trips	35	347	27	1	69	14
Total – Project Year 2015[d]	**962**	**3,002**	**12,779**	**264**	**452**	**258**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	37	(537)	(347)	(5,130)	(663)	(604)
Thresholds	55	550	55	150	150	55

Table 3.2-30: Peak Daily[a] Operational Emissions With Mitigation – Proposed Project

Emission Source	Peak Daily Emissions (lb/day)[e]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	606	2,013	9,474	190	333	196
Project minus NEPA Baseline	355	989	3,306	75	120	63
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	No	**Yes**
Project Year 2020						
Ships – Transit[b] and Anchoring	488	849	5,827	138	116	93
Ships – Hoteling[c]	25	70	687	77	23	18
Tugboats	10	53	60	0	1	1
Trucks[d]	325	1,043	3,017	7	174	63
Trains[d]	68	480	1,797	2	42	38
Terminal Equipment	26	350	106	2	4	4
Worker Trips	29	263	19	1	76	16
Total – Project Year 2020[d]	**972**	**3,109**	**11,513**	**227**	**436**	**233**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	47	(430)	(1,613)	(5,167)	(680)	(629)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	546	1,964	7,469	165	286	151
Project minus NEPA Baseline	425	1,144	4,044	62	150	83
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	**Yes**	**Yes**
Project Year 2025						
Ships – Transit[b] and Anchoring	598	1,039	7,122	166	142	113
Ships – Hoteling[c]	27	65	700	73	22	17
Tugboats	11	56	63	0	2	1
Trucks[d]	254	815	2,171	7	187	67
Trains[d]	54	509	1,448	2	31	29
Terminal Equipment	31	393	118	2	5	4
Worker Trips	24	204	14	1	81	17
Total – Project Year 2025[d]	**998**	**3,081**	**11,637**	**251**	**469**	**248**

Table 3.2-30: Peak Daily[a] Operational Emissions With Mitigation – Proposed Project

Emission Source	Peak Daily Emissions (lb/day)[e]					
	VOC	**CO**	**NO_X**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	74	(458)	(1,489)	(5,143)	(646)	(614)
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	504	1,803	6,810	162	288	148
Project minus NEPA Baseline	495	1,278	4,827	89	182	101
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	**Yes**	**Yes**
Project Year 2027						
Ships – Transit[b] and Anchoring	598	1,039	7,122	166	142	113
Ships – Hoteling[c]	14	47	400	68	17	14
Tugboats	12	57	64	0	2	1
Trucks[d]	265	851	2,283	7	194	70
Trains[d]	50	537	1,351	2	29	27
Terminal Equipment	27	369	112	2	4	4
Worker Trips	22	188	13	1	84	17
Total – Project Year 2027[d]	**988**	**3,088**	**11,345**	**247**	**471**	**246**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	64	(451)	(1,781)	(5,147)	(645)	(617)
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	506	1,834	6,780	163	289	147
Project minus NEPA Baseline	482	1,254	4,565	84	181	98
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	**Yes**	**Yes**

Notes:

a) Emissions assume the simultaneous occurrence of maximum theoretical daily equipment activity levels. Such levels would rarely occur during day-to-day terminal operations.
b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.
c) Hoteling emissions include regional power plant emissions from AMP electricity generation.
d) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.
e) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Residual Impacts

From a CEQA perspective, proposed Project peak daily emissions after mitigation would not exceed CEQA baseline emissions for CO, NOx, SOx, PM_{10} or $PM_{2.5}$ in any of the five proposed Project study years. Proposed Project peak daily emissions would continue to exceed the VOC peak daily threshold in 2027. In addition, peak daily emissions would slightly increase and exceed the VOC peak daily threshold in 2025 due to the decreased container ship engine efficiency at low speeds (VSR). In 2027, the almost 23 percent decrease in the container ship NOx emissions results in an overall decrease in ozone precursor emissions.

Annual emissions would not exceed the 10 tons per year VOC threshold in any proposed Project study year. Therefore, from a CEQA perspective, the mitigated air quality impacts associated with proposed Project operations would be less than significant for NOx, CO, SO_X, PM_{10}, and $PM_{2.5}$ in all study years. Mitigated air quality impacts associated with proposed Project operations would remain significant and unavoidable for VOC emissions in 2025 and 2027.

NEPA Impact Determination

From a NEPA perspective, proposed Project unmitigated peak daily emissions would exceed the CO, VOC, NOx, PM_{10} and $PM_{2.5}$ thresholds in 2015, 2020, 2025, and 2027 and the SOx threshold in 2025 and 2027. In addition, annual VOC emissions would exceed the 10 tpy threshold in 2015, 2020, 2025, and 2027. Therefore, from a NEPA perspective, the unmitigated air quality impacts associated with proposed Project operations would be significant for CO, VOC, NOx, PM_{10} and $PM_{2.5}$ in 2015, 2020, 2025, and 2027 and for SOx in 2025 and 2027.

Mitigation Measures

Mitigation measures to reduce air pollutant emissions from sources associated with the operation of the proposed Project would be implemented. Table 3.2-27 details how the Project mitigation measures compare to those identified in the San Pedro Bay Ports CAAP Update (POLA and POLB, 2010). Table 3.2-28 summarizes all operational mitigation measures and regulatory requirements included in the mitigated emission calculations.

Table 3.2-30a presents the mitigated average daily criteria pollutant emissions associated with operation of the proposed Project, after the application of **MM AQ-9 through MM AQ-16**. As discussed above, the effects of **MM AQ-11**, **MM AQ-12**, and **MM AQ-16** were not included in the emission calculations because their effectiveness has not been established. **LM AQ-1 and LM AQ-2** are lease measures that may reduce future emissions; however, because implementation may change over the life of the leases, these measures were not included in emissions calculations. Table 3.2-30b presents the mitigated combined peak daily criteria pollutant emissions associated with construction and operation of the proposed Project.

Residual Impacts

From a NEPA perspective, proposed Project peak daily emissions after mitigation would exceed SCAQMD thresholds for VOC, CO, NOx, and $PM_{2.5}$ in 2015, 2020, 2025, and 2027. Proposed Project peak daily emissions would exceed SCAQMD thresholds for PM_{10} in 2020, 2025 and 2027. In addition, annual VOC emissions would exceed the 10 tpy threshold in 2015, 2020, 2025, and 2027. The unmitigated SOx impacts in 2025 and 2027, and the unmitigated PM_{10} impact in 2015 would be reduced to less than significant levels. Annual VOC emissions would remain significant in 2015, 2020, 2025, and 2027 (see Appendix E1). The proposed Project peak daily emissions after mitigation would remain significant and unavoidable for VOC, CO, NOx, and $PM_{2.5}$ in 2015, 2020, 2025, and 2027 and PM_{10} in 2020, 2025 and 2027.

Figures 3.2-1, 3.2-2, and 3.2-3 plot the emission trends of NO_X, VOC, and PM_{10}, respectively, for the proposed Project CEQA and NEPA impacts, both with and without mitigation. For comparison, the SCAQMD (CEQA) significance threshold is also shown in the figures. Note that the CEQA and NEPA impacts are the proposed Project emissions minus the CEQA or NEPA baseline emissions, respectively. Therefore, the impacts are different under CEQA and NEPA.

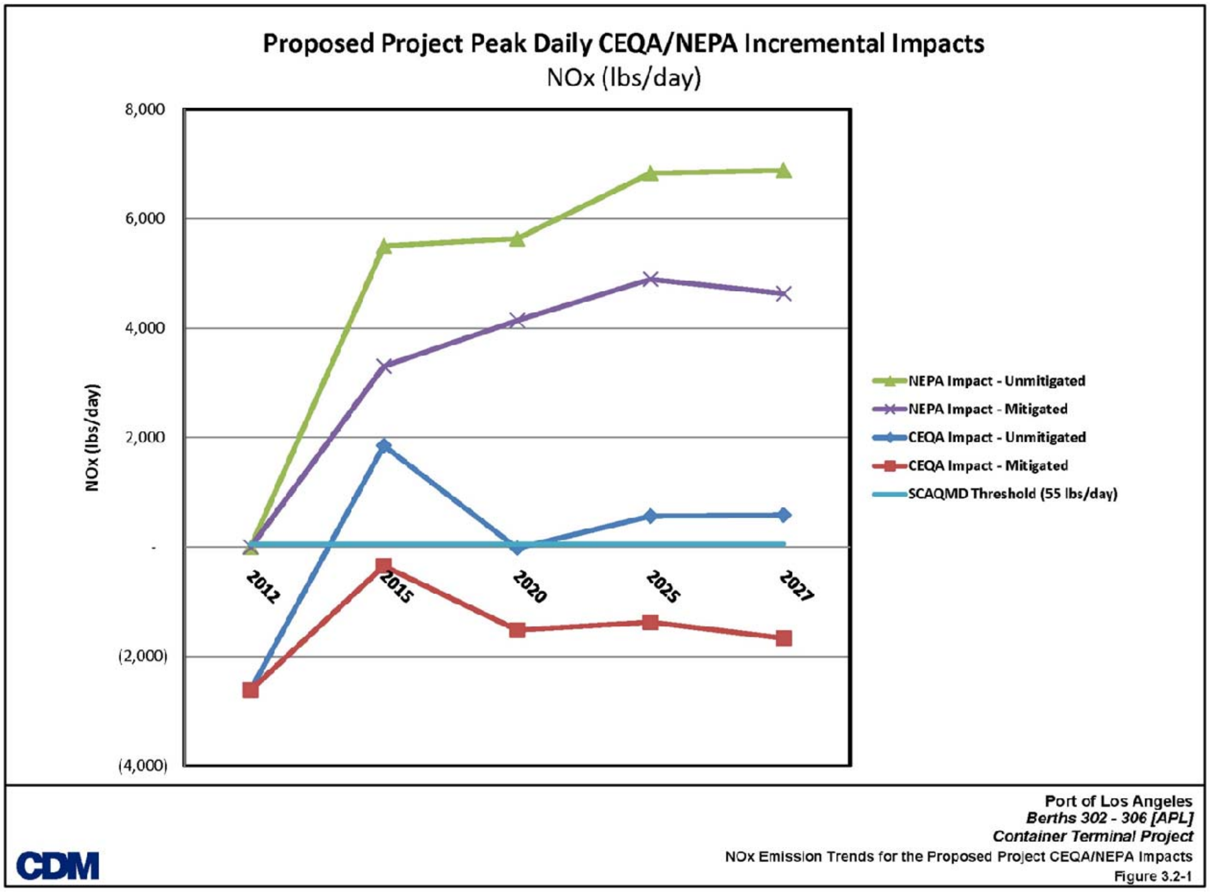
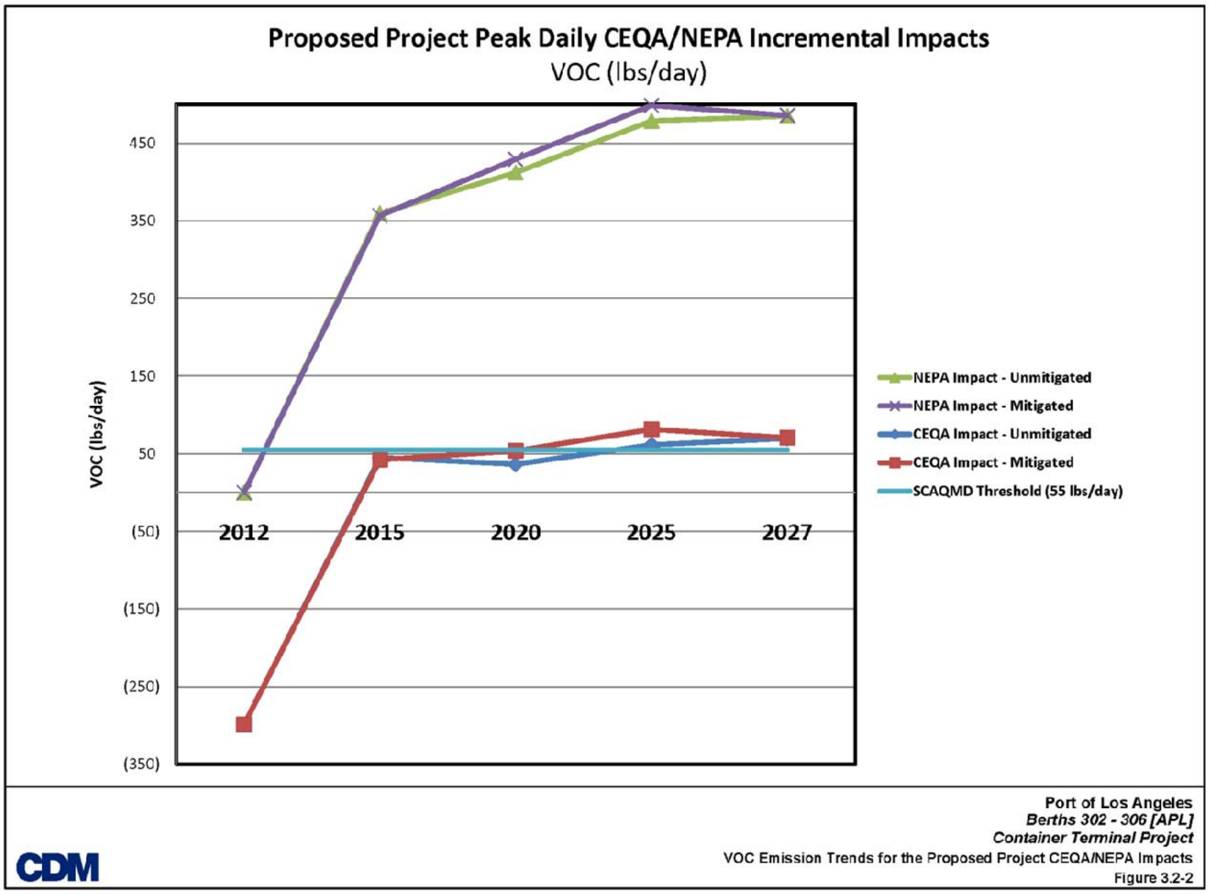


Figure 3.2-1: NOx Emission Trends for the Proposed Project CEQA/NEPA Impacts



1 **Figure 3.2-2: VOC Emission Trends for the Proposed Project CEQA/NEPA Impacts**

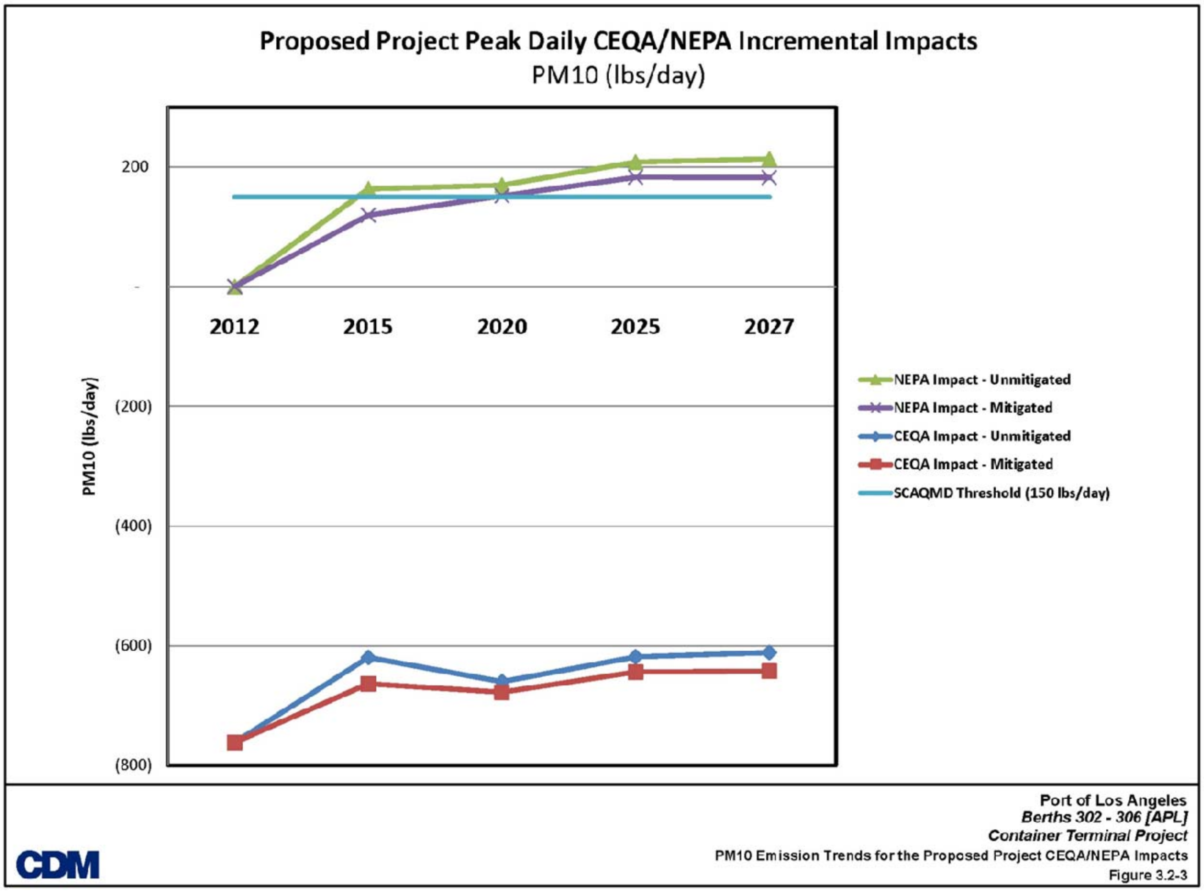


Figure 3.2-3: PM_{10} Emission Trends for the Proposed Project CEQA/NEPA Impacts

Impact AQ-4: Proposed Project operations would result in off-site ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-19.

Dispersion modeling of on-site and off-site Project operational emissions was performed to assess the impact of the proposed Project on local ambient air concentrations.

The USEPA dispersion model AERMOD, version 09292, was used to predict maximum ambient pollutant concentrations at or beyond the proposed Project site. A summary of the dispersion modeling results is presented here, and the complete dispersion modeling report is included in Appendix E2.

The analysis modeled peak 1-hour and annual NO_X emissions, peak 1-hour and 8-hour CO emissions, and peak daily (24-hour) and annual PM_{10} and $PM_{2.5}$ emissions. Emissions from marine vessels, terminal equipment, trains, trucks and worker trips were modeled. Emissions were estimated for all sources for the milestone years 2012, 2015, 2020, 2025, and 2027. The CEQA or NEPA baseline emissions were subtracted from the proposed Project emissions in each year to determine the proposed Project's impacts; and the highest overall incremental impact year for each pollutant was used in the dispersion modeling.

The EPA released a memorandum on the federal 1-hour NO_2 standard on June 28, 2010. The NO_2 standard is attained when the 3-year average of the 98^{th}-percentile of the annual distribution of daily maximum 1-hour concentrations does not exceed 100 ppb. EPA released clarifications to the memorandum on March 1, 2011 and stated that an acceptable approach to combining the modeled Project impact and ambient background would be to use the monitored NO_2 design value for the Federal standard (the 98^{th} percentile of the annual distribution of daily maximum 1-hour values averaged across the most recent three years of monitored data). This approach was used in the following analysis.

As noted in the Methodology discussion in Section 3.2.4.1.2, operational emissions of criteria pollutants from cargo handling equipment would be lower with an automated cargo handling system than with the conventional handling system analyzed above. Therefore, potential impacts associated with the automated cargo handling system would be less than shown below.

The analysis did not include modeling of SO_2, since project emissions of SO_2 were always less than the CEQA baseline emissions. Furthermore, since Los Angeles County is an attainment area for SO_2, modeling these emissions is not warranted. The background concentration for SO_2 already met the state and national ambient air quality standards. Therefore, decreases in SO_2 emissions would continue to demonstrate attainment with these standards. The impacts associated with SO_2 concentrations would be less than significant.

CEQA Impact Determination

Table 3.2-31 shows the maximum off-site NO_2, SO_2, and CO concentrations predicted for the proposed Project without mitigation. The table indicates that the maximum State 1-hour NO_2 concentration of 476 µg/m^3 would exceed the SCAQMD significance threshold of 339 µg/m^3. The maximum Federal 1-hour NO_2 concentration would exceed the NAAQS value of 188 µg/m^3. The maximum annual NO_2 concentration of 85 µg/m^3 would exceed the state threshold of 57 µg/m^3.

The maximum 1-hour and 8-hour CO concentrations from operational emissions of the proposed Project would be well below the SCAQMD significance thresholds.

Table 3.2-32 shows the maximum CEQA increment (proposed Project minus CEQA baseline) for PM_{10} and $PM_{2.5}$. Increments of PM_{10} and $PM_{2.5}$ concentrations were obtained by subtracting the CEQA baseline concentrations from the proposed Project concentrations at each receptor. The maximum increment among all receptors was selected for comparison with the SCAQMD threshold.

The CEQA increments for 24-hour and annual PM_{10} concentrations are predicted to be 0.6 and 0.7 µg/m^3 respectively. Neither increment exceeds the SCAQMD PM_{10} thresholds of 2.5 and 1.0 µg/m^3 respectively for the proposed Project operations.

The CEQA increment for 24-hour $PM_{2.5}$ concentration is predicted to be 0.1 µg/m^3. The 24-hour increment does not exceed the SCAQMD $PM_{2.5}$ threshold of 2.5 µg/m^3 for the proposed Project operations.

Maximum off-site ambient pollutant concentrations associated with the proposed Project operations would be significant under CEQA for Federal and state 1-hour NO_2 and state annual NO_2.

From a CEQA perspective, the 24-hour $PM_{2.5}$ CEQA incremental impact shown in Table 3.2-32 is 0.1 µg/m^3. The CEQA incremental impact is less than the SCAQMD threshold of 2.5 µg/m^3, therefore the 24-hour $PM_{2.5}$ concentration is less than significant and a mortality and morbidity determination is not required.

Table 3.2-31: Maximum Off-site NO_2, SO_2, and CO Concentrations Associated with Operation of the Proposed Project without Mitigation

Pollutant	Averaging Time	Maximum Modeled Concentration of Proposed Project ($\mu g/m^3$)	Background Concentration[b] ($\mu g/m^3$)	Total Ground Level Concentration [a] ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
NO_2 [c]	Federal 1-hour[d]	190	147	**336**	188
	State 1-hour	241	235	**476**	339
	State Annual	45	40	**85**	57
	Federal Annual	45	40	85	100
SO_2	Federal 1-hour[d]	6	53	60	196
	State 1-hour	10	228	238	655
	24-hour	0.6	32	33	105
CO	1-hour	379	4,600	4,979	23,000
	8-hour	162	2,878	3,040	10,000

Notes:

a) Exceedances of the thresholds are indicated in bold.

b) The background concentrations were obtained from the North Long Beach Monitoring Station. The maximum concentrations during the years of 2007, 2008, and 2009 were used.

c) NO_2 concentrations were calculated using the ozone limiting method (OLM) with ozone data from the North Long Beach monitoring station. The 1-hour NO_2 concentration is calculated using the 98^{th} percentile of the daily maximum 1-hour average to compare with the new federal 1-hour NO_2 standard of 0.100 ppm (188 $\mu g/m^3$) (effective January 22, 2010).

d) According to USEPA guidance, the modeled design values, 98^{th} percentile for 1-hour NO_2 and 99^{th} percentile for 1-hour SO_2, are added to the design background values for NO_2 and SO_2. (USEPA, 2011a).

Table 3.2-32: Maximum Off-site PM_{10} and $PM_{2.5}$ Concentrations Associated with Operation of the Proposed Project without Mitigation

	Averaging Time	Maximum Modeled Concentration of Proposed Project[b] ($\mu g/m^3$)	Maximum Modeled Concentration of CEQA Baseline[b] ($\mu g/m^3$)	Maximum Modeled Concentration of NEPA Baseline [b] ($\mu g/m^3$)	Ground Level Concentration CEQA Increment ($\mu g/m^3$)[a,b,c]	Ground Level Concentration NEPA Increment ($\mu g/m^3$)[a,b,c]	SCAQMD Threshold ($\mu g/m^3$)
PM_{10}	24-hour	6.2	7.1	5.6	0.6	1.3	2.5
	Annual	1.9	1.9	1.5	0.7	0.7	1.0
$PM_{2.5}$	24-hour	5.0	6.2	4.4	0.1	1.1	2.5
	Annual	1.5	NA	1.1	NA	**0.6**	0.3[d]

a) Exceedances of the threshold are indicated in bold. The thresholds for PM_{10} and $PM_{2.5}$ are incremental thresholds; therefore, the incremental concentration without background is compared to the threshold.
b) The maximum concentrations and increments presented in this table do not necessarily occur at the same receptor location. This means that the increments cannot necessarily be determined by simply subtracting the maximum baseline concentrations from the maximum Project concentration. The example provided in the discussion of Impact AQ-7 for the proposed Project describes how the increments are calculated.
c) The CEQA Increment represents the Unmitigated Project minus CEQA baseline. The NEPA Increment represents the Unmitigated Project minus NEPA baseline.
d) SCAQMD does not list a Significant Impact Level for annual $PM_{2.5}$, therefore the modeled annual average $PM_{2.5}$ was compared to the PSD SIL of 0.3 μg/m3 for the determination of NEPA significance only.

Mitigation Measures

To reduce the level of impact during proposed Project operation, **MM AQ-9 through MM AQ-16** described above for Impact AQ-3 would be applied to the proposed Project. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. Tables 3.2-33 and 3.2-34 present the maximum off-site ground-level concentrations of NO_2 and $PM_{2.5}$ respectively, for the proposed Project after mitigation.

Residual Impacts

Impacts would be significant and unavoidable for Federal and state 1-hour and state annual NO_2.

NEPA Impact Determination

Table 3.2-31 shows the maximum off-site NO_2, SO_2, and CO concentrations predicted for the proposed Project without mitigation. The maximum Federal 1-hour NO_2 concentration would exceed the NAAQS value of 188 $\mu g/m^3$.

Table 3.2-32 shows the maximum NEPA increment (proposed Project minus NEPA baseline) for PM_{10} and $PM_{2.5}$. Increments of PM_{10} and $PM_{2.5}$ concentrations were obtained by subtracting the NEPA baseline concentrations from the proposed Project concentrations at each receptor. The maximum increment among all receptors was selected for comparison with the SCAQMD threshold.

The NEPA increments for 24-hour and annual PM_{10} concentrations are predicted to be 1.3 and 0.7 $\mu g/m^3$ respectively. Neither increment exceeds the SCAQMD PM_{10} thresholds of 2.5 and 1.0 $\mu g/m^3$ respectively for the proposed Project operations.

The NEPA increments for 24-hour and annual $PM_{2.5}$ concentrations are predicted to be 1.1 µg/m^3 and 0.6 µg/m^3 respectively. The 24-hour increment does not exceed the daily $PM_{2.5}$ threshold of 2.5 µg/m^3 for the proposed Project operations. The annual increment would exceed the threshold for annual $PM_{2.5}$ of 0.3 µg/m^3.

Maximum off-site ambient pollutant concentrations associated with the proposed Project operations would be significant under NEPA for Federal 1-hour NO_2 and annual $PM_{2.5}$.

From a NEPA perspective, the 24-hour $PM_{2.5}$ NEPA incremental impact shown in Table 3.2-32 is 1.1 µg/m^3. The NEPA incremental impact is less than the SCAQMD threshold of 2.5 µg/m^3, therefore the 24-hour $PM_{2.5}$ concentration is less than significant and a mortality and morbidity determination is not required.

Mitigation Measures

To reduce the level of impact during proposed Project operation, **MM AQ-9 through MM AQ-16** described above for Impact AQ-3 would be applied to the proposed Project. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. Tables 3.2-33 and 3.2-34 present the maximum off-site ground-level concentrations of NO_2 and $PM_{2.5}$ respectively, for the proposed Project after mitigation. Annual $PM_{2.5}$ would be reduced to a less than significant level.

Residual Impacts

Impacts would be significant and unavoidable for Federal 1-hour NO_2.

Table 3.2-33: Maximum Off-site NO_2 Concentration Associated with Operation of the Proposed Project after Mitigation

Pollutant	Averaging Time	Maximum Modeled Concentration of Proposed Project ($\mu g/m^3$)	Background Concentration[b] ($\mu g/m^3$)	Total Ground Level Concentration [a,e] ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
NO_2 [c]	Federal 1-hour[d]	179	147	**325**	188
	State 1-hour	225	235	**460**	339
	State Annual	40	40	**80**	57

Notes:

a) Exceedances of the thresholds are indicated in bold.

b) The background concentrations were obtained from the North Long Beach Monitoring Station. The maximum concentrations during the years of 2007, 2008, and 2009 were used.

c) NO_2 concentrations were calculated using the ozone limiting method (OLM) with ozone data from the North Long Beach monitoring station. The 1-hour NO_2 concentration is calculated using the 98^{th} percentile of the daily maximum 1-hour average to compare with the new federal 1-hour NO_2 standard of 0.100 ppm (188 $\mu g/m^3$) (effective January 22, 2010).

d) According to USEPA guidance, the modeled design value (98^{th}) for 1-hour NO_2 is added to the design value background value for NO_2. (USEPA, 2011a).

e) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

Table 3.2-34: Maximum Off-site $PM_{2.5}$ Concentration Associated with Operation of the Proposed Project after Mitigation

	Averaging Time	Maximum Modeled Concentration of Proposed Project[1] ($\mu g/m^3$)	Maximum Modeled Concentration of NEPA Baseline[1] ($\mu g/m^3$)	Ground Level Concentration NEPA Increment	SCAQMD Threshold ($\mu g/m^3$)
$PM_{2.5}$	Annual	0.7	1.1	0.1	0.3

a) Exceedances of the threshold are indicated in bold. The thresholds for PM_{10} and $PM_{2.5}$ are incremental thresholds; therefore, the incremental concentration without background is compared to the threshold.

b) The maximum concentrations and increments presented in this table do not necessarily occur at the same receptor location. This means that the increments cannot necessarily be determined by simply subtracting the maximum baseline concentrations from the maximum Project concentration. The example provided in the discussion of Impact AQ-7 for the proposed Project describes how the increments are calculated.

c) The NEPA Increment represents the Unmitigated Project minus NEPA baseline.

d) SCAQMD does not list a Significant Impact Level for annual $PM_{2.5}$, therefore the modeled annual average $PM_{2.5}$ was compared to the PSD SIL of 0.3 $\mu g/m^3$ for the determination of NEPA significance only.

Impact AQ-5: The proposed Project would not generate on-road traffic that would contribute to an exceedance of the 1-hour or 8-hour CO standards.

Proposed Project-generated truck trips would affect intersections predicted to operate at a poor level of service (LOS) in future years. During periods of near-calm winds, heavily congested intersections can produce elevated levels of carbon monoxide (CO) in their immediate vicinity. Therefore, a CO microscale-modeling analysis was conducted to determine whether the proposed Project would contribute to a violation of the ambient air quality standards for CO at a local intersection.

The intersections of Ferry St and Terminal Way (Intersection A) (midday peak) and Seaside Ave and Navy Way (Intersection B) (pm peak) were selected for the CO analysis. Intersection A is the only intersection predicted by the traffic study (Section 3.6) to operate at LOS F. The intersection would operate at LOS F in 2027 for the proposed Project and all alternatives. This is the year of greatest throughput through the intersection.

Furthermore, Intersection A would have the highest volume-to-capacity (V/C) ratio of any Project-affected intersection in all 5 study years, and the only intersection with a V/C ratio greater than 1.0.

Intersection B has the highest volume of any intersection in all study years and alternatives, carrying approximately 17 percent of the total traffic in the study area (15 intersections total).

The analysis was conducted using the CAL3QHC dispersion model, using guidance from Caltrans (1997) and the SCAQMD (2005). For the most conservative estimate of 1-hour and 8-hour CO concentration, the proposed Project or alternative with the highest traffic volume, was modeled for total peak-hour traffic (total traffic including project-generated truck and automobile trips) through the intersection in 2027. Therefore the traffic data used to model the worst case scenario are representative of the absolute worst case peak project or alternative-related impact. For comparison with study year 2027, the CEQA baseline and NEPA baseline were modeled for both Intersection A and B.

Peak-hour traffic volumes, traffic cycle length, red-light length, and average speeds were provided by the traffic study. All left and right-hand turning lanes were assumed to travel at the worst case slowest speeds for the most conservative estimate of impacts. Emission factors were generated using EMFAC2007 for Los Angeles County, for the analysis years 2008 and 2027.[15]

Tables 3.2-35 and 3.2-36 present maximum 1-hour and 8-hour CO concentrations predicted at locations three meters from the edge of the intersection. The results show that CO concentrations would not exceed the CO standards during any proposed Project study year, either with or without the Project.

The input data and CAL3QHC output files for the CO intersection analysis are presented in Appendix E2.

---

[15] EMFAC2007 was run for the winter months using a worst-case temperature of 30°F.

Table 3.2-35: Maximum CO Concentrations at the Ferry St/Terminal Way Intersection – Proposed Project Without Mitigation

Project Year	1-Hour Concentration (ppm)[a,d]	8-Hour Concentration (ppm)[b,c]
	Proposed Project	Proposed Project
2008	4.5	3.8
2027	5.3	4.0
Most Stringent Standard	20	9

Notes:

a) 1-Hour concentrations include a background concentration of 4.0 for 2008 and 5.1 ppm for 2027.
b) 8-Hour concentrations include a background concentration of 3.4 for 2008 and 3.9 ppm for 2027.
c) A persistence factor of 0.7 was used to convert the 1-hour modeled concentration to an 8-hour concentration.
d) CAL3QHC was run with meteorological conditions of 1.0 meter per second (m/s) wind speed, stability F, and 10-degree standard deviation of wind direction.

Table 3.2-36: Maximum CO Concentrations at the Seaside Ave/Navy Way Intersection – Proposed Project Without Mitigation

Project Year	1-Hour Concentration (ppm)[a,d]	8-Hour Concentration (ppm)[b,c]
	Proposed Project	Proposed Project
2008	6.1	4.9
2027	6.4	4.8
Most Stringent Standard	20	9

Notes:

a) 1-Hour concentrations include a background concentration of 4.0 for 2008 and 5.1 ppm for 2027.
b) 8-Hour concentrations include a background concentration of 3.4 for 2008 and 3.9 ppm for 2027.
c) A persistence factor of 0.7 was used to convert the 1-hour modeled concentration to an 8-hour concentration.
d) CAL3QHC was run with meteorological conditions of 1.0 meter per second (m/s) wind speed, stability F, and 10-degree standard deviation of wind direction.

CEQA Impact Determination

Under CEQA, CO impacts at intersections would not be significant because CO standards would not be exceeded.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Under NEPA, CO impacts at intersections would not be significant because CO standards would not be exceeded.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact AQ-6: The proposed Project would not create an objectionable odor at the nearest sensitive receptor.

Operation of the proposed Project would increase air pollutants due to the combustion of diesel fuel. Some individuals might find diesel combustion emissions to be objectionable in nature, although quantifying the odorous impacts of these emissions to the public is difficult. The mobile nature of most Project emission sources would help to disperse proposed Project emissions. Additionally, the distance between proposed Project emission sources and the nearest residents is expected to be far enough to allow for adequate dispersion of these emissions to below objectionable odor levels.

CEQA Impact Determination

As a result of the above, the potential is low for the proposed Project to produce objectionable odors that would affect a sensitive receptor. Significant odor impacts under CEQA, therefore, are not anticipated.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

As a result of the above, the potential is low for the proposed Project to produce objectionable odors that would affect a sensitive receptor. Significant odor impacts under NEPA, therefore, are not anticipated.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact AQ-7: The proposed Project would expose receptors to significant levels of TACs.

Health Risk

Project operations would emit toxic air contaminant (TAC) emissions that could affect public health. A health risk assessment (HRA) was conducted to address potential public health effects from TACs generated by the proposed improvement and expansion of the existing APL Terminal. The results of the HRA are presented below, with impacts shown for both NOP CEQA baseline and future CEQA baselines, as well as for the NEPA baseline. Details of the analysis including TAC emission calculation, dispersion modeling, and risk calculations are presented in Appendix E3.

Example for Determining Maximum Risk Increment

For each receptor type, the various health values in the following tables often occur at different locations. The CEQA and NEPA incremental impacts are determined by subtracting the CEQA and NEPA baseline from the Project impacts at each of the hundreds of modeled receptors, and the receptor with the highest difference is selected as the maximum increment. The following example shows how the maximum sensitive receptor future CEQA cancer risk increment of 2 in a million in Table 3.2-37a was determined by examining the predicted risks at two modeled receptors.

1) *Determine Sensitive Receptor Future CEQA Increment*

   (a) Proposed Project cancer risk, sensitive receptor = 15 in a million

   (b) Future CEQA baseline cancer risk, sensitive receptor = 8 in a million

   (c) Future CEQA increment, sensitive receptor = 15 – 8 = 7 in a million

This receptor is not necessarily the location of the maximum proposed Project risk or the maximum future CEQA baseline risk for a sensitive receptor. Nevertheless, the future CEQA increment of 2 in a million is the highest increment of any modeled sensitive receptor. Therefore, this receptor is the location of the maximum future CEQA increment.

2) *Determine Occupational NEPA Increment (in Table 3.2-38a)*

   (a) Proposed Project cancer risk impact, occupational = 38 in a million

   (b) NEPA baseline cancer risk impact, occupational = 31 in a million

   (c) NEPA increment, occupational = 38 – 31= 7 in a million

This receptor happens to be the location of the maximum proposed Project impact of 7 in a million for an occupational receptor, shown in Table 3.2-38a.

Although the above example shows cancer risk increments being calculated at two modeled receptors, the complete determination of the maximum increment involves this same type of calculation at over two thousand modeled receptors. The calculation of the increments for the chronic and acute noncancer hazard indices, and the PM_{10} increments addressed in Impact AQ-4 are done the same way.

CEQA Impact Determination

Table 3.2-37a presents the maximum predicted health impacts associated with the proposed Project without mitigation. The table includes estimates of individual lifetime cancer risk, chronic noncancer hazard index, and acute noncancer hazard index at the maximally exposed residential, occupational, sensitive, student, and recreational receptors. Results are presented for the proposed Project, and NOP and future CEQA increments (proposed Project minus CEQA baseline).

As noted in the Methodology discussion in Section 3.2.4.1.2, operational emissions of DPM from cargo handling equipment would be lower with an automated cargo handling system than with the conventional handling system analyzed above. Therefore, potential impacts associated with the automated cargo handling system would be less than shown below.

A mortality and morbidity analysis was not required because, per Port policy, the $PM_{2.5}$ concentration did not exceed the thresholds in AQ-4.

Table 3.2-37a: Maximum Incremental CEQA Health Impacts Associated With The Proposed Project Without Mitigation, 2012 – 2081

Health Impact	Receptor Type	Maximum Predicted Impact[a,d]					Significance Threshold
		Proposed Project	NOP CEQA Baseline	NOP CEQA Increment[b,c]	Future CEQA Baseline	Future CEQA Increment[b,c]	
Cancer Risk[f]	Residential[e]	47	130	<0[g]	22	**25×10^{-6} (25 in a million)**	10×10^{-6} (10 in a million)
	Occupational	38	65	<0[g]	22	**16×10^{-6} (16 in a million)**	
	Sensitive	15	60	<0[g]	8	7×10^{-6} (7 in a million)	
	Student	0.6	1.3	<0[g]	0.4	0.2×10^{-6} (0.2 in a million)	
	Recreational	5	16	<0[g]	2	3×10^{-6} (3 in a million)	
Chronic Hazard Index	Residential	0.2	0.5	< 0[g]	0.5	< 0[g]	1.0
	Occupational	0.5	0.8	< 0[g]	0.8	< 0[g]	
	Sensitive	0.1	0.4	< 0[g]	0.4	< 0[g]	
	Student	0.1	0.3	< 0[g]	0.3	< 0[g]	
	Recreational	0.1	0.4	< 0[g]	0.4	< 0[g]	
Acute Hazard Index	Residential	1.4	0.2	**1.2**	0.2	**1.2**	1.0
	Occupational	2.0	0.2	**1.8**	0.2	**1.8**	
	Sensitive	0.4	0.06	0.4	0.06	0.4	
	Student	0.4	0.06	0.4	0.06	0.4	
	Recreational	0.6	0.09	0.5	0.09	0.5	

Notes:

a) Exceedances of the significance criteria are in **bold**. The significance thresholds apply to the CEQA and NEPA increments only.

b) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impacts. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.

c) The CEQA increment represents Project minus CEQA baseline.

d) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.

e) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.

f) Construction emissions were modeled with the operational emissions for the determination of cancer risk.

g) When the predicted impact is less than zero, the Project risk is less than the respective baseline.

Table 3.2-37a shows that the maximum NOP CEQA cancer risk increment associated with the unmitigated proposed Project is predicted to be less than the CEQA baseline at all receptor types. The NOP CEQA cancer risk increment therefore for all receptors would be less than significant.

The maximum chronic hazard index NOP CEQA increment associated with the unmitigated Project is predicted to be less than the CEQA baseline for all receptor types.

The acute hazard index NOP CEQA increments associated with residential receptors (1.2) and occupational receptors (1.8) would exceed the significance criterion hazard index of 1.0. The maximum residential impact occurs near the Federal prison to the west of the proposed Project boundary. The maximum occupational impact occurs on Pier 400 approximately 400 m south of the proposed Project boundary.

Table 3.2-37a also shows that the maximum future CEQA cancer risk increment associated with the unmitigated proposed Project is predicted to exceed the significance threshold for the residential and occupational receptors.

The future CEQA cancer risk increment would be significant for these two receptor types. The location identified for the peak residential receptors are at the liveaboards (people who live on boats) for boats docked west of Terminal Island Freeway at Anchorage Road. The cancer risk increment would also exceed the significance threshold at the liveaboards docked in Fish Harbor west of the Project Site. However, residential incremental cancer risk would not exceed the significance threshold at any residential areas on the mainland.

The peak occupational location is on the APL terminal west fence in the southwest corner of the property. Relative to the future CEQA baseline, isopleths of the incremental residential cancer risk are shown on Figure 3.2-4, and isopleths of the incremental occupational cancer risk are shown on Figure 3.2-5. Appendix E3, Attachment E3.2 provides the locations of the peak (maximally exposed individual, or MEI) incremental impacts for each receptor type.

Approximately 99 percent of the cancer risk for all receptors is caused by exposure to diesel particulate matter (DPM). The major source driving the impacts at the peak residential receptor are container trucks traveling on the Terminal Island Freeway going to and from the APL terminal.

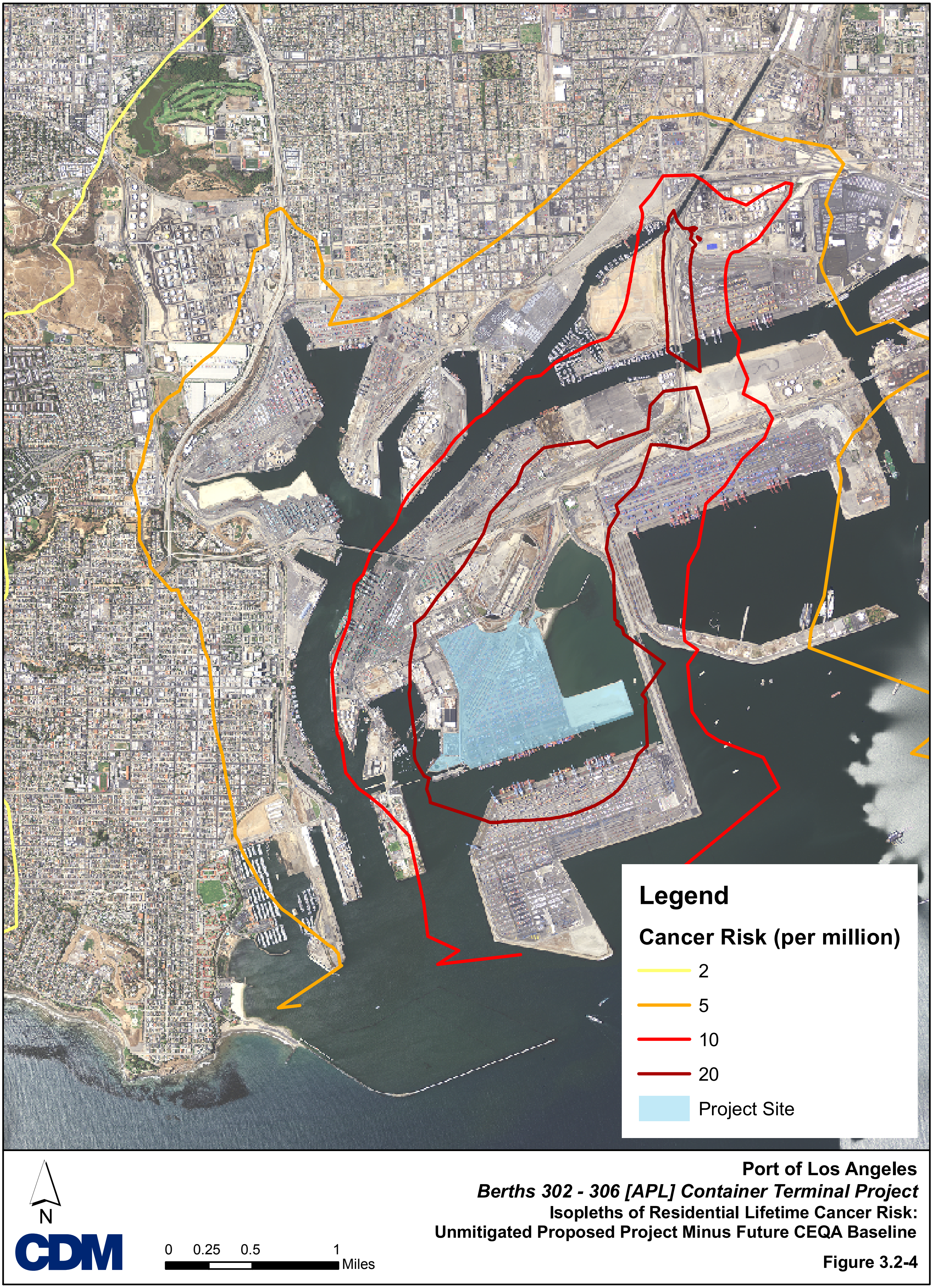
The maximum chronic hazard index future CEQA increment associated with the unmitigated Project is predicted to be less than the CEQA baseline for all receptor types.

The acute hazard index future CEQA increments associated with residential receptors (1.2) and occupational receptors (1.8) would exceed the significance criterion hazard index of 1.0. The maximum residential impact occurs near the Federal prison to the west of the proposed Project boundary. The maximum occupational impact occurs on Pier 400 approximately 400 m south of the proposed Project boundary.

Mitigation Measures

Mitigation measures to reduce TAC emissions would be the same as measures **MM AQ-9 through MM AQ-16** described above for Impact AQ-3. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5.

The potential for additional mitigation measures to address residential cancer risk impacts under the future baseline scenario was evaluated by the Port. Since, as described, the major source driving cancer risk impacts at the peak residential receptor are the drayage trucks traveling on the Terminal Island Freeway to and from the APL Terminal, the feasibility of mitigating APL-related drayage trucks was considered. Drayage trucks operating at Port terminals are subject to the Clean Truck Program (CTP) implemented in 2008 by the Ports of Los Angeles and Long Beach. Starting January 1, 2012, all drayage trucks operating at Port terminals must meet USEPA 2007 heavy duty truck emissions standards. In the period since the start of the CTP in 2008, more than 10,000 older drayage trucks have been replaced with USEPA 2007 emissions compliant trucks at a cost to the State of California and the two ports of more than $200 million and at a cost to private industry of more than $800 million. The result has been overall drayage truck emissions reductions of at least 80 percent in cancer causing diesel particulate matter (DPM), and more than a 90 percent reduction in DPM when compared to the oldest drayage trucks that were operating at Port terminals.



CDM

Port of Los Angeles

Berths 302 - 306 [APL] Container Terminal Project

Isopleths of Residential Lifetime Cancer Risk:
Unmitigated Proposed Project Minus Future CEQA Baseline

Figure 3.2-4

CDM

Port of Los Angeles
Berths 302 - 306 [APL] Container Terminal Project
Isopleths of Occupational Lifetime Cancer Risk:
Unmitigated Proposed Project Minus Future CEQA Baseline

Figure 3.2-5

Analysis of health risk exposure for the proposed Project assumes full compliance with CTP requirements, so the APL-related trucks affecting residential cancer risk that are operating on the Terminal Island Freeway are fully compliant with 2007 emission standards. As a result, to further reduce residential cancer risk caused by operation of these APL-related trucks, APL would have to require that only trucks with lower DPM emissions than 2007-compliant trucks could operate at its terminal. In light of the more than $1 billion investment in clean drayage trucks made by the State, the Port, and private industry in the last three years, to ask that the drayage industry start replacing these trucks again right away is not considered feasible. Though no formal requirements have been approved at this time, it is expected that additional controls on drayage truck DPM emissions will be required by the State and the Port in the coming years, thereby further reducing DPM emissions and associated residential cancer risk over the 70 year exposure period. No other feasible mitigation of DPM emissions from drayage trucks is available at this time.

Residual Impacts

Table 3.2-37b shows that the maximum acute risk at residential receptors is reduced to a less than significant level. The maximum residential and occupational cancer risk under the future CEQA increment as well as the acute risk at occupational receptor under both CEQA increments remain significant and unavoidable. Isopleths of the future CEQA incremental cancer risk for residential and occupational are presented in Figures 3.2-6 and 3.2-7, respectively.

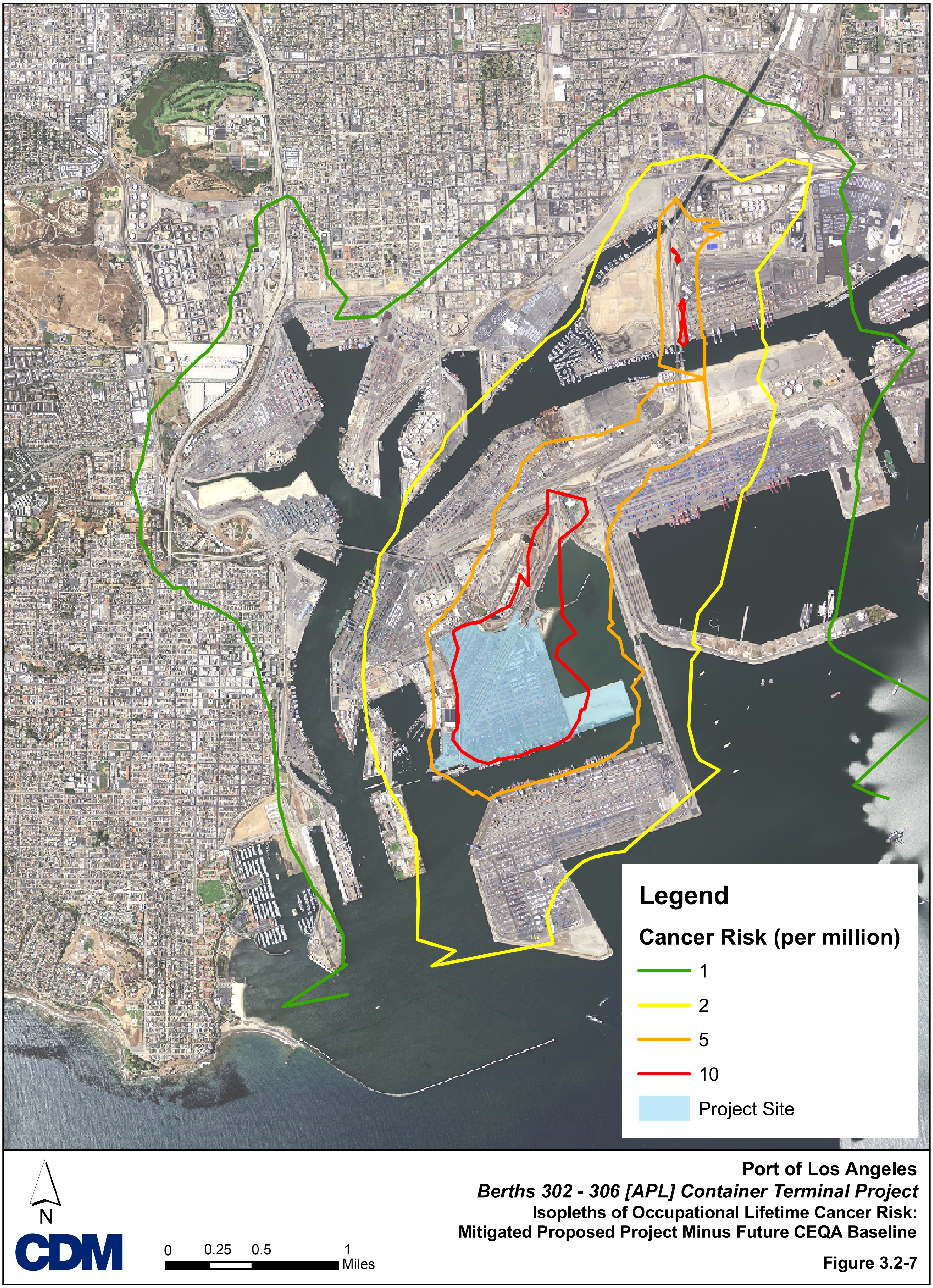
Using the future CEQA baseline, the one in one million incremental cancer risk isopleths extends into areas beyond Port property; therefore, a cancer burden calculation was conducted. The incremental cancer burden results are summarized in Appendix E3, Attachment E3.3. These results indicate that the mitigated proposed Project cancer burden (0.53) would exceed the significance threshold, thus would be a significant and unavoidable impact. Note that a cancer burden is not appropriate for the NOP CEQA baseline increment, since the maximum individual cancer risks are less than zero (0) indicating that the cancer burden would also be less than zero (0).

The peak residual incremental residential cancer risk impacts are liveaboards west of Terminal Island Freeway and to a lesser extent in Fish Harbor. Marina areas that would facilitate most of the liveaboard populations are located along the West Channel near the City of San Pedro, and near the East Basin and Cerritos Channel in the northern portion of the Port. Based on the APL Terminal location on Terminal Island, truck traffic from the proposed Project would use the Terminal Island Freeway. Several boat marinas are located within the East Basin and Cerritos Channel area of the Port, which are in close proximity to the freeway bridge. There are estimated to be 40 liveaboards currently within the East Basin/Cerritos Channel marinas. Therefore, boat marinas with liveaboard residents would be the residential receptors located closest to the proposed Project. The marinas in the East Basin and Cerritos Channel area (Berths 200 to 205) are comprised of approximately 1,650 slips. The closest boat marina (i.e., Island Yacht Anchorage) in the Cerritos Channel would be a minimum distance of approximately 100 feet west of the Schuyler Heim Bridge/SR 47. Of the 22 slips that make up this marina, approximately 16 slips would be within the area with a cancer risk of over 20 in a million. An additional 214 slips are located within the area predicted to have a cancer risk of over 10 in a million. Of the total number of slips that could experience a cancer risk of over 10 in

CDM

Port of Los Angeles
Berths 302 - 306 [APL] Container Terminal Project
Isopleths of Residential Lifetime Cancer Risk:
Mitigated Proposed Project Minus Future CEQA Baseline

Figure 3.2-6



CDM

Port of Los Angeles

Berths 302 - 306 [APL] Container Terminal Project

Isopleths of Occupational Lifetime Cancer Risk:

Mitigated Proposed Project Minus Future CEQA Baseline

Figure 3.2-7

a million (approximately 230), 40 of those could host liveaboards. In general, liveaboards are not expected to stay in that location for a significant length of time, unlike traditional residential populations that could remain during the 70 years considered under the health risk assessment. The proposed Project would not potentially cause a significant cancer risk of over 10 in a million at the nearby, and more traditional, residential neighborhoods of Wilmington or San Pedro.

There is no additional feasible mitigation available beyond mitigation measures **MM AQ-9 through MM AQ-16** that could reduce the impacts on liveaboard locations potentially impacted by the proposed Project.

Table 3.2-37b: Maximum Incremental CEQA Health Impacts Associated With The Proposed Project With Mitigation, 2012 – 2081

Health Impact	Receptor Type	Maximum Predicted Impact[a,d]					Significance Threshold
		Proposed Project	NOP CEQA Baseline	NOP CEQA Increment[b,c]	Future CEQA Baseline	Future CEQA Increment[b,c]	
Cancer Risk[f]	Residential[e]	45	-[g]	-[g]	22	**23×10^{-6} (23 in a million)**	10×10^{-6} (10 in a million)
	Occupational	29	-[g]	-[g]	18	**11×10^{-6} (11 in a million)**	
Acute Hazard Index	Residential	1.0	0.2	0.9	0.2	0.9	1.0
	Occupational	1.3	0.2	**1.1**	0.2	**1.1**	

Notes:

a) Exceedances of the significance criteria are in **bold**. The significance thresholds apply to the CEQA and NEPA increments only.

b) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impacts. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.

c) The CEQA increment represents Project minus CEQA baseline.

d) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.

e) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.

f) Construction emissions were modeled with the operational emissions for the determination of cancer risk.

g) Unmitigated impacts that were less than the significance threshold were not reanalyzed for mitigation.

NEPA Impact Determination

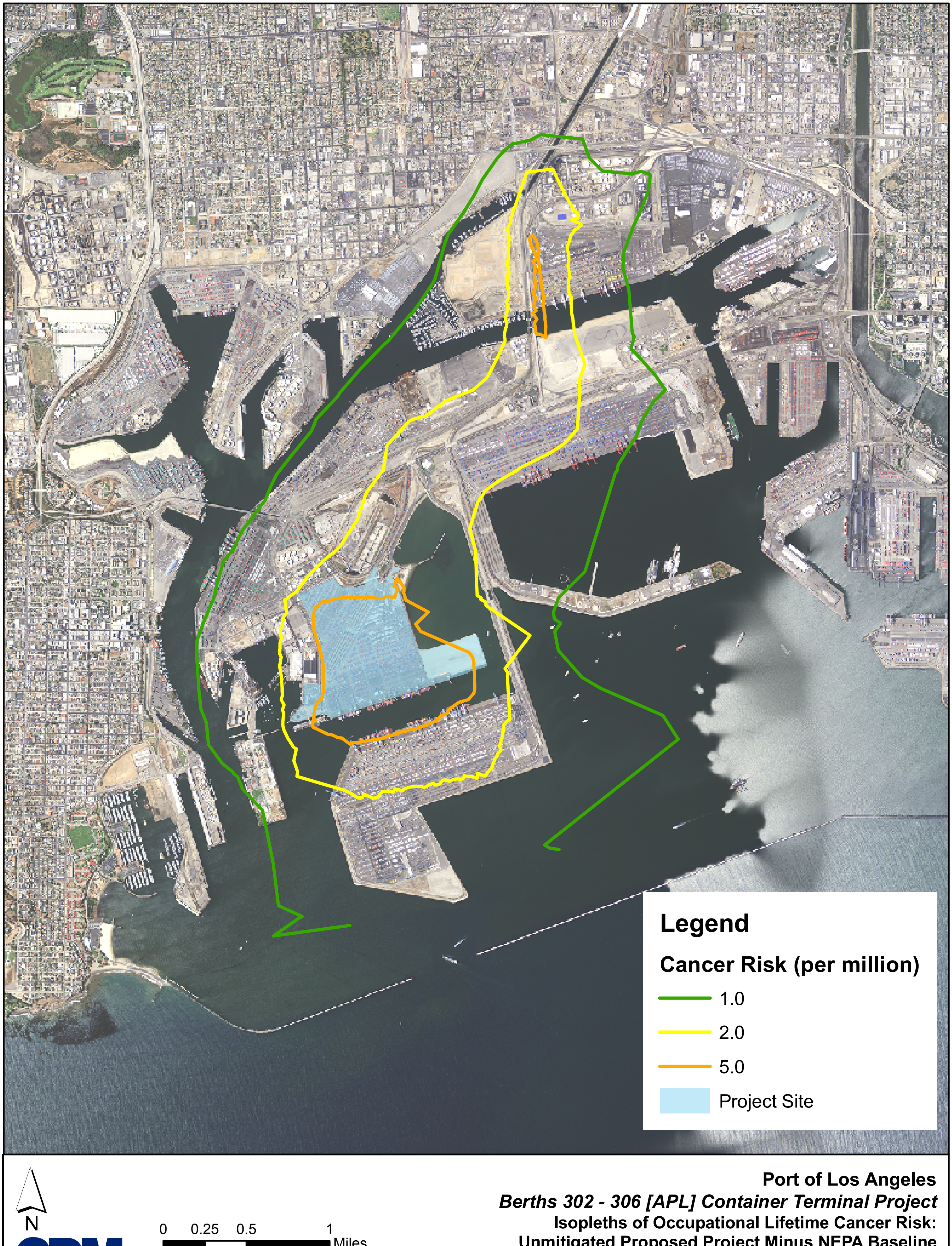
As shown in Table 3.2-38a, the maximum NEPA cancer risk increment associated with the unmitigated proposed Project is predicted to be 7 in a million (7×10^{-6}), at both a residential and an occupational receptor. This risk value does not exceed the significance criterion of 10 in a million and would not be considered a significant impact. Isopleths of the unmitigated incremental residential and occupational cancer risks are presented in Figures 3.2-8 and 3.2-9, respectively.

The maximum chronic hazard index NEPA increment associated with the unmitigated Project is predicted to be 0.2 at an occupational receptor and would not be considered a significant impact. The acute hazard index NEPA increment is predicted to be 1.2 at a residential receptor and 1.8 at an occupational receptor, which are considered significant.

CDM

Port of Los Angeles
Berths 302 - 306 [APL] Container Terminal Project
Isopleths of Residential Lifetime Cancer Risk:
Unmitigated Proposed Project Minus NEPA Baseline

Figure 3.2-8



CDM

Port of Los Angeles
Berths 302 - 306 [APL] Container Terminal Project
Isopleths of Occupational Lifetime Cancer Risk:
Unmitigated Proposed Project Minus NEPA Baseline

Figure 3.2-9

Mitigation Measures

Mitigation measures to reduce TAC emissions would be the same as measures **MM AQ-9 through MM AQ-16** described above for Impact AQ-3. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5.

Residual Impacts

The maximum NEPA cancer risk and chronic risk increments associated with the mitigated proposed Project remain less than significant. Isopleths of the mitigated incremental residential and occupational cancer risks are presented in Figures 3.2-10 and 3.2-11, respectively. The one in one million incremental cancer risk isopleth does not extend into landside residential areas; therefore, the incremental cancer burden would be less than the 0.5 excess cancer case threshold, and would not be significant.

The maximum acute risk at residential receptor would be reduced to a less than significant level. The NEPA increment maximum acute risk at occupational receptors remains significant and unavoidable.

CDM

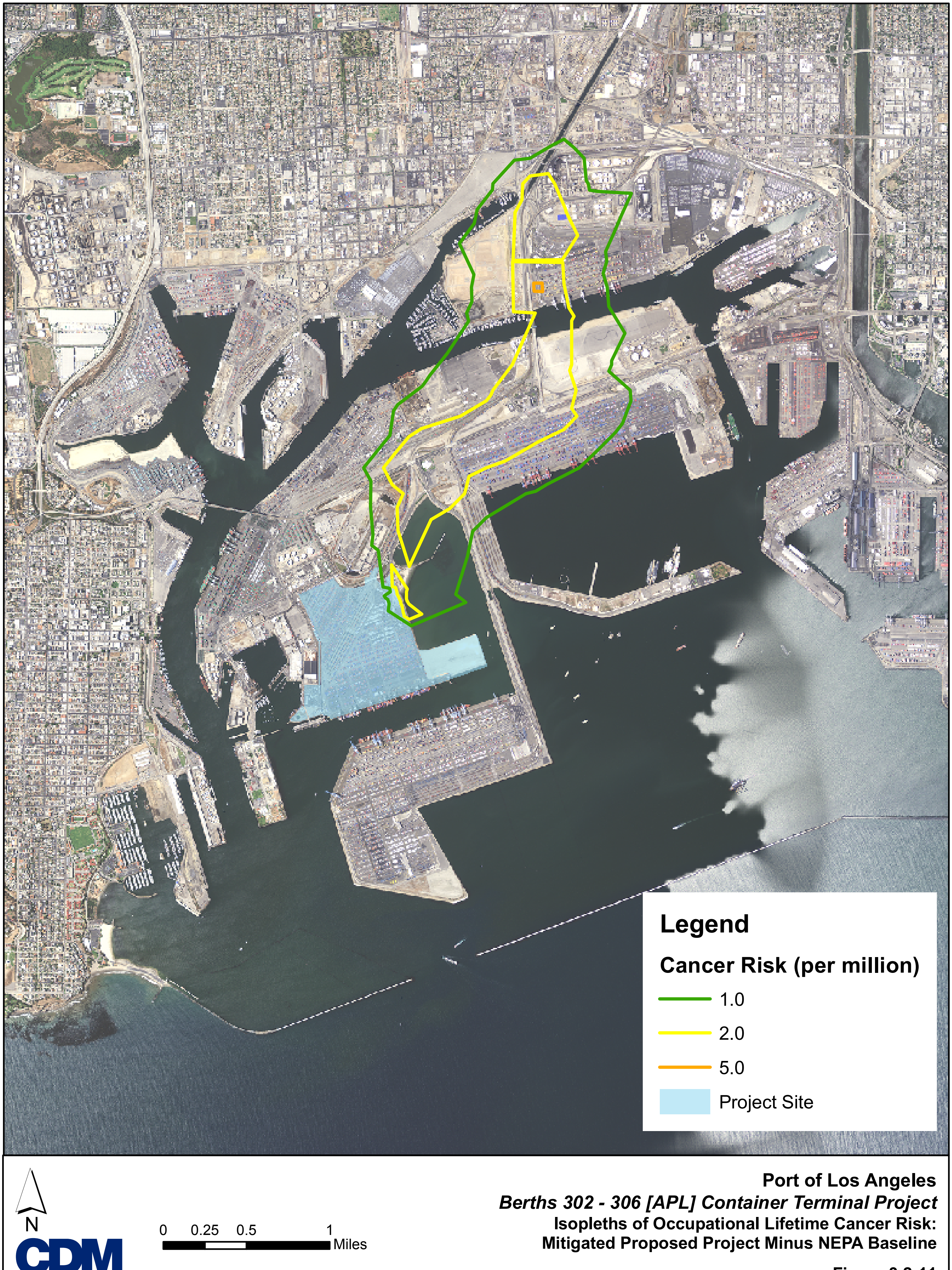
Port of Los Angeles

Berths 302 - 306 [APL] Container Terminal Project

Isopleths of Residential Lifetime Cancer Risk:

Mitigated Proposed Project Minus NEPA Baseline

Figure 3.2-10



CDM

Port of Los Angeles
Berths 302 - 306 [APL] Container Terminal Project
Isopleths of Occupational Lifetime Cancer Risk:
Mitigated Proposed Project Minus NEPA Baseline

Figure 3.2-11

Table 3.2-38a: Maximum Incremental NEPA Health Impacts Associated With The Proposed Project Without Mitigation, 2012 – 2081

Health Impact	Receptor Type	Maximum Predicted Impact[a,d]			Significance Threshold
		Proposed Project	NEPA Baseline	NEPA Increment[b,c]	
Cancer Risk[f]	Residential[e]	47	40	7×10^{-6} (7 in a million)	10×10^{-6} (10 in a million)
	Occupational	38	31	7×10^{-6} (7 in a million)	
	Sensitive	15	13	2×10^{-6} (2 in a million)	
	Student	0.6	0.5	8×10^{-8} (0.08 in a million)	
	Recreational	5.2	4.5	8×10^{-7} (0.8 in a million)	
Chronic Hazard Index	Residential	0.2	0.2	0.06	1.0
	Occupational	0.5	0.4	0.2	
	Sensitive	0.1	0.1	0.03	
	Student	0.1	0.09	0.03	
	Recreational	0.1	0.1	0.04	
Acute Hazard Index	Residential	1.4	0.2	**1.2**	1.0
	Occupational	2.0	0.2	**1.8**	
	Sensitive	0.4	0.06	0.4	
	Student	0.4	0.06	0.4	
	Recreational	0.6	0.09	0.5	

Notes:

a) Exceedances of the significance criteria are in **bold**. The significance thresholds apply to the CEQA and NEPA increments only.

b) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impacts. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.

c) The NEPA increment represents Project minus NEPA baseline.

d) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.

e) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.

f) Construction emissions were modeled with the operational emissions for the determination of cancer risk.

g) When the predicted impact is less than zero, the Project risk is less than the respective baseline.

Table 3.2-38b: Maximum Incremental NEPA Health Impacts Associated With The Proposed Project With Mitigation, 2012 – 2081

Health Impact	Receptor Type	Maximum Predicted Impact[a,d]			Significance Threshold
		Proposed Project	NEPA Baseline	NEPA Increment[b,c]	
Cancer Risk[f]	Residential[e]	45	40	6×10^{-6} (6 in a million)	10×10^{-6} (10 in a million)
	Occupational	29	23	6×10^{-6} (6 in a million)	
Acute Hazard Index	Residential	1.0	0.2	0.9	1.0
	Occupational	1.3	0.2	**1.1**	

Notes:

a) Exceedances of the significance criteria are in **bold**. The significance thresholds apply to the CEQA and NEPA increments only.

b) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impacts. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.

c) The CEQA increment represents Project minus CEQA baseline. The NEPA increment represents Project minus NEPA baseline.

d) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.

e) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.

f) Construction emissions were modeled with the operational emissions for the determination of cancer risk.

Additional Analyses for Informational Purposes

Particulates: Morbidity and Mortality

Since the proposed Project would generate emissions of DPM, Impact AQ-7 also discusses the effects of ambient PM on mortality and morbidity for informational purposes only. However, as described in Impact AQ-4, the results of ambient air dispersion modeling indicated that operation of the proposed Project would result in off-site 24-hour $PM_{2.5}$ concentrations that do not exceed the SCAQMD significance threshold of 2.5 µg/m3 (see Table 3.2-32). Since the operational $PM_{2.5}$ concentrations do not meet the Port's criteria for calculating morbidity and mortality attributable to PM, this evaluation was not conducted for the proposed Project.

Impact AQ-8: The proposed Project would not conflict with or obstruct implementation of an applicable AQMP.

Project operation would produce emissions of nonattainment pollutants primarily in the form of diesel exhaust. The 2007 AQMP proposes emission reduction measures that are designed to bring the South Coast Air Basin into attainment of the state and national ambient air quality standards (SCAQMD, 2007). The attainment strategies in these plans include more stringent standards for new engines and cleanup of existing fleets including new measures for port trucks, statewide truck fleets, ships traveling and in port, locomotives, and harbor craft that are enforced at the state and federal level on engine manufacturers and petroleum refiners and retailers; as a result, proposed Project operation would comply with these control measures. The SCAQMD also adopts AQMP control measures into the SCAQMD rules and regulations, which are then used to regulate sources of air pollution in the South Coast Air Basin. Therefore, compliance with these requirements would ensure that the proposed Project would not conflict with or obstruct implementation of the AQMP.

The Port regularly provides SCAG with its Port-wide cargo forecasts for development of the AQMP. Therefore, the attainment demonstrations included in the 2007 AQMP account for the emissions generated by projected future growth at the Port. Because one objective of the proposed Project is to accommodate growth in cargo throughput at the Port, the AQMP accounts for the proposed Project and conforms to the applicable 2007 AQMP, which is the basis for a SIP revision.

CEQA Impact Determination

The proposed Project would not conflict with or obstruct implementation of the AQMP; therefore, significant impacts under CEQA are not anticipated.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

The proposed Project would not conflict with or obstruct implementation of the AQMP; therefore, significant impacts under NEPA are not anticipated.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact AQ-9: The proposed Project would produce GHG emissions that would exceed CEQA and NEPA baseline levels.

Climate change, as it relates to man-made GHG emissions, is by nature a global impact. An individual project does not generate enough GHG emissions to significantly influence global climate change by itself (AEP, 2007). The issue of global climate change is, therefore, a cumulative impact. Nevertheless, for the purposes of this EIS/EIR, the Port has opted to address GHG emissions as a Project-level impact. In actuality, an appreciable impact on global climate change would only occur when the proposed Project GHG emissions combine with GHG emissions from other man-made activities on a global scale.

Table 3.2-39 summarizes the total GHG construction emissions associated with the proposed Project. The emissions are totaled over the entire multiple-year construction period. The construction sources for which GHG emissions were calculated include off-road construction equipment, on-road trucks, marine cargo vessels used to deliver equipment to the site, and worker commute vehicles.

Table 3.2-39: Total GHG Emissions from Berth 302-306 Terminal Construction Activities – Proposed Project

Emission Source	CO_2	CH_4	N_2O	CO_2e[d]
	Total Emissions[b] (Metric Tons[c])			
Total Construction				
Wharf Construction	2,015	0.10	0.05	2,031
Backland Construction	1,107	0.07	0.03	1,118
AMP Installation (Berth 306)	166	0.01	0.00	168
Demolition	46	0.00	0.00	46
Building Construction	712	0.04	0.02	719
Reefer Area Expansion	161	0.01	0.01	162
Utility Infrastructure	127	0.01	0.00	128
Cranes Installation	59	0.00	0.00	59
Modify Earle Street Gate	122	0.01	0.00	123
Worker Commute	443	0.02	0.01	446
Total Construction – CEQA Impact[d,e]	4,957	0.26	0.12	5,001
Total Construction – NEPA Impact[e]	4,226	0.22	0.11	4,264

Notes:

a) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

b) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

c) One metric ton equals 1,000 kilograms, 2,205 lbs, or 1.1 U.S. (short) tons.

d) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; and 310 for N_2O.

e) The CEQA Impact equals total Project construction emissions minus CEQA baseline emissions. In the case of construction, CEQA baseline emissions are zero. The NEPA impact equals total Project construction emissions minus NEPA baseline emissions. The activities considered to be part of the NEPA baseline construction analysis are reported in Table 3.2-11.

Table 3.2-40 summarizes the annual unmitigated GHG emissions that would occur in California from operation of the proposed Project. The emission sources for which GHG emission were calculated include ships, tugboats, on-road trucks, trains, cargo-handling equipment, fugitive refrigerant losses from refrigerated containers (reefers), on-terminal electricity usage, and worker commute vehicles. The table also shows the net change in the proposed Project's GHG emissions relative to both the CEQA baseline.

As noted in the Methodology discussion in Section 3.2.4.1.2, operational emissions of GHGs from cargo handling equipment would be similar between an automated cargo handling system and the conventional handling system analyzed above. Therefore, potential impacts associated with the automated cargo handling system would be roughly the same as shown above.

Table 3.2-40: Annual Operational GHG Emissions – Unmitigated Proposed Project

Project Scenario/ Source Type	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
Project Year 2012					
Ships – Transit	48,660	1	2	0	49,413
Ships – Hoteling	21,378	0	1	0	21,749
Tugboats	340	0	0	0	345
Trucks	59,452	0	0	0	59,497
Trains	43,445	1	4	0	44,572
Terminal Equipment	13,376	0	0	0	13,429
Reefer Refrigerant Losses	0	0	0	1	841
AMP Usage	0	0	0	0	0
OnTerminal Electricity Usage	22,448	1	0	0	22,506
Worker Trips	5,340	0	1	0	5,525
Total For Project Year 2012[c]	**214,440**	**4**	**8**	**1**	**217,876**
CEQA Baseline	149,251	5	5	0	151,264
Project Minus CEQA Baseline	65,198	(1)	1	0	66,612
NEPA Baseline	214,440	4	8	1	217,876
Project Minus NEPA Baseline	*0*	*0*	*0*	*0*	*0*
Project Year 2015					
Ships – Transit	56,648	1	3	0	57,523
Ships – Hoteling	19,029	0	1	0	19,393
Tugboats	416	0	0	0	422
Trucks	84,792	0	0	0	84,855
Trains	64,64949,583	2	5	0	66,327
Terminal Equipment	19,680	0	0	0	19,757
Reefer Refrigerant Losses	0	0	0	1	1,192
AMP Usage	7,244	0	0	0	7,259
OnTerminal Electricity Usage	31,823	1	0	0	31,905
Worker Trips	7,621	0	1	0	7,810
Total For Project Year 2015[c]	**291,901**	**5**	**10**	**1**	**296,443**
CEQA Baseline	149,251	5	5	0	151,264
Project Minus CEQA Baseline	142,659	1	6	1	145,179
NEPA Baseline	215,143	4	8	1	218,469
Project Minus NEPA Baseline	76,738	1	3	0	77,974
Project Year 2020					
Ships – Transit	69,834	2	3	0	70,915
Ships – Hoteling	14,265	0	1	0	14,569
Tugboats	491	0	0	0	499
Trucks	89,518	0	0	0	89,586
Trains	69,560	2	6	0	71,367
Terminal Equipment	21,343	0	0	0	21,427
Reefer Refrigerant Losses	0	0	0	1	1,284
AMP Usage	8,785	0	0	0	8,803
On-Terminal Electricity Usage	25,036	1	0	0	25,101
Worker Trips	6,623	0	0	0	6,724

Table 3.2-40: Annual Operational GHG Emissions – Unmitigated Proposed Project

Project Scenario/ Source Type	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
Total Project Year 2020[c]	**305,455**	**5**	**11**	**1**	**310,273**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	156,213	1	6	1	159,009
NEPA Baseline	215,045	4	8	1	218,469
Project Minus NEPA Baseline	90,410	2	3	0	91,804
Project Year 2025					
Ships – Transit	83,563	2	4	0	84,858
Ships – Hoteling	11,243	0	1	0	11,483
Tugboats	529	0	0	0	537
Trucks	97,188	0	0	0	97,262
Trains	70,775	2	6	0	72,613
Terminal Equipment	23,006	1	0	0	23,097
Reefer Refrigerant Losses	0	0	0	1	1,377
AMP Usage	7,004	0	0	0	7,018
On-Terminal Electricity Usage	26,842	1	0	0	26,911
Worker Trips	6,534	0	0	0	6,655
Total Project Year 2025[c]	**326,684**	**6**	**12**	**1**	**331,809**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	177,443	1	7	1	180,545
NEPA Baseline	232,166	4	9	1	235,867
Project Minus NEPA Baseline	94,518	2	3	0	95,942
Project Year 2027					
Ships – Transit	91,160	2	4	0	92,573
Ships – Hoteling	11,607	0	1	0	11,854
Tugboats	567	0	0	0	575
Trucks	100,443	0	0	0	100,519
Trains	72673	2	6	0	74,560
Terminal Equipment	23,672	1	0	0	23,764
Reefer Refrigerant Losses	0	0	0	1	1,414
AMP Usage	7,269	0	0	0	7,284
On-Terminal Electricity Usage	27,564	1	0	0	27,635
Worker Trips	6,647	0	0	0	6,758
Total Project Year 2027[c]	**341,600**	**6**	**12**	**1**	**346,935**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	192,358	1	8	1	195,671
NEPA Baseline	234,217	4	9	1	237,940
Project Minus NEPA Baseline	107,383	2	4	0	108,996

Notes:

a) One metric ton equals 1,000 kilograms, 2205 lbs, or 1.1 U.S. (short) tons.

b) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; 2800 for HFC-125; 1,300 for HFC-134a; and 3,800 for HFC-143a.

c) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

CEQA Impact Determination

Table 3.2-39 shows that total CO_2e emissions during project construction would exceed CEQA baseline construction emissions (which are zero for construction). In addition, Table 3.2-40 shows that in each future Project year, annual operational CO_2e emissions would increase relative to the CEQA baseline. These increases are considered a significant impact under CEQA.

Mitigation Measures

Measures that reduce electricity consumption or fossil fuel usage from Project emission sources would reduce proposed GHG emissions. Construction mitigation measures that would accomplish this include **MM AQ-2 through MM AQ-4**. The operational mitigation measures required for criteria pollutant emissions as part of Impact AQ-3 (**MM AQ-9**, **MM AQ-10**, and **MM AQ-16**) would also reduce operational GHG emissions. The following additional mitigation measures specifically target Project GHG emissions. They were developed through an applicability and feasibility review of possible measures identified in the *Climate Action Team Report to Governor Schwarzenegger* and *the California Legislature* (Climate Action Team, 2010) and the CARB *Proposed Early Actions to Mitigate Climate Change in California* (CARB, 2007b). The strategies proposed in these two reports for the commercial/industrial sector are listed in Table 3.2-41, along with an applicability determination for the proposed Project.

Table 3.2-42 shows that the mitigated Project's CO_2e emissions would remain greater than the CEQA and NEPA baseline levels for all Project study years. Therefore, after mitigation, the proposed Project's GHG impacts would remain significant under CEQA.

Table 3.2-41: Project Applicability Review of Potential GHG Emission Reduction Strategies

Operational Strategy	Applicability to Proposed Project
Commercial and Industrial Design Features	
Vehicle Climate Change Standards	Regulatory measure implemented by CARB
Diesel Anti-Idling	**MM AQ-16** (truck idling); also regulatory measures implemented by CARB
Other Light duty Vehicle Technology	Regulatory measure implemented by CARB (standards will phase in starting 2009)
HFCs Reduction	Future regulatory measure planned by CARB
Transportation Refrigeration Units, Off Road Electrification, Port Electrification	**MM AQ-9** (AMP for ships); off-loaded reefers are electrified as part of the Project; also, a future regulatory measure is planned by CARB
Alternative Fuels: Biodiesel blends	Future regulatory measure planned by CARB
Alternative Fuel: Ethanol vehicles or enhanced ethanol/gasoline blends	Future regulatory measure planned by CARB
Heavy Duty Vehicle Emissions Reduction Measures	**MM AQ-10** (VSRP for ships) and **MM AQ-16** (truck idling); Port-wide CAAP measure HDV2 (trucks); also a regulatory measure implemented by CARB
Reduced Venting in Gas Systems	Not applicable to Project
Building Operations Strategy	
Recycling	**MM AQ-19;** also a regulatory measure implemented by the Integrated Waste Management Board
Building Energy Efficiency	**MM AQ-17 and MM AQ-18;** also a regulatory measure implemented by the California Energy Commission
Green Buildings Initiative	Future regulatory measure planned by the State and Consumer Services and Cal/EPA
California Solar Initiative	Future regulatory measure is planned by the California Public Utilities Commission

Note: These strategies are found in the *California Climate Action Team's report to the Governor* (State of California, 2006) and CARB's *Proposed Early Actions to Mitigate Climate Change in California* (CARB, 2007b).

MM AQ-17: **Compact Fluorescent Light Bulbs.** All interior buildings on the premises shall exclusively use fluorescent light bulbs, compact fluorescent light bulbs, or a technology with similar energy-saving capabilities.

Fluorescent light bulbs produce less waste heat and use substantially less electricity than incandescent light bulbs. Although not quantified in this analysis, implementation of this measure is expected to reduce the Project's GHG emissions by less than 0.1 percent.

MM AQ-18: **Energy Audit.** The tenant shall conduct an energy audit by a third party of its choice every 5 years and install innovative power saving technology (1) where it is feasible; and (2) where the amount of savings would be reasonably sufficient to cover the costs of implementation. Such systems help to maximize usable electric current and eliminate wasted electricity, thereby lowering overall electricity use.

This mitigation measure primarily targets large on-terminal electricity consumers such as on-terminal lighting and shoreside electric gantry cranes. These sources consume the majority of on-terminal electricity, and account for about 1 percent of overall Project GHG emissions. Therefore, implementation of power saving technology at the terminal could reduce overall Project GHG emissions by a fraction of 1 percent.

MM AQ-19: **Recycling.** The tenant shall ensure a minimum of 40 percent of all waste generated in all terminal buildings is recycled by 2014 and 60 percent of all waste generated in all terminal buildings is recycled by 2016. Recycled materials shall include: (a) white and colored paper; (b) post-it notes; (c) magazines; (d) newspaper; (e) file folders; (f) all envelopes including those with plastic windows; (g) all cardboard boxes and cartons; (h) all metal and aluminum cans; (i) glass bottles and jars; and; (j) all plastic bottles.

In general, products made with recycled materials require less energy and raw materials to produce than products made with un-recycled materials. This savings in energy and raw material use translates into GHG emission reductions. The effectiveness of this mitigation measure was not quantified due to the lack of a standard emission estimation approach.

MM AQ-20: ***Tree Planting.*** The applicant shall plant shade trees around the main terminal building, and the tenant shall maintain all trees through the life of the lease.

Trees act as insulators from weather, thereby decreasing energy requirements. On-site trees also provide carbon storage (AEP, 2007). Although not quantified, implementation of this measure is expected to reduce Project GHG emissions by less than 0.1 percent.

Future Port-wide greenhouse gas emission reductions are also anticipated through AB 32 rule promulgation. However, such reductions have not yet been quantified because AB 32 implementation is still under development by the CARB.

Table 3.2-42: Annual Operational GHG Emissions – Mitigated Proposed Project

Project Scenario/ Source Type	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
Project Year 2012					
Ships – Transit	48,660	1	2	-	49,413
Ships – Hoteling	21,378	0	1	-	21,749
Tugboats	340	0	0	-	345
Trucks	59,452	0	0	-	59,497
Trains	43,445	1	4	-	44,572
Terminal Equipment	13,376	0	0	0	13,429
Reefer Refrigerant Losses	-	-	-	1	841
AMP Usage	-	-	-	-	-
On-Terminal Electricity Usage	22,448	1	0	-	22,506
Worker Trips	5,340	0	1	-	5,525
Total For Project Year 2012[c]	**214,440**	**4**	**8**	**1**	**217,876**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	65,198	(1)	4	0	66,612
NEPA Baseline	214,440	4	8	1	217,876
Project Minus NEPA Baseline	-	-	-	-	-
Project Year 2015					
Ships – Transit	54,041	1	3	-	54,880
Ships – Hoteling	19,029	0	1	-	19,393
Tugboats	416	0	0	-	422
Trucks	84,792	0	0	-	84,855
Trains	64,649	2	5	0	66,327
Terminal Equipment	19,680	0	0	0	19,757
Reefer Refrigerant Losses	-	-	-	1	1,192
AMP Usage	7,244	0	0	-	7,259
On-Terminal Electricity Usage	31,823	1	0	-	31,905
Worker Trips	7,621	0	1	-	7,810
Total For Project Year 2015[c]	**289,295**	**5**	**10**	**1**	**293,800**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	140,053	1	6	1	142,536
NEPA Baseline	215,143	4	8	1	218,469
Project Minus NEPA Baseline	74,152	1	3	0	75,331
Project Year 2020					
Ships – Transit	66,471	1	3	-	67,504
Ships – Hoteling	14,265	0	1	-	14,569
Tugboats	491	0	0	-	499
Trucks	89,518	0	0	-	89,586
Trains	69,560	2	6	0	71,367
Terminal Equipment	21,343	1	0	0	21,427
Reefer Refrigerant Losses	-	-	-	1	1,284
AMP Usage	8,785	0	0	-	8,803
On-Terminal Electricity Usage	25,036	1	0	-	25,101
Worker Trips	6,623	0	0	-	6,724
Total Project Year 2020[c]	**302,092**	**5**	**11**	**1**	**306,863**

Table 3.2-42: Annual Operational GHG Emissions – Mitigated Proposed Project

Project Scenario/ Source Type	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	152,851	1	6	1	155,598
NEPA Baseline	215,045	4	8	1	218,469
Project Minus NEPA Baseline	87,047	2	3	0	88,394
Project Year 2025					
Ships – Transit	79,204	2	4	-	80,437
Ships – Hoteling	11,243	0	1	-	11,483
Tugboats	529	0	0	-	537
Trucks	97,188	0	0	-	97,262
Trains	70,775	2	6	0	72,613
Terminal Equipment	23,006	1	0	0	23,097
Reefer Refrigerant Losses	-	-	-	1	1,377
AMP Usage	7,004	0	0	-	7,018
On-Terminal Electricity Usage	26,842	1	0	-	26,911
Worker Trips	6,534	0	0	-	6,655
Total Project Year 2025[c]	**322,325**	**6**	**12**	**1**	**327,388**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	173,084	1	7	1	176,124
NEPA Baseline	232,166	4	9	1	235,867
Project Minus NEPA Baseline	90,159	2	3	0	91,521
Project Year 2027					
Ships – Transit	86,335	2	4	-	87,679
Ships – Hoteling	9,316	0	1	-	9,532
Tugboats	567	0	0	-	575
Trucks	100,443	0	0	-	100,519
Trains	72,673	2	6	0	74,560
Terminal Equipment	23,672	1	0	0	23,764
Reefer Refrigerant Losses	-	-	-	1	1,414
AMP Usage	8,632	0	0	-	8,649
On-Terminal Electricity Usage	27,564	1	0	-	27,635
Worker Trips	6,647	0	0	-	6,758
Total Project Year 2027[c]	**335,847**	**6**	**12**	**1**	**341,085**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	186,605	1	7	1	189,821
NEPA Baseline	234,217	4	9	1	237,940
Project Minus NEPA Baseline	101,630	2	3	0	103,146

Notes:

a) 1 metric ton equals 1,000 kilograms, 2205 lbs, or 1.1 U.S. (short) tons.

b) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2;
21 for CH_4; 310 for N_2O; 2,800 for HFC-125; 1,300 for HFC-134a; and 3,800 for HFC-143a.

c) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

Residual Impacts

Table 3.2-42 summarizes the annual GHG emissions that would occur within California from operation of the proposed Project with mitigation. The effects of **MM AQ-9** (AMP for Ships) and **MM AQ-10** (VSRP for ships), were included in the emission estimates. The potential effects of the remaining GHG mitigation measures (and **MM AQ-17 through MM AQ-20**) were addressed qualitatively. Residual impacts would be significant and unavoidable.

NEPA Impact Determination

There are no science-based GHG significance thresholds, nor has the Federal government or the state adopted any by regulations. In the absence of an adopted or science-based GHG standard, in compliance with the NEPA implementing regulations, a significance determination regarding GHGs will not be made under NEPA.

In accordance with CEQ *Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions*, GHG emissions exceed the CEQ reference level of 25,000 $MTCO_2e$ for further analysis in a NEPA document (CEQ, 2010). Therefore GHG emissions are calculated for all proposed Project sources and mitigation measures are considered for the reduction of emissions.

Mitigation Measures

No mitigation is required.

Residual Impacts

An impact determination is not applicable.

3.2.4.4 Alternatives

Construction and operational impacts associated with the Project alternatives were evaluated for Alternatives 1 through 6.

To assist in comparing the alternatives to one another, Table 3.2-43 provides a summary of the air quality significance determinations for the proposed Project and each alternative. The table shows the results by type of impact and pollutant, both before and after mitigation. The discussions of the impacts for each alternative are provided in the following sections.

Table 3.2-43: Comparison Of Air Quality Impacts Associated With Project Alternatives

Air Quality Impact	Without Mitigation							With Mitigation						
	PP	Alt 1[1,2]	Alt 2[2]	Alt 3	Alt 4	Alt 5	Alt 6	PP	Alt 1[1,2]	Alt 2[2]	Alt 3	Alt 4	Alt 5	Alt 6
CEQA Impacts														
AQ-1 Construction Emissions														
VOC	S	-	-	S	S	S	S	S	-	-	S	S	S	S
CO	S	-	-	-	-	S	S	S	-	-	-	-	S	S
NO_X	S	-	S	S	S	S	S	S	-	S	S	S	S	S
SO_X	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PM_{10}	S	-	-	-	S	S	S	S	-	-	-	S	S	S
$PM_{2.5}$	S	-	-	S	S	S	S	S	-	-	S	S	S	S
AQ-2 Construction Concentrations														
CO	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NO_2	S	-	S	S	S	S	S	S	-	S	S	S	S	S
PM_{10}	S	-	-	-	S	S	S	S	-	-	-	S	S	S
$PM_{2.5}$[4]	S	-	-	-	-	-	-	-	-	-	-	-	-	-
AQ-3 Operational Emissions[3]														
VOC	S	-	-	-	-	S	S	S	-	-	-	-	S	S
CO	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NO_X	S	-	-	-	-	S	S	-	-	-	-	-	-	-
SO_X	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PM_{10}	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$PM_{2.5}$	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AQ-4 Operational Concentrations														
CO	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NO_2	S	S	S	S	S	S	S	S	S	S	S	S	S	S
PM_{10}	-	-	-	-	-	-	-	-	-	-	-	-	-	-
$PM_{2,5}$	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AQ-5 CO Hot Spots														
	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AQ-6 Odors														
	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 3.2-43: Comparison Of Air Quality Impacts Associated With Project Alternatives

Air Quality Impact	Without Mitigation							With Mitigation						
	PP	Alt 1[1,2]	Alt 2[2]	Alt 3	Alt 4	Alt 5	Alt 6	PP	Alt 1[1,2]	Alt 2[2]	Alt 3	Alt 4	Alt 5	Alt 6
AQ-7 Toxic Air Contaminants														
Cancer Risk – Residential or Occupational[5]	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Chronic Hazard Index – All Receptors[5]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acute Hazard Index – Residential or Occupational[5]	S	-	-	S	S	S	S	S	-	-	S	S	S	S
AQ-8 AQMP Consistency														
	-	-	-	-	-	-	-	-	-	-	-	-	-	-
AQ-9 GHG Emissions														
	S	S	S	S	S	S	S	S	S	S	S	S	S	S
NEPA Impacts														
AQ-1 Construction Emissions														
VOC	S	NA	-	S	S	S	S	S	NA	-	-	S	S	S
CO	S	NA	-	-	-	S	S	S	NA	-	-	-	S	S
NO_X	S	NA	-	S	S	S	S	S	NA	-	S	S	S	S
SO_X	-	NA	-	-	-	-	-	-	NA	-	-	-	-	-
PM_{10}	S	NA	-	-	S	S	S	S	NA	-	-	-	S	S
$PM_{2.5}$	S	NA	-	S	S	S	S	S	NA	-	S	S	S	S
AQ-2 Construction Concentrations														
CO	-	NA	-	-	-	-	-	-	NA	-	-	-	-	-
NO_2	S	NA	-	S	S	S	S	S	NA	-	S	S	S	S
PM_{10}	S	NA	-	-	S	S	S	S	NA	-	-	S	S	S
$PM_{2.5}$	S	NA	-	S	S	S	S	S	NA	-	S	S	S	S
AQ-3 Operational Emissions														
VOC	S	NA	-	S	S	S	S	S	NA	-	S	S	S	S
CO	S	NA	-	-	-	S	S	S	NA	-	-	-	S	S
NO_X	S	NA	-	S	S	S	S	S	NA	-	S	S	S	S
SO_X	S	NA	-	-	-	S	S	-	NA	-	-	-	-	-

Table 3.2-43: Comparison Of Air Quality Impacts Associated With Project Alternatives

Air Quality Impact	Without Mitigation							With Mitigation						
	PP	Alt 1[1,2]	Alt 2[2]	Alt 3	Alt 4	Alt 5	Alt 6	PP	Alt 1[1,2]	Alt 2[2]	Alt 3	Alt 4	Alt 5	Alt 6
PM_{10}	S	NA	-	-	-	S	S	S	NA	-	-	-	S	S
$PM_{2.5}$	S	NA	-	-	-	S	S	S	NA	-	-	-	S	S
AQ-4 Operational Concentrations														
CO	-	NA	-	-	-	-	-	-	NA	-	-	-	-	-
NO_2	S	NA	-	S	S	S	S	S	NA	-	S	S	S	S
PM_{10}	-	NA	-	-	-	-	-	-	NA	-	-	-	-	-
$PM_{2.5}$	S	NA	-	-	S	S	S	-	NA	-	-	-	-	-
AQ-5 CO Hot Spots														
	-	NA	-	-	-	-	-	-	NA	-	-	-	-	-
AQ-6 Odors														
	-	NA	-	-	-	-	-	-	NA	-	-	-	-	-
AQ-7 Toxic Air Contaminants														
Cancer Risk – All Receptors	-	NA	-	-	-	-	-	-	NA	-	-	-	-	-
Chronic Hazard Index – All Receptors	-	NA	-	-	-	-	-	-	NA	-	-	-	-	-
Acute Hazard Index – Residential or Occupational	S	NA	-	S	S	S	S	S	NA	-	S	S	S	S
AQ-8 AQMP Consistency														
	-	NA	-	-	-	-	-	-	NA	-	-	-	-	-
AQ-9 GHG Emissions														
	S	NA	-	S	S	S	S	S	NA	-	S	S	S	S

S Significant impact - Less than significant impact PP Proposed Project

Notes:

1. Alternative 1 does not require federal action; therefore, a NEPA significance evaluation is not necessary.
2. Alternatives 1 and 2 operations would not have mitigation; therefore, the operational impacts (AQ-3 through AQ-9) listed in the With Mitigation column are identical to the Without Mitigation column for Alternatives 1 and 2.
3. For Impact AQ-3, the significance determinations vary by study year (2012, 2015, 2020, 2025, and 2027). The impact is designated significant in this table if it is significant for any year, even if it is less than significant for some years.
4. Peak daily $PM_{2.5}$ impacts are significant for combined construction and operational impacts.
5. Maximum exposed individual (MEI) cancer risks are not significant for the NOP CEQA baseline increments. However, MEI cancer risks are significant for certain receptor types for the future CEQA baseline increments. The MEI chronic non-cancer and acute risks are identical for the NOP CEQA and future CEQA increments.

3.2.4.4.1 Alternative 1 – No Project Alternative

Under Alternative 1, no further Port action or federal action would occur. The Port would not construct and develop additional backlands, wharves, or terminal improvements. No new cranes would be added, no gate or backland improvements would occur, and no infrastructure for AMP at Berth 306 or automation in the backland area adjacent to Berth 306 would be provided. This alternative would not include any dredging, new wharf construction, or new cranes. The No Project Alternative would not include development of any additional backlands because the existing terminal is berth-constrained and additional backlands would not improve its efficiency.

Under the No Project Alternative, the existing APL Terminal would continue to operate as an approximately 291-acre container terminal. Based on the throughput projections, terminal operations are expected to grow over time as throughput demands increase. Under Alternative 1, the existing APL Terminal would handle approximately 2.15 million TEUs by 2027, which would result in 286 annual ship calls at Berths 302-305. In addition, this alternative would result in up to 7,273 peak daily one-way truck trips (1,922,497 annual), and up to 2,336 annual one-way rail trip movements. Under Alternative 1, cargo ships that currently berth and load/unload at the Berths 302-305 terminal would continue to do so.

The No Project Alternative would not preclude future improvements to the proposed Project site. However, any future changes in use or new improvements with the potential to significantly impact the environment would need to be analyzed in a separate environmental document.

Impact AQ-1: Alternative 1 would not result in construction-related emissions that exceed an SCAQMD threshold of significance in Table 3.2-16.

Under Alternative 1, no construction would occur and construction emissions would not be generated.

CEQA Impact Determination

Because Alternative 1 would not generate construction emissions, there would be no impact under CEQA.

Mitigation Measures

No mitigation is required.

Residual Impacts

There would be no impact.

NEPA Impact Determination

The impacts of this No Project Alternative are not required to be analyzed under NEPA. NEPA requires the analysis of a No Federal Action Alternative (see Alternative 2 in this document).

Mitigation Measures

No mitigation is required.

Residual Impacts

An impact determination is not applicable.

Impact AQ-2: Alternative 1 would not have construction that results in off-site ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-17.

Alternative 1 would not result in construction and would therefore not produce air quality concentrations of NO_X, CO, PM_{10}, and $PM_{2.5}$ in excess of significance thresholds.

CEQA Impact Determination

Because no construction under Alternative 1 would occur, it would not result in a pollutant concentration increase, and there would be no impact under CEQA.

Mitigation Measures

No mitigation is required.

Residual Impacts

There would be no impacts.

NEPA Impact Determination

The impacts of this No Project Alternative are not required to be analyzed under NEPA. NEPA requires the analysis of a No Federal Action Alternative (see Alternative 2 in this document).

Mitigation Measures

No mitigation is required.

Residual Impacts

An impact determination is not applicable.

Impact AQ-3: Alternative 1 would not result in operational emissions that exceed 10 tons per year of VOCs or an SCAQMD threshold of significance in Table 3.2-18.

Under Alternative 1, operation of the 72-acre backlands at Berths 302-305 would continue. This alternative would not result in additional development beyond what currently exists.

The operational emissions associated with this alternative assume the following annual container volumes for Berths 302-305:

- 1,906,000 TEUs in 2012
- 1,948,201 TEUs in 2015
- 2,033,536 TEUs in 2020
- 2,118,871 TEUs in 2025
- 2,153,000 TEUs in 2027

Tables 3.2-44 and 3.2-45 show average and peak daily operations emissions, respectively, for Alternative 1. The average daily emissions represent the annual emissions divided by 365 days per year. Average daily emissions are a good indicator of terminal operations over the long term since terminal operations can vary substantially from day to day, depending on ship arrivals. Section 3.2.4.1.2 summarizes the operational parameters for each of the emission sources assumed in the calculations.

Table 3.2-44: Average Daily Operational Emissions– Alternative 1

Emission Source	Average[a] Daily Emissions (lb/day)[c]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2012						
Ships – Transit and Anchoring	123	229	1,977	51	36	29
Ships – Hoteling	56	142	1,563	91	37	29
Tugboats	3	15	57	0	2	2
Trucks	117	358	1,336	3	74	22
Trains	75	280	1,495	1	42	39
Terminal Equipment	25	172	686	1	21	19
Worker Trips	20	208	17	0	33	7
Total – Project Year 2012[b]	**419**	**1,404**	**7,130**	**148**	**245**	**147**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(80)	(462)	(15)	(2,442)	(317)	(287)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2015						
Ships – Transit and Anchoring	123	229	1,977	51	36	29
Ships – Hoteling	30	80	845	64	23	18
Tugboats	3	16	18	0	0	0
Trucks	149	457	1,531	3	79	26
Trains	62	283	1,363	1	36	33
Terminal Equipment	27	181	724	1	23	21
Worker Trips	17	173	14	0	34	7
Total – Project Year 2015[b]	**411**	**1,419**	**6,472**	**120**	**231**	**134**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(88)	(447)	(673)	(2,469)	(331)	(300)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2020						
Ships – Transit and Anchoring	123	229	1,977	51	36	29
Ships – Hoteling	16	46	450	50	15	12
Tugboats	3	17	19	0	0	0
Trucks	163	525	1,518	3	88	32
Trains	47	323	1,214	1	28	26
Terminal Equipment	12	169	50	1	2	2
Worker Trips	14	128	9	0	37	8
Total – Project Year 2020[b]	**379**	**1,437**	**5,237**	**107**	**206**	**108**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(120)	(429)	(1,908)	(2,483)	(356)	(326)

Table 3.2-44: Average Daily Operational Emissions– Alternative 1

Emission Source	Average[a] Daily Emissions (lb/day)[c]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2025						
Ships – Transit and Anchoring	157	291	2,501	64	46	37
Ships – Hoteling	15	43	420	47	14	11
Tugboats	4	22	25	0	1	1
Trucks	122	393	1,044	3	90	32
Trains	36	332	956	1	21	19
Terminal Equipment	14	184	54	1	2	2
Worker Trips	12	100	7	0	40	8
Total – Project Year 2025[b]	**360**	**1,364**	**5,007**	**118**	**213**	**110**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(139)	(501)	(2,138)	(2,472)	(349)	(324)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2027						
Ships – Transit and Anchoring	157	291	2,501	64	46	37
Ships – Hoteling	15	44	426	48	14	11
Tugboats	5	22	25	0	1	1
Trucks	125	403	1,078	4	92	33
Trains	33	335	859	1	19	17
Terminal Equipment	15	190	56	1	2	2
Worker Trips	10	88	6	0	39	8
Total – Project Year 2027[b]	**360**	**1,373**	**4,951**	**118**	**212**	**109**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(139)	(492)	(2,194)	(2,471)	(349)	(325)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No

Notes:

a) Emissions represent annual emissions divided by 365 days per year of operation.

b) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

c) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Table 3.2-45: Peak Daily Operational Emissions – Alternative 1

Emission Source	Peak[a] Daily Emissions (lb/day)[c]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2012						
Ships – Transit and Anchoring	205	381	3,278	84	60	48
Ships – Hoteling	87	223	2,461	140	58	46
Tugboats	5	23	89	0	4	3
Trucks	161	494	1,844	4	102	30
Trains	86	319	1,703	1	48	44
Terminal Equipment	47	280	1,115	1	36	33
Worker Trips	29	296	24	0	47	10
Total – Project Year 2012[b]	**620**	**2,016**	**10,515**	**231**	**354**	**214**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(304)	(1,523)	(2,611)	(5,163)	(761)	(648)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2015						
Ships – Transit and Anchoring	205	381	3,278	84	60	48
Ships – Hoteling	48	127	1,349	98	35	28
Tugboats	5	25	29	0	1	1
Trucks	205	631	2,114	4	109	36
Trains	70	319	1,535	1	40	37
Terminal Equipment	50	288	1,149	1	39	36
Worker Trips	24	241	19	0	48	10
Total – Project Year 2015[b]	**606**	**2,013**	**9,474**	**190**	**333**	**196**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(318)	(1,526)	(3,652)	(5,204)	(783)	(667)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2020						
Ships – Transit and Anchoring	205	381	3,278	84	60	48
Ships – Hoteling	24	70	682	73	22	18
Tugboats	5	27	30	0	1	1
Trucks	226	724	2,096	5	121	44
Trains	50	346	1,297	1	30	28
Terminal Equipment	18	244	72	2	3	2
Worker Trips	19	173	13	0	50	10
Total – Project Year 2020[b]	**546**	**1,964**	**7,469**	**165**	**286**	**151**

Table 3.2-45: Peak Daily Operational Emissions – Alternative 1

Emission Source	Peak[a] Daily Emissions (lb/day)[c]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(378)	(1,574)	(5,657)	(5,229)	(829)	(712)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2025						
Ships – Transit and Anchoring	236	430	3,658	92	67	54
Ships – Hoteling	20	57	557	63	18	15
Tugboats	6	28	31	0	1	1
Trucks	169	542	1,442	5	124	44
Trains	39	362	1,038	1	23	21
Terminal Equipment	19	254	75	1	3	3
Worker Trips	15	130	9	1	52	11
Total – Project Year 2025[b]	**504**	**1,803**	**6,810**	**162**	**288**	**148**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(421)	(1,736)	(6,316)	(5,231)	(828)	(715)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2027						
Ships – Transit and Anchoring	236	430	3,658	92	67	54
Ships – Hoteling	20	57	557	63	18	15
Tugboats	6	29	32	0	1	1
Trucks	173	556	1,488	5	127	46
Trains	36	376	957	1	21	19
Terminal Equipment	21	268	79	2	3	3
Worker Trips	14	118	8	1	52	11
Total – Project Year 2027[b]	**506**	**1,8343**	**6,780**	**163**	**289**	**147**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(419)	(1,705)	(6,346)	(5,231)	(826)	(715)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No

Notes:

a) Emissions assume maximum theoretical daily equipment activity levels. Such levels would rarely occur during day-to-day terminal operations.

b) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

c) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

CEQA Impact Determination

From a CEQA perspective, Alternative 1 peak daily emissions would not exceed CEQA baseline emissions for any criteria pollutants in any study year.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

The impacts of this No Project Alternative are not required to be analyzed under NEPA. NEPA requires the analysis of a No Federal Action Alternative (see Alternative 2 in this document).

Mitigation Measures

No mitigation is required.

Residual Impacts

An impact determination is not applicable.

Impact AQ-4: Alternative 1 operations would result in off-site ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-19.

Dispersion modeling of on-site and off-site operational emissions was performed to assess the impact of Alternative 1 on local ambient air concentrations. Tables 3.2-46 and 3.2-47 present a summary of the maximum off-site concentrations of NO_2, SO_2, CO, PM_{10} and $PM_{2.5}$ associated with operation of Alternative 1.

CEQA Impact Determination

The data in Table 3.2-46 show that the maximum State 1-hour concentration of NO_2 is predicted to be 438 $\mu g/m^3$, which would exceed the 1-hour SCAQMD concentration threshold of 339 $\mu g/m^3$. The maximum Federal 1-hour concentration of NO_2 of 310 $\mu g/m^3$ would exceed the 1-hour NAAQS of 188 $\mu g/m^3$. The maximum annual NO_2 concentration of 78 $\mu g/m^3$ would exceed the annual NO_2 threshold.

The maximum off-site 1-hour and 8-hour CO concentrations associated with operation of Alternative 1 would be well below the SCAQMD significance thresholds.

The 24-hour PM_{10} and $PM_{2.5}$ CEQA incremental concentrations are predicted to be less than zero $\mu g/m^3$ and therefore would not exceed the SCAQMD significance threshold of 2.5 $\mu g/m^3$.

The annual PM_{10} CEQA incremental concentration is predicted to be 0.1 $\mu g/m^3$. The CEQA increment would not exceed the SCAQMD significance threshold of 1.0 $\mu g/m^3$.

Table 3.2-46: Maximum Off-site NO_2, SO_2, and CO Concentrations Associated with Operation of Alternative 1

Pollutant	Averaging Time	Maximum Modeled Concentration of Alternative 1 ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Ground Level Concentration[a] ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
NO_2 [c]	Federal 1-hour[d,e]	163	147	**310**	188
	State 1-hour[e]	203	235	**438**	339
	Annual	38	40	**78**	57
SO_2	Federal 1-hour[d]	5	53	58	196
	State 1-hour	9	288	297	655
	24-hour	1	31	32	105
CO	1-hour	261	4,600	4,861	23,000
	8-hour	110	2,878	2,988	10,000

Notes:
a) Exceedances of the thresholds are indicated in bold.
b) The background concentrations were obtained from the North Long Beach Monitoring Station. The maximum concentrations during the years of 2007, 2008, and 2009 were used.
c) NO_2 concentrations were calculated using ozone data from the North Long Beach monitoring station. The 1-hour NO_2 concentration is calculated using the 98th percentile of the daily maximum 1-hour average to compare with the new federal 1-hour NO_2 standard of 0.100 ppm (188 $\mu g/m^3$) (effective January 22, 2010).
d) According to USEPA guidance, the modeled design values, 98th percentile for 1-hour NO_2 and 99th percentile for 1-hour SO_2, are added to the design background values for NO_2 and SO_2. (USEPA, 2011a).
e) The Federal and state 1-hour NO_2 background values differ because of different methodologies in calculating the design values. The Federal 1-hour NO_2 background is based on the 98th percentile of the daily maximum 1-hour average, while the state background concentration is based on the peak value from 2007 through 2009.

Table 3.2-47: Maximum Off-site PM_{10} and $PM_{2.5}$ Concentrations Associated with Operation of the Alternative 1

	Averaging Time	Maximum Modeled Concentration of Alternative 1[1] ($\mu g/m^3$)	Maximum Modeled Concentration of CEQA Baseline[1] ($\mu g/m^3$)	Ground Level Concentration CEQA Increment ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
PM_{10}	24-hour	5.6	7.1	(0.2)	2.5
	Annual	1.5	1.9	0.1	1.0
$PM_{2.5}$	24-hour	4.4	6.2	(0.2)	2.5

Notes:
a) Exceedances of the threshold are indicated in bold. The thresholds for PM_{10} and $PM_{2.5}$ are incremental thresholds; therefore, the incremental concentration without background is compared to the threshold.
b) The maximum concentrations and increments presented in this table do not necessarily occur at the same receptor location. This means that the increments cannot necessarily be determined by simply subtracting the baseline concentrations from the Project concentration. The example provided in the discussion of Impact AQ-7 for the proposed Project describes how the increments are calculated.
c) The CEQA Increment represents the Unmitigated Project minus CEQA baseline. The NEPA increment is not assessed for Alternative 1.

Maximum off-site ambient pollutant concentrations associated with the operation of Alternative 1 would be significant for NO_2 (Federal and state 1-hour, and annual) but not CO, PM_{10}, or $PM_{2.5}$. Therefore, significant impacts under CEQA would occur for NO_2.

Mitigation Measures

Mitigation measures are not applicable to Alternative 1 because there would be no discretionary actions subject to CEQA.

Residual Impacts

Impacts would be significant and unavoidable for Federal and state 1-hour and state annual NO_2.

NEPA Impact Determination

The impacts of this No Project Alternative are not required to be analyzed under NEPA. NEPA requires the analysis of a No Federal Action Alternative (see Alternative 2 in this document).

Mitigation Measures

No mitigation is required.

Residual Impacts

An impact determination is not applicable.

Impact AQ-5: Alternative 1 would not generate on-road traffic that would contribute to an exceedance of the 1-hour or 8-hour CO standards.

Alternative 1 would not generate a greater number of truck trips or have a greater impact on intersection Level-of-Service (LOS) than the analysis done for the proposed Project done in Section 3.2.4.3.1- Impacts AQ-5. The proposed Project analysis would not exceed CO standards at any intersection therefore significant impacts under CEQA are not anticipated. The traffic-related impacts for Alternative 1 are less than for the proposed Project; therefore, Alternative 1 would not generate CO concentrations that would exceed any of the CO standards near a roadway intersection.

CEQA Impact Determination

Under CEQA, CO standards would not be exceeded, therefore impacts are less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

The impacts of this No Project Alternative are not required to be analyzed under NEPA. NEPA requires the analysis of a No Federal Action Alternative (see Alternative 2 in this document).

Mitigation Measures

No mitigation is required.

Residual Impacts

An impact determination is not applicable.

Impact AQ-6: Alternative 1 would not create an objectionable odor at the nearest sensitive receptor.

Similar to the proposed Project, the mobile nature of the emission sources associated with Alternative 1 would help to disperse emissions. Additionally, the distance between Alternative 1 emission sources and the nearest residents would be far enough to allow for adequate dispersion of these emissions to below objectionable odor levels. Thus, the potential is low for this alternative to produce objectionable odors that would affect a sensitive receptor.

CEQA Impact Determination

As a result of the above, the potential is low for the Alternative 1 to produce objectionable odors that would affect a sensitive receptor; and significant odor impacts under CEQA, therefore, are not anticipated.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

The impacts of this No Project Alternative are not required to be analyzed under NEPA. NEPA requires the analysis of a No Federal Action Alternative (see Alternative 2 in this document).

Mitigation Measures

No mitigation is required.

Residual Impacts

An impact determination is not applicable.

Impact AQ-7: Alternative 1 would expose receptors to significant levels of toxic air contaminants.

The main source of TACs from Alternative 1 operations would be DPM emissions from terminal equipment, container trucks, rail and ship engines. Similar to the HRA for the proposed Project, PM_{10} and VOC emissions were projected over a 70-year period, from 2012 through 2081.

CEQA Impact Determination

The TAC emissions for Alternative 1 are identical to the TAC emissions for Alternative 2. The summary of HRA impacts are provided in the Alternative 2 discussion in the following subsection (see Table 3.2-53). Incremental proposed Project risks compared to the NOP CEQA baseline would be less than significant for all risk types (cancer, chronic non-cancer, and acute) and all receptor types (residential, occupational, sensitive, student, and recreational).

The peak incremental proposed Project residential cancer risk under the future CEQA baseline would exceed the significance threshold at the same boat dock locations as noted in the proposed Project discussion (at Anchorage Road just west of the Terminal Island Freeway). Container trucks account for more the 50 percent of the risk. See the proposed Project discussion under Impact AQ-7 and Appendix E3 for additional details.

Mitigation Measures

Mitigation measures are not applicable to Alternative 1 because there would be no discretionary actions subject to CEQA.

Residual Impacts

Impacts would remain significant and unavoidable for incremental residential cancer risk.

NEPA Impact Determination

The impacts of this No Project Alternative are not required to be analyzed under NEPA. NEPA requires the analysis of a No Federal Action Alternative (see Alternative 2 in this document).

Mitigation Measures

No mitigation is required.

Residual Impacts

An impact determination is not applicable.

Impact AQ-8: Alternative 1 would not conflict with or obstruct implementation of an applicable AQMP.

This alternative would comply with SCAQMD rules and regulations and would be consistent with SCAG regional employment and population growth forecasts. Thus, this alternative would not conflict with or obstruct implementation of the AQMP.

CEQA Impact Determination

The No Project Alternative would not conflict with or obstruct implementation of the AQMP; therefore, significant impacts under CEQA are not anticipated.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

The impacts of this No Project Alternative are not required to be analyzed under NEPA. NEPA requires the analysis of a No Federal Action Alternative (see Alternative 2 in this document).

Mitigation Measures

No mitigation is required.

Residual Impacts

An impact determination is not applicable.

Impact AQ-9: Alternative 1 would produce GHG emissions that would exceed CEQA baseline.

There are no GHG construction emissions associated with Alternative 1. Table 3.2-48 summarizes the annual GHG emissions that would occur in California from the operation of the No Project Alternative.

Table 3.2-48: Annual Operational GHG Emissions – Alternative 1 (No Project Alternative)

Emission Source	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
Project Year 2012					
Ships – Transit and Anchoring	48,660	1	2	0	49,413
Ships – Hoteling	21,378	0	1	0	21,749
Tugboats	340	0	0	0	345
Trucks	59,452	0	0	0	59,497
Trains	43,445	1	4	0	44,572
Terminal Equipment	13,376	0	0	0	13,429
Worker Trips	0	0	0	1	841
Total For Project Year 2012[c]	0	0	0	0	0
CEQA Baseline	22,448	1	0	0	22,506
Project Minus CEQA Baseline	5,340	0	1	0	5,525
Project Year 2015					
Ships – Transit and Anchoring	48,661	1	2	0	49,414
Ships – Hoteling	14,331	0	1	0	14,606
Tugboats	340	0	0	0	345
Trucks	60,769	0	0	0	60,814
Trains	43,938	1	4	0	45,078
Rail Yard Equipment	13,669	0	0	0	13,723
Reefer Refrigerant Losses	0	0	0	1	859
AMP Usage	5,431	0	0	0	5,442
On0Terminal Electricity Usage	22,945	1	0	0	23,004
Worker Trips	5,059	0	0	0	5,184
Total For Project Year 2015[c]	**215,143**	**4**	**8**	**1**	**218,469**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	65,902	-1	3	0	67,205
Project Year 2020					
Ships – Transit and Anchoring	48,660	1	2	0	49,413
Ships – Hoteling	10,764	0	1	0	10,994
Tugboats	340	0	0	0	345
Trucks	62,137	0	0	0	62,184
Trains	50,485	1	4	0	51,795
Rail Yard Equipment	14,157	0	0	0	14,213
Reefer Refrigerant Losses	0	0	0	1	897
AMP Usage	6,608	0	0	0	6,621
On0Terminal Electricity Usage	17,483	1	0	0	17,529
Worker Trips	4,410	0	0	0	4,477
Total Project Year 2020[c]	**215,045**	**4**	**8**	**1**	**218,469**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	65,804	-1	3	0	67,204

Table 3.2-48: Annual Operational GHG Emissions – Alternative 1 (No Project Alternative)

Emission Source	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
Project Year 2025					
Ships – Transit and Anchoring	61,848	1	3	0	62,805
Ships – Hoteling	10,075	0	1	0	10,290
Tugboats	416	0	0	0	422
Trucks	64,745	0	0	0	64,794
Trains	51,670	1	4	0	53,011
Rail Yard Equipment	14,645	0	0	0	14,703
Reefer Refrigerant Losses	0	0	0	1	935
AMP Usage	6,171	0	0	0	6,183
On0Terminal Electricity Usage	18,217	0	0	0	18,264
Worker Trips	4,380	0	0	0	4,461
Total Project Year 2025[c]	**232,166**	**4**	**9**	**1**	**235,867**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	82,925	-1	4	0	84,603
Project Year 2027					
Ships – Transit and Anchoring	61,848	1	3	0	62,805
Ships – Hoteling	10,228	0	1	0	10,446
Tugboats	416	0	0	0	422
Trucks	65,788	0	0	0	65,837
Trains	52,118	1	4	0	53,471
Rail Yard Equipment	14,840	0	0	0	14,899
Reefer Refrigerant Losses	0	0	0	1	950
AMP Usage	6,264	0	0	0	6,277
On0Terminal Electricity Usage	18,511	0	0	0	18,559
Worker Trips	4,204	0	0	0	4,274
Total Project Year 2027[c]	**234,217**	**4**	**9**	**1**	**237,940**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	84,975	-1	4	0	86,676

Notes:

a) One metric ton equals 1,000 kilograms, 2205 lbs, or 1.1 U.S. (short) tons.

b) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; 1,300 for HFC-134a.

a) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

CEQA Impact Determination

There are no construction-related GHG emissions under Alternative 1. Table 3.2-48 shows that in each future Project year, annual operational CO_2e emissions would increase relative to the CEQA baseline. As a result, Alternative 1 would produce significant levels of GHG emissions under CEQA.

Mitigation Measures

Mitigation measures are not applicable to Alternative 1 because there would be no discretionary actions subject to CEQA.

Residual Impacts

Impacts would remain significant and unavoidable.

NEPA Impact Determination

The impacts of this No Project Alternative are not required to be analyzed under NEPA. NEPA requires the analysis of a No Federal Action Alternative (see Alternative 2 in this document).

Mitigation Measures

No mitigation is required.

Residual Impacts

An impact determination is not applicable.

3.2.4.4.2 Alternative 2 – No Federal Action

The No Federal Action Alternative would be the same as the NEPA baseline and would include only the activities and impacts likely to occur absent further USACE federal approval but could include improvements that require a local action. Under Alternative 2, no federal action would occur; however, minor terminal improvements in the upland area of the existing APL Terminal would be implemented. These minor upland improvements would include conversion of a portion of the dry container storage area to an additional 200 reefers, associated electrical lines, and installation of utility infrastructure at locations in the existing backland areas. Beyond these minor upland improvements, the Port would not construct and develop additional backlands or wharves. No gate or additional backland improvements would occur, and no in-water features such as dredging or a new berth, wharf extension, or over-water features such as new cranes would occur under the No Federal Action Alternative.

Under the No Federal Action Alternative, the existing APL Terminal would continue to operate as an approximately 291-acre container terminal, and up to approximately 2.15 million TEUs could be handled at the terminal by 2027. Based on the throughput projections, the No Federal Action Alternative would result in 286 annual ship calls at Berths 302-305. In addition, this alternative would result in up to 7,273 peak daily truck trips (1,922,497 annual), and up to 2,336 annual one-way rail trip movements. Cargo ships that currently berth and load/unload at the Berths 302-305 terminal would continue to do so.

Impact AQ-1: Alternative 2 would result in construction-related emissions that exceed an SCAQMD threshold of significance in Table 3.2-16.

Construction of the No Federal Action Alternative would include minor terminal improvements in the upland area, including conversion of container storage area for reefer units, and the installation of utility infrastructure in the backlands. No other construction would occur beyond these minor upland improvements for Alternative 2.

CEQA Impact Determination

Construction emissions from Alternative 2 improvements would exceed the SCAQMD daily thresholds for NO_X under CEQA. Detailed construction emission calculations of Alternative 2 are presented in Appendix E1. Therefore, significant impacts under CEQA would occur.

Mitigation Measures

To reduce the level of impact during construction, **MM AQ-1 through MM AQ-8** would be applied. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. After mitigation and compliance with SCAQMD Rule 403, emissions from Alternative 2 would continue to exceed SCAQMD daily thresholds for NOx, if all Alternative 2 elements were constructed simultaneously. However, mitigated emissions from the individual elements (conversion of storage area for reefer units, and installation of utility infrastructure in the backlands) would each be less than the construction emission significance thresholds. Therefore, constructing the elements sequentially instead of simultaneously could reduce construction emissions to less than significant levels.

Residual Impacts

Impacts would be temporary but significant for NOx, based on simultaneous construction of all Alternative 2 elements.

NEPA Impact Determination

The No Federal Action Alternative would have the same conditions as the NEPA baseline, as explained in Section 2.6.2 in Chapter 2; therefore, there would be no incremental difference between Alternative 2 and the NEPA baseline. As a consequence, Alternative 2 would result in no impact under NEPA.

Mitigation Measures

No mitigation is required.

Residual Impacts

There would be no impacts.

Impact AQ-2: Alternative 2 construction would result in off-site ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-17.

Maximum daily construction emissions from Alternative 2 would be less than the maximum daily construction emissions from the proposed Project. Therefore, air quality concentrations of CO, PM_{10}, and $PM_{2.5}$ would be less than the proposed Project.

However, concentrations of NO_2 would likely be significant due to the level of existing, background NO_2 concentrations.

CEQA Impact Determination

Because the dispersion modeling analysis for unmitigated construction activities for the proposed Project (Table 3.2-23a) predicted no exceedances of the CO and $PM_{2.5}$ standards, the construction activity for Alternative 2 also would not result in an exceedance of these standards.

Based on the relative source contributions from the dispersion modeling analysis for the proposed Project, maximum 24-hour off-site ambient pollutant concentrations of PM_{10} associated with Alternative 2 construction activities would be less than the SCAQMD significance thresholds. The 1-hour off-site ambient pollutant concentration of NO_2 would not exceed the NAAQS value. Results of the air dispersion modeling for Alternative 2 are presented in Appendix E2. Therefore, CEQA impacts would be less than significant during Alternative 2 construction.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

The No Federal Action Alternative would have the same conditions as the NEPA baseline, as explained in Section 2.6.2 in Chapter 2, therefore, there would be no incremental difference between Alternative 2 and the NEPA baseline. As a consequence, Alternative 2 would result in no impact under NEPA.

Mitigation Measures

No mitigation is required.

Residual Impacts

There would be no impacts.

Impact AQ-3: Alternative 2 would not result in operational emissions that exceed 10 tons per year of VOCs or an SCAQMD threshold of significance in Table 3.2-18.

Table 3.2-49 presents the unmitigated average daily criteria pollutant emissions associated with operation of the No Federal Action Alternative (Alternative 2). The No Federal Action includes terminal improvements that require a local action including the conversion of a portion of container storage area to reefer storage area, and the installation of utility infrastructure in the backlands. Emissions were estimated for five Project study years: 2012, 2015, 2020, 2025 and 2027. Comparisons to the CEQA and NEPA baseline emissions are presented to determine CEQA and NEPA significance, respectively. Alternative 2 is equivalent to the NEPA baseline therefore all NEPA impacts are zero for this alternative.

The operational emissions associated with this alternative assume the following activity levels:

- Annual container volumes for Berths 302-305 are estimated to be 1,906,000 TEUs in 2012; 1,948,201 TEUs in 2015; 2,033,536 TEUs in 2020, 2,118,871 TEUs in 2025, and 2,153,000 TEUs in 2027
- Annual ship calls to Berths 302-305 are estimated to be 234 visits in 2012, 2015, and 2020 and 286 visits in 2025 and 2027.
- Without mitigation, the VSRP compliance rate to 20- nm was assumed to be 95 percent for all study years. This represents the required compliance rate for designation by the Port as being in compliance with the VSRP.
- The fraction of all TEUs moving through on-dock rail is estimated to be 35.3 percent in the CEQA baseline, 35 percent in 2012-2020, 33.2 percent in 2025 and 32.4 percent in 2027. The fraction of all TEUs moving through off-dock rail yards (Carson ICTF, Los Angeles rail yards, or Inland Empire rail yards) is estimated to be 10.6 percent in the CEQA baseline and 10 percent in 2012-2027. The fraction of all TEUs hauled by truck to nonrail-yard destinations is estimated to be 64.7 percent in the CEQA baseline and 65 percent in 2012- 2027.
- The No Federal Action Alternative would generate 5,093; 6,438; 6,581; 6,869; 7,157; and 7,273 peak daily truck trips in the CEQA baseline, 2012, 2015, 2020, 2025 and 2027 respectively.
- The No Federal Action Alternative would generate 1,676; 2,197; 2,221; 2,270, 2,317 and 2,336 annual one-way train trips in CEQA baseline, 2012, 2015, 2020, 2025 and 2027 respectively.

Table 3.2-50 summarizes peak daily unmitigated emissions estimated for Alternative 2 operations in years 2012, 2015, 2020, 2025 and 2027. Peak daily emissions represent theoretical upper-bound estimates of activity levels at the terminal. Therefore, in contrast to average daily emissions, peak daily emissions would occur infrequently and are based upon a lesser known and therefore more theoretical set of conservative assumptions. Comparisons to the CEQA and NEPA baseline emissions are presented to determine CEQA and NEPA significance, respectively.

Tables 3.2-49 and 3.2-50 show average and peak daily operational emissions, respectively, for Alternative 2. Since Alternative 2 is equivalent to the NEPA baseline for project operations, the methodology for calculating Alternative 2 emissions is described in Section 3.2.4.1, NEPA Impact Determination.

Table 3.2-49: Average Daily Operational Emissions without Mitigation – Alternative 2

Emission Source	Average[a] Daily Emissions (lb/day)[c]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2012						
Ships – Transit and Anchoring	123	229	1,977	51	36	29
Ships – Hoteling	56	142	1,563	91	37	29
Tugboats	3	15	57	0	2	2
Trucks	117	358	1,336	3	74	22
Trains	75	280	1,495	1	42	39
Terminal Equipment	25	172	686	1	21	19
Worker Trips	20	208	17	0	33	7
Total – Project Year 2012[b]	**419**	**1,404**	**7,130**	**148**	**245**	**147**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(80)	(462)	(15)	(2,442)	(317)	(287)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	419	1,404	7,130	148	245	147
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2015						
Ships – Transit and Anchoring	123	229	1,977	51	36	29
Ships – Hoteling	30	80	845	64	23	18
Tugboats	3	16	18	0	0	0
Trucks	149	457	1,531	3	79	26
Trains	62	283	1,363	1	36	33
Terminal Equipment	27	181	724	1	23	21
Worker Trips	17	173	14	0	34	7
Total – Project Year 2015[b]	**411**	**1,419**	**6,472**	**120**	**231**	**134**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(88)	(447)	(673)	(2,469)	(331)	(300)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	411	1,419	6,472	120	231	134
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2020						
Ships – Transit and Anchoring	123	229	1,977	51	36	29
Ships – Hoteling	16	46	450	50	15	12
Tugboats	3	17	19	0	0	0

Table 3.2-49: Average Daily Operational Emissions without Mitigation – Alternative 2

Emission Source	Average[a] Daily Emissions (lb/day)[c]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Trucks	163	525	1,518	3	88	32
Trains	47	323	1,214	1	28	26
Terminal Equipment	12	169	50	1	2	2
Worker Trips	14	128	9	0	37	8
Total – Project Year 2020[b]	**379**	**1,437**	**5,237**	**107**	**206**	**108**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(120)	(429)	(1,908)	(2,483)	(356)	(326)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	379	1,437	5,237	107	206	108
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2025						
Ships – Transit and Anchoring	157	291	2,501	64	46	37
Ships – Hoteling	15	43	420	47	14	11
Tugboats	4	22	25	0	1	1
Trucks	122	393	1,044	3	90	32
Trains	36	332	956	1	21	19
Terminal Equipment	14	184	54	1	2	2
Worker Trips	12	100	7	0	40	8
Total – Project Year 2025[b]	**360**	**1,364**	**5,007**	**118**	**213**	**110**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(139)	(501)	(2,138)	(2,472)	(349)	(324)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	360	1,364	5,007	118	213	110
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2027						
Ships – Transit and Anchoring	157	291	2,501	64	46	37
Ships – Hoteling	15	44	426	48	14	11
Tugboats	5	22	25	0	1	1
Trucks	125	403	1,078	4	92	33
Trains	33	335	859	1	19	17
Terminal Equipment	15	190	56	1	2	2
Worker Trips	10	88	6	0	39	8

Table 3.2-49: Average Daily Operational Emissions without Mitigation – Alternative 2

Emission Source	Average[a] Daily Emissions (lb/day)[c]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Total – Project Year 2027[b]	**360**	**1,373**	**4,951**	**118**	**212**	**109**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(139)	(492)	(2,194)	(2,471)	(349)	(325)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	360	1,373	4,951	118	212	109
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No

Notes:
b) Emissions represent annual emissions divided by 365 days per year of operation.
c) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.
d) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Table 3.2-50: Peak Daily Operational Emissions without Mitigation – Alternative 2

Emission Source	Peak Daily[a] Emissions (lb/day)[c]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2012						
Ships – Transit and Anchoring	205	381	3,278	84	60	48
Ships – Hoteling	87	223	2,461	140	58	46
Tugboats	5	23	89	0	4	3
Trucks	161	494	1,844	4	102	30
Trains	86	319	1,703	1	48	44
Terminal Equipment	47	280	1,115	1	36	33
Worker Trips	29	296	24	0	47	10
Total – Project Year 2012[b]	**620**	**2,016**	**10,515**	**231**	**354**	**214**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(304)	(1,523)	(2,611)	(5,163)	(761)	(648)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	620	2,016	10,515	231	354	214
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No

Table 3.2-50: Peak Daily Operational Emissions without Mitigation – Alternative 2

Emission Source	Peak Daily[a] Emissions (lb/day)[c]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2015						
Ships – Transit and Anchoring	205	381	3,278	84	60	48
Ships – Hoteling	48	127	1,349	98	35	28
Tugboats	5	25	29	0	1	1
Trucks	205	631	2,114	4	109	36
Trains	70	319	1,535	1	40	37
Terminal Equipment	50	288	1,149	1	39	36
Worker Trips	24	241	19	0	48	10
Total – Project Year 2015[b]	**606**	**2,013**	**9,474**	**190**	**333**	**196**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(318)	(1,526)	(3,652)	(5,204)	(783)	(667)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	606	2,013	9,474	190	333	196
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2020						
Ships – Transit and Anchoring	**205**	**381**	**3,278**	**84**	**60**	**48**
Ships – Hoteling	**24**	**70**	**682**	**73**	**22**	**18**
Tugboats	**5**	**27**	**30**	**0**	**1**	**1**
Trucks	**226**	**724**	**2,096**	**5**	**121**	**44**
Trains	50	346	1,297	1	30	28
Terminal Equipment	18	244	72	2	3	2
Worker Trips	19	173	13	0	50	10
Total – Project Year 2020[b]	**546**	**1,964**	**7,469**	**165**	**286**	**151**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(378)	(1,574)	(5,657)	(5,229)	(829)	(712)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	546	1,964	7,469	165	286	151
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2025						
Ships – Transit and Anchoring	236	430	3,658	92	67	54
Ships – Hoteling	20	57	557	63	18	15
Tugboats	6	28	31	0	1	1
Trucks	169	542	1,442	5	124	44

Table 3.2-50: Peak Daily Operational Emissions without Mitigation – Alternative 2

Emission Source	Peak Daily[a] Emissions (lb/day)[c]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Trains	39	362	1,038	1	23	21
Terminal Equipment	19	254	75	1	3	3
Worker Trips	15	130	9	1	52	11
Total – Project Year 2025[b]	**504**	**1,803**	**6,810**	**162**	**288**	**148**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(421)	(1,736)	(6,316)	(5,231)	(828)	(715)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	504	1,803	6,810	162	288	148
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2027						
Ships – Transit and Anchoring	236	430	3,658	92	67	54
Ships – Hoteling	20	57	557	63	18	15
Tugboats	6	29	32	0	1	1
Trucks	173	556	1,488	5	127	46
Trains	36	376	957	1	21	19
Terminal Equipment	21	268	79	2	3	3
Worker Trips	14	118	8	1	52	11
Total – Project Year 2027[b]	**506**	**1,834**	**6,780**	**163**	**289**	**147**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(419)	(1,705)	(6,346)	(5,231)	(826)	(715)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	506	1,834	6,780	163	289	147
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No

Notes:

a) Emissions assume maximum theoretical daily equipment activity levels. Such levels would rarely occur during day-to-day terminal operations.

b) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

c) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

CEQA Impact Determination

From a CEQA perspective, Alternative 2 peak daily emissions would not exceed CEQA baseline emissions for any criteria pollutant in 2012, 2015, 2020, 2025, and 2027. In addition, the 10 ton/year VOC threshold would not be exceeded in any study year. The air quality impacts associated with Alternative 2 operations would be less than significant under CEQA.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

The No Federal Action Alternative would have the same conditions as the NEPA baseline, as explained in Section 2.6.2 in Chapter 2. Therefore, there would be no incremental difference between Alternative 2 and the NEPA baseline. As a consequence, Alternative 2 would result in no impact under NEPA.

Mitigation Measures

No mitigation is required.

Residual Impacts

There would be no impacts.

Impact AQ-4: Alternative 2 operations would result in off-site ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-19.

Dispersion modeling of on-site and off-site operational emissions was performed to assess the impact of Alternative 2 on local ambient air concentrations. Tables 3.2-51 and 3.2-52 present a summary of the maximum off-site concentrations of NO_2, CO, SO_2, PM_{10} and $PM_{2.5}$ associated with operation of Alternative 2.

CEQA Impact Determination

The data in Table 3.2-51 show that the maximum State 1-hour concentration of NO_2 is predicted to be 438 $\mu g/m^3$, which exceeds the 1-hour SCAQMD concentration threshold of 339 $\mu g/m^3$. The maximum Federal 1-hour concentration of NO_2 would exceed the NAAQS value of 188 $\mu g/m^3$. The maximum annual NO_2 concentration of 78 $\mu g/m^3$ would exceed the annual NO_2 threshold of 57 $\mu g/m^3$.

Table 3.2-51: Maximum Off-site NO_2, SO_2, and CO Concentrations Associated with Operation of Alternative 2 without Mitigation

Pollutant	Averaging Time	Maximum Modeled Concentration of Proposed Project (μg/m³)	Background Concentration[b] (μg/m³)	Total Ground Level Concentration [a] (μg/m³)	SCAQMD Threshold (μg/m³)
NO_2 [c]	Federal 1-hour[d,e]	163	147	**310**	188
	State 1-hour[e]	203	235	**438**	339
	State Annual	38	40	**78**	57
	Federal Annual	38	40	78	100
SO_2	Federal 1-hour[d]	5	53	58	196
	State 1-hour	9	228	236	655
	24-hour	1	33	33	105
CO	1-hour	261	4,600	4,861	23,000
	8-hour	110	2,878	2,988	10,000

Notes:

a) Exceedances of the thresholds are indicated in bold.

b) The background concentrations were obtained from the North Long Beach Monitoring Station. The maximum concentrations during the years of 2007, 2008, and 2009 were used.

c) NO_2 concentrations were calculated using ozone data from the North Long Beach monitoring station. The 1-hour NO_2 concentration is calculated using the 98^{th} percentile of the daily maximum 1-hour average to compare with the new federal 1-hour NO_2 standard of 0.100 ppm (188 μg/m³) (effective January 22, 2010).

d) According to USEPA guidance, the modeled design values, 98^{th} percentile for 1-hour NO_2 and 99^{th} percentile for 1-hour SO_2, are added to the design background values for NO_2 and SO_2. (USEPA, 2011a).

e) The Federal and state 1-hour NO_2 background values differ because of different methodologies in calculating the design values. The Federal 1-hour NO_2 background is based on the 98^{th} percentile of the daily maximum 1-hour average, while the state background concentration is based on the peak value from 2007 through 2009.

Table 3.2-52: Maximum Off-site PM_{10} and $PM_{2.5}$ Concentrations Associated with Operation of the Alternative 2 without Mitigation

	Averaging Time	Maximum Modeled Concentration of Proposed Project[b] (μg/m³)	Maximum Modeled Concentration of CEQA Baseline[b] (μg/m³)	Maximum Modeled Concentration of NEPA Baseline[b] (μg/m³)	Ground Level Concentration CEQA Increment (μg/m³)[a,c]	Ground Level Concentration NEPA Increment (μg/m³)[a,c]	SCAQMD Threshold (μg/m³)
PM_{10}	24-hour	5.6	7.1	0	(0.2)	0	2.5
	Annual	1.5	1.9	0	0.1	0	1.0
$PM_{2.5}$	24-hour	4.4	6.2	0	(0.2)	0	2.5
	Annual	1.1	NA	0	NA	0	0.3

Notes:

a) Exceedances of the threshold are indicated in bold. The thresholds for PM_{10} and $PM_{2.5}$ are incremental thresholds; therefore, the incremental concentration without background is compared to the threshold.

b) The maximum concentrations and increments presented in this table do not necessarily occur at the same receptor location. This means that the increments cannot necessarily be determined by simply subtracting the baseline concentrations from the Project concentration. The example provided in the discussion of Impact AQ-7 for the proposed Project describes how the increments are calculated.

c) The CEQA Increment represents the Project minus CEQA baseline. The NEPA Increment is zero because Alternative 2 is equivalent to the NEPA baseline.

d) SCAQMD does not list a Significant Impact Level for annual $PM_{2.5}$, therefore the modeled annual average $PM_{2.5}$ was compared to the PSD SIL of 0.3 μg/m3 for the determination of NEPA significance only.

The maximum off-site 1-hour and 8-hour CO concentrations associated with operation of Alternative 2 would be well below the SCAQMD significance thresholds.

The 24-hour PM_{10} and $PM_{2.5}$ CEQA incremental concentrations are predicted to be (0.2) and (0.1) $\mu g/m^3$, respectively. The CEQA increments are negative and would therefore not exceed the SCAQMD significance threshold of 2.5 $\mu g/m^3$. The annual PM_{10} CEQA incremental concentration is predicted to be 0.3 $\mu g/m^3$. The CEQA increment would not exceed the SCAQMD significance threshold of 1.0 $\mu g/m^3$.

Maximum off-site ambient pollutant concentrations associated with the operation of Alternative 2 would be significant for the Federal and state 1-hour, and state annual concentrations of NO_2. Therefore, impacts under CEQA would be significant.

Mitigation Measures

To reduce the level of impact during Alternative 2 operation, **MM AQ-9 through MM AQ-16** described above for Impact AQ-3 would be applied to Alternative 2. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. The maximum off-site ground-level concentrations of Federal and state 1-hour and state annual NO_2 for Alternative 2 would remain significant after mitigation.

Residual Impacts

Impacts would be significant and unavoidable for Federal and state 1-hour and state annual NO_2.

NEPA Impact Determination

The No Federal Action Alternative would have the same conditions as the NEPA baseline, as explained in Section 2.6.2 in Chapter 2; therefore, there would be no incremental difference between Alternative 2 and the NEPA baseline. As a consequence, Alternative 2 would result in no impact under NEPA.

Mitigation Measures

No mitigation is required.

Residual Impacts

There would be no impacts.

Impact AQ-5: Alternative 2 would not generate on-road traffic that would contribute to an exceedance of the 1-hour or 8-hour CO standards.

Alternative 2 would not generate a greater number of truck trips or have a greater impact on intersection LOS than the analysis done for the proposed Project, in Section 3.2.4.3.1 Impact AQ-5. The proposed Project analysis would not exceed CO standards at any intersection therefore significant impacts under CEQA are not anticipated. The traffic-related impacts related to Alternative 2 are less than for the proposed Project. Therefore, Alternative 2 would not generate any exceedances of the CO standards near a roadway intersection.

CEQA Impact Determination

Under CEQA, CO standards would not be exceeded, therefore impacts are less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

The No Federal Action Alternative would have the same conditions as the NEPA baseline, as explained in Section 2.6.2 in Chapter 2. Therefore, there would be no incremental difference between Alternative 2 and the NEPA baseline. As a consequence, Alternative 2 would result in no impact under NEPA.

Mitigation Measures

No mitigation is required.

Residual Impacts

There would be no impacts.

Impact AQ-6: Alternative 2 would not create an objectionable odor at the nearest sensitive receptor.

Similar to the proposed Project, the mobile nature of the emission sources associated with Alternative 2 would help to disperse emissions. Additionally, the distance between proposed Project emission sources and the nearest residents would be far enough to allow for adequate dispersion of these emissions to below objectionable odor levels. Thus, the potential is low for this alternative to produce objectionable odors that would affect a sensitive receptor.

CEQA Impact Determination

As a result of the above, the potential is low for the proposed Project to produce objectionable odors that would affect a sensitive receptor; and significant odor impacts under CEQA, therefore, are not anticipated.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

The No Federal Action Alternative would have the same conditions as the NEPA baseline, as explained in Section 2.6.2 in Chapter 2; therefore, there would be no incremental difference between Alternative 2 and the NEPA baseline. As a consequence, Alternative 2 would result in no impact under NEPA.

Mitigation Measures

No mitigation is required.

Residual Impacts

There would be no impacts.

Impact AQ-7: The No Federal Action Alternative would expose receptors to significant levels of toxic air contaminants.

The main sources of TACs from Alternative 2 operations would be DPM emissions from terminal equipment, container truck, rail and ship engines. Similar to the HRA for the proposed Project, PM_{10} and VOC emissions were projected over a 70-year period, from 2012 through 2081. An HRA was performed over this 70-year exposure period.

The results of the HRA analysis for the NOP CEQA baseline increment for the proposed Project discussed previously indicated that those impacts would all be less than significant. Therefore, the impacts for Alternative 2 compared to the NOP CEQA baseline would also be less than significant, and are not quantified for Alternative 2.

Table 3.2-53 presents the maximum predicted health impacts associated with this alternative for incremental future CEQA and NEPA impacts. The table includes estimates of individual lifetime cancer risk, chronic noncancer hazard index, and acute noncancer hazard index at the maximally exposed receptors. Results are presented for the future CEQA increment (alternative minus future CEQA baseline) and the NEPA increment (alternative minus NEPA baseline).

Table 3.2-53: Maximum Incremental CEQA and NEPA Health Impacts Associated With Alternative 2 Without Mitigation, 2012 – 2081

Health Impact	Receptor Type	Maximum Predicted Impact[a,d]					Significance Threshold
		Alt 2	Future CEQA Baseline	Future CEQA Increment[b,c]	NEPA Baseline	NEPA Increment[b,c]	
Cancer Risk[f]	Residential[e]	40	22	**18 x 10^{-6} (18 in a million)**	-[c]	-[c]	10 x 10^{-6} (10 in a million)
	Occupational	31	22	9 x 10^{-6} (9 in a million)	-[c]	-[c]	
	Sensitive	13	8	5 x 10^{-6} (5 in a million)	-[c]	-[c]	
	Student	0.5	0.4	0.1 x 10^{-6} (0.1 in a million)	-[c]	-[c]	
	Recreational	5	2	3 x 10^{-6} (3 in a million)	-[c]	-[c]	
Chronic Hazard Index	Residential	0.2	0.5	< 0[g]	-[c]	-[c]	1.0
	Occupational	0.4	0.8	< 0[g]	-[c]	-[c]	
	Sensitive	0.1	0.4	< 0[g]	-[c]	-[c]	
	Student	0.09	0.3	< 0[g]	-[c]	-[c]	
	Recreational	0.1	0.4	< 0[g]	-[c]	-[c]	
Acute Hazard Index	Residential	0.2	0.2	0	-[c]	-[c]	1.0
	Occupational	0.2	0.2	0	-[c]	-[c]	
	Sensitive	0.06	0.06	0	-[c]	-[c]	
	Student	0.06	0.06	0	-[c]	-[c]	
	Recreational	0.09	0.09	0	-[c]	-[c]	

Notes:

a) Exceedances of the significance criteria are in **bold**. The significance thresholds apply to the CEQA and NEPA increments only.

b) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impacts. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.

c) The CEQA increment represents Project minus CEQA baseline. Alternative 2 is the NEPA Baseline; therefore, no incremental risk is reported for the NEPA increment.

d) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.

e) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.

f) Construction emissions were modeled with the operational emissions for the determination of cancer risk.

g) When the predicted impact is less than zero, the Project risk is less than the respective baseline.

CEQA Impact Determination

Table 3.2-53 shows that the maximum CEQA chronic non-cancer and acute risk increments associated with Alternative 2 are predicted to be less than the significance threshold of 1 at all receptor types. The future CEQA cancer risk increments for Alternative 2 are predicted to be less than the cancer risk threshold of 10 in one million for non-residential receptors. For the residential receptor, the future CEQA cancer risk increment is greater than the threshold, and the peak location is at the boats docked west of the Terminal Island Freeway, as discussed under the proposed Project Impact AQ-7, above.

From a CEQA perspective, the 24-hour $PM_{2.5}$ CEQA incremental impact shown in Table 3.2-52 is less than zero. The CEQA incremental impact is less than the SCAQMD threshold of 2.5 $\mu g/m^3$; therefore the 24-hour $PM_{2.5}$ concentration is less than significant and a mortality and morbidity determination is not required.

Mitigation Measures

The only discretionary action subject to CEQA under Alternative 2 is the refer area expansion. The project mitigation measures (**MM-AQ-9 through MM-AQ-16**) do not control the few sources associated with the construction and operation of this portion of the terminal. No other measures are feasible that would reduce these impacts.

Residual Impacts

Impacts would remain significant and unavoidable for incremental residential cancer risk.

NEPA Impact Determination

The No Federal Action Alternative would have the same conditions as the NEPA baseline, as explained in Section 2.6.2 in Chapter 2; therefore, there would be no incremental difference between Alternative 2 and the NEPA baseline. As a consequence, Alternative 2 would result in no impact under NEPA.

Mitigation Measures

No mitigation is required.

Residual Impacts

There would be no impacts.

Impact AQ-8: Alternative 2 would not conflict with or obstruct implementation of an applicable AQMP.

This alternative would comply with SCAQMD rules and regulations and would be consistent with SCAG regional employment and population growth forecasts. Thus, this alternative would not conflict with or obstruct implementation of the AQMP.

CEQA Impact Determination

Alternative 2 would not conflict with or obstruct implementation of the AQMP; therefore, impacts under CEQA are not anticipated.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

The No Federal Action Alternative would have the same conditions as the NEPA baseline, as explained in Section 2.6.2 in Chapter 2; therefore, there would be no incremental difference between Alternative 2 and the NEPA baseline. As a consequence, Alternative 2 would result in no impact under NEPA.

Mitigation Measures

No mitigation is required.

Residual Impacts

There would be no impacts.

Impact AQ-9: Alternative 2 would produce GHG emissions that would exceed the CEQA baseline levels.

Table 3.2-54 summarizes the total GHG construction emissions associated with Alternative 2. The annual GHG emissions that would occur within California from the operation of Alternative 2 are shown in Table 3.2-55.

CEQA Impact Determination

Table 3.2-54 shows that total CO_2e emissions during project construction would exceed CEQA baseline construction emissions (which are zero for construction). In addition, the data in Table 3.2-55 show that in each future Project year, annual operational CO_2e emissions would increase from CEQA baseline levels. As a result, Alternative 2 would produce significant levels of GHG emissions under CEQA.

Mitigation Measures

Measures that reduce fuel usage and electricity consumption from Alternative 2 emission sources would reduce proposed GHG emissions. Project mitigation measures that would accomplish this effect include **MM AQ-2** through **MM AQ-4** for construction; and **MM AQ-16 through MM AQ-20** for operations. Although GHG emissions would be reduced through these measures, emissions are still anticipated to exceed baseline levels.

Residual Impacts

Impacts would remain significant and unavoidable.

NEPA Impact Determination

The No Federal Action Alternative would have the same conditions as the NEPA baseline, as explained in Section 2.6.2 in Chapter 2; therefore, there would be no incremental difference between Alternative 2 and the NEPA baseline. As a consequence, Alternative 2 would result in no impact under NEPA.

Mitigation Measures

No mitigation is required.

Residual Impacts

There would be no impacts.

Table 3.2-54: Total GHG Emissions from Berth 302-306 Terminal Construction Activities – Alternative 2

Emission Source	CO_2	CH_4	N_2O	CO_2e[d]
	Total Emissions[b] (Metric Tons[c])			
Total Construction				
Reefer Area Expansion	161	0.01	0.01	162
Utility Infrastructure	127	0.01	0.00	128
Worker Commute	443	0.02	0.01	446
Total Construction – CEQA Impact[a,e]	731	0.04	0.02	737
Total Construction – NEPA Impact [e]	0	0	0	0

Notes:

a) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

b) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

c) One metric ton equals 1,000 kilograms, 2,205 lbs, or 1.1 U.S. (short) tons.

d) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; and 310 for N_2O.

e) The CEQA Impact equals total Project construction emissions minus CEQA baseline emissions. In the case of construction, CEQA baseline emissions are zero. The NEPA impact equals total Project construction emissions minus NEPA baseline emissions. The activities considered to be part of the NEPA construction analysis are reported in Table 3.2-11.

Table 3.2-55: Annual Operational GHG Emissions – Alternative 2 (No Federal Action Alternative)

Project Scenario/ Source Type	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
Project Year 2012					
Ships – Transit and Anchoring	48,660	1	2	-	49,413
Ships – Hoteling	21,378	0	1	-	21,749
Tugboats	340	0	0	-	345
Trucks	59,452	0	0	-	59,497
Trains	43,445	1	4	-	44,572
Terminal Equipment	13,376	0	0	0	13,429
Reefer Refrigerant Losses	-	-	-	1	841
AMP Usage	-	-	-	-	-
On-Terminal Electricity Usage	22,448	1	0	-	22,506
Worker Trips	5,340	0	1	-	5,525
Total – Project Year 2012[c]	**214,440**	**4**	**8**	**1**	**217,876**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	65,198	-1	4	0	66,612
NEPA Baseline	**214,440**	**4**	**8**	**1**	**217,876**
Project Minus NEPA Baseline	0	0	0	0	0
Project Year 2015					
Ships – Transit and Anchoring	48,661	1	2	0	49,414
Ships – Hoteling	14,331	0	1	0	14,606
Tugboats	340	0	0	0	345
Trucks	60,769	0	0	0	60,814
Trains	43,938	1	4	0	45,078
Terminal Equipment	13,669	0	0	0	13,723
Reefer Refrigerant Losses	0	0	0	1	859
AMP Usage	5,431	0	0	0	5,442
On-Terminal Electricity Usage	22,945	1	0	0	23,004
Worker Trips	5,059	0	0	0	5,184
Total – Project Year 2015[c]	**215,143**	**4**	**8**	**1**	**218,469**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	65,902	-1	3	0	67,205
NEPA Baseline	**215,143**	**4**	**8**	**1**	**218,469**
Project Minus NEPA Baseline	0	0	0	0	0
Project Year 2020					
Ships – Transit and Anchoring	48,660	1	2	0	49,413
Ships – Hoteling	10,764	0	1	0	10,994
Tugboats	340	0	0	0	345
Trucks	62,137	0	0	0	62,184
Trains	50,485	1	4	0	51,795
Terminal Equipment	14,157	0	0	0	14,213
Reefer Refrigerant Losses	0	0	0	1	897
AMP Usage	6,608	0	0	0	6,621
On-Terminal Electricity Usage	17,483	0	0	0	17,529
Worker Trips	4,410	0	0	0	4,477
Total – Project Year 2020[c]	**215,045**	**4**	**8**	**1**	**218,469**

Table 3.2-55: Annual Operational GHG Emissions – Alternative 2 (No Federal Action Alternative)

Project Scenario/ Source Type	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	65,804	-1	3	0	67,204
NEPA Baseline	**215,045**	**4**	**8**	**1**	**218,469**
Project Minus NEPA Baseline	0	0	0	0	0
Project Year 2025					
Ships – Transit and Anchoring	61,848	1	3	0	62,805
Ships – Hoteling	10,075	0	1	0	10,290
Tugboats	416	0	0	0	422
Trucks	64,745	0	0	0	64,794
Trains	51,670	1	4	0	53,011
Terminal Equipment	14,645	0	0	0	14,703
Reefer Refrigerant Losses	0	0	0	1	935
AMP Usage	6,171	0	0	0	6,183
On-Terminal Electricity Usage	18,217	0	0	0	18,264
Worker Trips	4,380	0	0	0	4,461
Total – Project Year 2025[c]	**232,166**	**4**	**9**	**1**	**235,867**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	82,925	-1	4	0	84,603
NEPA Baseline	**232,166**	**4**	**9**	**1**	**235,867**
Project Minus NEPA Baseline	0	0	0	0	0
Project Year 2027					
Ships – Transit and Anchoring	61,848	1	3	0	62,805
Ships – Hoteling	10,228	0	1	0	10,446
Tugboats	416	0	0	0	422
Trucks	65,788	0	0	0	65,837
Trains	52,118	1	4	0	53,471
Terminal Equipment	14,840	0	0	0	14,899
Reefer Refrigerant Losses	0	0	0	1	950
AMP Usage	6,264	0	0	0	6,277
On-Terminal Electricity Usage	18,511	0	0	0	18,559
Worker Trips	4,204	0	0	0	4,274
Total – Project Year 2027[c]	**234,217**	**4**	**9**	**1**	**237,940**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	84,975	-1	4	0	86,676
NEPA Baseline	**234,217**	**4**	**9**	**1**	**237,940**
Project Minus NEPA Baseline	0	0	0	0	0

Notes:

a) One metric ton equals 1,000 kilograms, 2205 lbs, or 1.1 U.S. (short) tons.

b) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; 1,300 for HFC-134a.

c) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

3.2.4.4.3 Alternative 3 – Reduced Project: Four New Cranes

Under Alternative 3, four new cranes would be added to the existing wharf along Berths 302-305 and only minor improvements to the existing APL Terminal would be made utility infrastructure and conversion of dry container storage to reefers). No other upland terminal improvements would be constructed. The existing terminal is berth-constrained, and adding the additional four cranes would improve the terminal's efficiency.

The total acreage of backlands under Alternative 3 would remain at approximately 291 acres, which would be less than the proposed Project. This alternative would not include the extension of the existing wharf, construction of a new berth, dredging, or the relocation and improvement of various gates and entrance lanes.

Based on the throughput projections, TEU throughput under Alternative 3 would be less than the proposed Project, with an expected throughput of approximately 2.58 million TEUs by 2027. This would translate into 338 annual ship calls at Berths 302-305. In addition, this alternative would result in up to 8,725 peak daily truck trips (2,306,460 annual), and up to 2,544 annual one-way rail trip movements. Configuration of all other landside terminal components would be identical to the existing terminal.

Impact AQ-1: Alternative 3 would result in construction-related emissions that exceed an SCAQMD threshold of significance in Table 3.2-16.

Construction of Alternative 3 would include equivalent construction activity to Alternative 2, such as minor terminal improvements in the upland area, including conversion of container storage area to reefer storage, and the installation of utility infrastructure in the backlands. In addition, four cranes would be added to the existing wharf along Berths 302-305 for Alternative 3.

CEQA Impact Determination

Without mitigation, emissions from Alternative 3 construction activities would exceed the SCAQMD daily thresholds for VOC, NO_X and $PM_{2.5}$ under CEQA. Detailed construction emission calculations of Alternative 3 are presented in Appendix E1.1.

Alternative 3 would exceed the thresholds for VOC, NO_X and $PM_{2.5}$ during construction activities without mitigation. Therefore, significant impacts under CEQA would occur.

Mitigation Measures

To reduce the level of impact during construction, **MM AQ-1 through MM AQ-8** would be applied. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. After mitigation and compliance with SCAQMD Rule 403, emissions from Alternative 3 would continue to exceed SCAQMD daily thresholds for VOC, $NO_{X,}$ and $PM_{2.5}$.

Residual Impacts

Impacts would be temporary but significant and unavoidable for VOC, NOx, and $PM_{2.5}$.

NEPA Impact Determination

Without mitigation, emissions from Alternative 3 construction activities would exceed the SCAQMD daily thresholds for VOC, NO_X and $PM_{2.5}$ under NEPA. Detailed construction emission calculations of Alternative 3 are presented in Appendix E1.1.

Alternative 3 would exceed the thresholds for VOC, NO_X and $PM_{2.5}$ during construction activities without mitigation. Therefore, significant impacts under NEPA would occur.

Mitigation Measures

To reduce the level of impact during construction, **MM AQ-1 through MM AQ-8** would be applied. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. After mitigation and compliance with SCAQMD Rule 403, emissions from Alternative 3 would continue to exceed SCAQMD daily thresholds for VOC, NO_X and $PM_{2.5}$.

Residual Impacts

Impacts would be temporary but significant and unavoidable for VOC, NOx and $PM_{2.5}$.

Impact AQ-2: Alternative 3 construction would result in off-site ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-17.

This alternative has less construction activities than the proposed Project. The level of peak construction emissions for Alternative 3 construction ranges between approximately 26 and 56 percent of proposed Project peak construction.

Maximum off-site ambient pollutant concentrations associated with proposed Project construction were significant for NO_X (1-hour and annual average) and PM_{10} (24-hour and annual average).

CEQA Impact Determination

Because the dispersion modeling analysis for unmitigated proposed Project construction activities for the proposed Project (Table 3.2-23a) predicted no exceedances of the CO and $PM_{2.5}$ standards, the lower construction activity for Alternative 3 also would not result in an exceedance of these standards.

The 1-hour NO_2 concentrations associated with Alternative 3 construction are: Highest 1st high value equals 106 $\mu g/m^3$; and NAAQS 1-hour design value equals 65 $\mu g/m^3$. These impacts occur near the northwest corner of the terminal. When added to existing background, the resulting state and Federal concentrations are 341 $\mu g/m^3$ (comparable to the state standard of 339 $\mu g/m^3$), and 212 $\mu g/m^3$ (comparable to the NAAQS of 188 $\mu g/m^3$). Based on these results, the maximum Federal and state 1-hour off-site ambient pollutant concentrations of NO_2 associated with Alternative 3 construction activities would exceed SCAQMD significance threshold. Therefore, CEQA impacts would be significant for NO_2 during Alternative 3 construction.

Mitigation Measures

To reduce the level of impact during construction, **MM AQ-1 through MM AQ-8** would be applied to Alternative 3 construction. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. Despite implementation of these mitigation measures, off-site ambient concentrations from construction activities remain significant for Federal 1-hour NO_2. Off-site ambient concentrations from construction activities would be below the significance thresholds for CO, PM_{10} and $PM_{2.5}$.

Residual Impacts

Impacts associated with NO_2 from construction would be temporary but significant and unavoidable.

NEPA Impact Determination

Because the dispersion modeling analysis for unmitigated proposed Project construction activities for the proposed Project (Table 3.2-23a) predicted no exceedances of the CO and PM_{10} standards, the lower construction activity associated with Alternative 3 also would not result in an exceedance of these standards under NEPA.

Based on the relative source contributions from the dispersion modeling analysis for the proposed Project, the maximum Federal 1-hour off-site ambient pollutant concentration of NO_2 associated with Alternative 3 construction activities would exceed the SCAQMD significance threshold. In addition, annual $PM_{2.5}$ emissions would exceed the NEPA threshold of 0.3 $\mu g/m^3$. Therefore, NEPA impacts would be significant for NO_2 and $PM_{2.5}$ during Alternative 3 construction. In addition to the impact noted above for construction alone, the overlap of construction and operations would result in a significant impact for 24-hour $PM_{2.5}$.

Mitigation Measures

To reduce the level of impact during construction, **MM AQ-1 through MM AQ-8** would be applied to Alternative 3 construction. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. However, off-site ambient concentrations from construction activities would remain significant for NO_2 and $PM_{2.5}$. Off-site ambient concentrations from construction activities would be below the significance thresholds for CO and PM_{10}.

Residual Impacts

Impacts associated with NO_2 and $PM_{2.5}$ from construction would be temporary but significant and unavoidable.

Impact AQ-3: Alternative 3 would result in operational emissions that exceed 10 tons per year of VOCs or an SCAQMD threshold of significance in Table 3.2-18.

Table 3.2-56 presents the unmitigated average daily criteria pollutant emissions associated with operation of this alternative. Emissions were estimated for five Project study years: 2012, 2015, 2020, 2025 and 2027. Comparisons to the CEQA baseline and NEPA baseline emissions are presented to determine CEQA and NEPA significance, respectively.

The operational emissions associated with Alternative 3 assume the following activity levels:

- Annual container volumes for Berths 302-305 are estimated to be 1,906,000 TEUs in 2012; 2,102,000 TEUs in 2015; 2,302,417 TEUs in 2020, 2,502,833 TEUs in 2025 and 2,583,000 TEUs in 2027.
- Annual ship calls to Berths 302-306 are estimated to be 234 visits in 2012 and 2015, 286 visits in 2020 and 338 visits in 2025 and 2027.
- Without mitigation, the VSRP compliance rate was assumed to be 95 percent for all study years. This represents the required compliance rate for designation by the Port as being in compliance with the VSRP.
- The fraction of all TEUs moving through on-dock rail is estimated to be 35 percent in 2012, 2015, 2020, 2025 and 2027. The fraction of all TEUs moving through off-dock rail yards (Carson ICTF, Los Angeles rail yards, or Inland Empire rail yards) is estimated to be 10 percent in 2012, 2015, 2020, 2025 and 2027. The fraction of all TEUs hauled by truck to nonrail-yard destinations is estimated to be 65 percent in 2012, 2015, 2020, 2025 and 2027.

Table 3.2-56: Average Daily Operational Emissions Without Mitigation – Alternative 3

Emission Source	Average[a] Daily Emissions (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2012						
Ships – Transit[b] and Anchoring	123	229	1,977	51	36	29
Ships – Hoteling	56	142	1,563	91	37	29
Tugboats	3	15	57	0	2	2
Trucks[b]	117	358	1,336	3	74	22
Trains[b]	75	280	1,495	1	42	39
Terminal Equipment	25	172	686	1	21	19
Worker Trips	20	208	17	0	33	7
Total – Project Year 2012[c]	**419**	**1,404**	**7,130**	**148**	**245**	**147**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(80)	(462)	(15)	(2,442)	(317)	(287)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	419	1,404	7,130	148	245	147
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2015						
Ships – Transit[b] and Anchoring	127	237	2,033	52	37	30
Ships – Hoteling	29	77	819	62	22	17
Tugboats	3	16	18	0	0	0
Trucks[b]	160	493	1,652	3	85	28
Trains[b]	72	329	1,582	1	41	38
Terminal Equipment	31	200	805	1	26	24
Worker Trips	18	175	14	0	35	7
Total – Project Year 2015[c]	**441**	**1,526**	**6,922**	**121**	**247**	**145**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(58)	(339)	(223)	(2,469)	(315)	(289)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	411	1,419	6,472	120	231	134
Project minus NEPA Baseline	29	107	450	0	16	11
Thresholds	55	550	55	150	150	55
Significant?	No	No	**Yes**	No	No	No

Table 3.2-56: Average Daily Operational Emissions Without Mitigation – Alternative 3

Emission Source	Average[a] Daily Emissions (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2020						
Ships – Transit[b] and Anchoring	157	291	2,501	64	46	37
Ships – Hoteling	17	48	469	52	15	12
Tugboats	4	21	24	0	1	0
Trucks[b]	185	594	1,719	4	99	36
Trains[b]	54	378	1,419	1	33	30
Terminal Equipment	14	195	58	1	2	2
Worker Trips	16	140	10	0	40	8
Total – Project Year 2020[c]	**447**	**1,667**	**6,199**	**124**	**236**	**126**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(52)	(198)	(946)	(2,466)	(326)	(308)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	379	1,437	5,237	107	206	108
Project minus NEPA Baseline	68	230	962	16	31	18
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	**Yes**	No	No	No
Project Year 2025						
Ships – Transit[b] and Anchoring	186	345	2,970	76	54	43
Ships – Hoteling	15	43	425	47	14	11
Tugboats	5	26	29	0	1	1
Trucks[b]	144	464	1,233	4	106	38
Trains[b]	42	394	1,129	2	25	23
Terminal Equipment	17	224	67	1	3	2
Worker Trips	14	116	8	0	46	10
Total – Project Year 2025[c]	**424**	**1,613**	**5,861**	**131**	**249**	**128**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(75)	(253)	(1,284)	(2,459)	(313)	(306)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	360	1,364	5,007	118	213	110
Project minus NEPA Baseline	64	249	854	13	36	18
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	**Yes**	No	No	No
Project Year 2027						
Ships – Transit[b] and Anchoring	186	345	2,970	76	54	43
Ships – Hoteling	16	45	438	49	14	12

Table 3.2-56: Average Daily Operational Emissions Without Mitigation – Alternative 3

Emission Source	Average[a] Daily Emissions (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Tugboats	5	26	30	0	1	1
Trucks[b]	150	483	1,293	4	110	40
Trains[b]	39	401	1,019	2	22	20
Terminal Equipment	18	236	70	1	3	3
Worker Trips	13	112	8	0	50	10
Total – Project Year 2027[c]	**427**	**1,649**	**5,827**	**133**	**254**	**129**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(72)	(217)	(1,318)	(2,457)	(308)	(306)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	361	1,373	4,951	118	212	109
Project minus NEPA Baseline	68	276	876	14	42	20
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	**Yes**	No	No	No

Notes:
a) Emissions represent annual emissions divided by 365 days per year of operation.
b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.
c) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.
d) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

- Alternative 3 would generate 6,438; 7,100; 7,777; 8,454; and 8,725 peak daily truck trips in 2012, 2015, 2020, 2025 and 2027 respectively.
- Alternative 3 would generate 2,197; 2,308; 2,412; 2,504; and 2,544 annual one-way train trips in 2012, 2015, 2020, 2025 and 2027 respectively.

Table 3.2-57 shows the peak daily operational emissions for Alternative 3. The peak daily emission estimates for operations include the following assumptions that were chosen to identify a maximum theoretical activity scenario:

- Ships at berth: The peak day scenario assumes that the largest combination of ships in the Project fleet that could be simultaneously accommodated at the wharf would call at the terminal. The specific ship activity assumed for each analysis year is (a) in 2012, one 6,000-TEU-capacity vessel arrives, hotels, and departs; (b) and in 2015, 2020, 2025, and 2027 one 9,000- TEU-capacity vessel arrives, hotels, and departs. The time each vessel is assumed to hotel equals 24 hours minus the ship transit time between the South Coast Air Basin overwater boundary and the berth. Without mitigation, the emissions also assume that each ship uses fuel with a worst case sulfur content of 0.1 percent to comply with CARB regulations.
- Trains: Of the annual TEUs moved to or from ships through the APL Terminal, 45 percent are moved by rail, with 35 percent of the annual TEUs moved are through

the APL Terminal rail yard, and the other 10 percent moved through off-dock rail yards (ICTF and Hobart). The peak month throughput, which represents approximately 9.1 percent of annual throughput, was used to calculate peak day rail activity for each year. Following the train calculation methodology described in Section 3.2.1.1, the number of locomotives needed to move APL containers in the peak day were: 22 in 2012, 24 in 2015, and 32 in 2020, 2025, and 2027.

- Trucks: Peak day truck trips generated by Alternative 3 were provided by the traffic study for each analysis year. The peak day represents a weekday during a peak month of container throughput. This equates to about 40 percent more truck trips on the peak day compared to an average day for 2012, 2015, 2020, 2025 and 2027.
- Terminal equipment: Activity, horsepower, and load factors for diesel CHE, and fuel usage for LPG forklifts was provided by APL for both the peak day and annual equipment. The peak day equates to between 29 and 42 percent more operating hours compared to an average day for 2012, 2015, 2020, 2025, and 2027.

Table 3.2-57: Peak Daily Operational Emissions Without Mitigation – Alternative 3

Emission Source	Peak Daily[a] Emissions (lb/day)[d]					
	VOC	**CO**	**NO_X**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Project Year 2012						
Ships – Transit[b] and Anchoring	205	381	3,278	84	60	48
Ships – Hoteling	87	223	2,461	140	58	46
Tugboats	5	23	89	0	4	3
Trucks[b]	161	494	1,844	4	102	30
Trains[b]	86	319	1,703	1	48	44
Terminal Equipment	47	280	1,115	1	36	33
Worker Trips	29	296	24	0	47	10
Total – Project Year 2012[c]	**620**	**2,016**	**10,515**	**231**	**354**	**214**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(304)	(1,523)	(2,611)	(5,163)	(761)	(648)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	620	2,016	10,515	231	354	214
Project minus NEPA Baseline	-	-	-	-	-	-
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2015						
Ships – Transit[b] and Anchoring	236	430	3,658	92	67	54
Ships – Hoteling	39	103	1,089	83	29	23
Tugboats	5	25	29	0	1	1
Trucks[b]	221	681	2,281	5	118	39
Trains[b]	76	346	1,665	1	44	40
Terminal Equipment	57	325	1,306	2	45	41
Worker Trips	26	257	20	1	51	11
Total – Project Year 2015[c]	**659**	**2,167**	**10,049**	**182**	**354**	**208**

Table 3.2-57: Peak Daily Operational Emissions Without Mitigation – Alternative 3

Emission Source	Peak Daily[a] Emissions (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(265)	(1,372)	(3,077)	(5,211)	(761)	(655)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	606	2,013	9,474	190	333	196
Project minus NEPA Baseline	53	155	575	(7)	22	12
Thresholds	55	550	55	150	150	55
Significant?	No	No	Yes	No	No	No
Project Year 2020						
Ships – Transit[b] and Anchoring	236	430	3,658	92	67	54
Ships – Hoteling	20	57	557	63	18	15
Tugboats	5	27	30	0	1	1
Trucks[b]	256	820	2,374	5	137	50
Trains[b]	64	453	1,697	2	39	36
Terminal Equipment	21	279	84	2	3	3
Worker Trips	22	194	14	1	56	12
Total – Project Year 2020[c]	**623**	**2,260**	**8,413**	**164**	**321**	**169**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(301)	(1,279)	(4,713)	(5,230)	(794)	(693)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	546	1,964	7,469	165	286	151
Project minus NEPA Baseline	76	295	944	(1)	35	19
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	**Yes**	No	No	No

Table 3.2-57: Peak Daily Operational Emissions Without Mitigation – Alternative 3

Emission Source	Peak Daily[a] Emissions (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2025						
Ships – Transit[b] and Anchoring	236	430	3,658	92	67	54
Ships – Hoteling	20	57	557	63	18	15
Tugboats	6	28	31	0	1	1
Trucks[b]	199	641	1,703	6	147	53
Trains[b]	48	456	1,299	2	28	26
Terminal Equipment	23	303	91	2	3	3
Worker Trips	18	151	11	1	60	12
Total – Project Year 2025[c]	**550**	**2,065**	**7,349**	**164**	**325**	**163**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(374)	(1,474)	(5,776)	(5,230)	(790)	(699)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	504	1,803	6,810	162	288	148
Project minus NEPA Baseline	46	263	540	2	37	16
Thresholds	55	550	55	150	150	55
Significant?	No	No	**Yes**	No	No	No
Project Year 2027						
Ships – Transit[b] and Anchoring	236	430	3,658	92	67	54
Ships – Hoteling	20	57	557	63	18	15
Tugboats	6	29	32	0	1	1
Trucks[b]	207	667	1,785	6	152	55
Trains[b]	43	456	1,154	2	25	23
Terminal Equipment	25	318	95	2	4	3
Worker Trips	17	144	10	1	64	13
Total – Project Year 2027[c]	**554**	**2,101**	**7,291**	**164**	**331**	**163**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(370)	(1,438)	(5,835)	(5,230)	(784)	(699)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						

Table 3.2-57: Peak Daily Operational Emissions Without Mitigation – Alternative 3

Emission Source	Peak Daily[a] Emissions (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
NEPA Baseline Emissions	506	1,834	6,780	163	289	147
Project minus NEPA Baseline	49	267	511	2	42	16
Thresholds	55	550	55	150	150	55
Significant?	No	No	**Yes**	No	No	No

Notes:
a) Emissions assume the simultaneous occurrence of maximum theoretical daily equipment activity levels. Such levels would rarely occur during day-to-day terminal operations.
b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.
c) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.
d) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

CEQA Impact Determination

From a CEQA perspective, Alternative 3 unmitigated peak daily emissions are not expected to exceed CEQA baseline emissions for any criteria pollutants in any study year. The unmitigated air quality impacts associated with Alternative 3 are therefore expected to be less than significant in 2012, 2015, 2020, 2025, and 2027. Unmitigated annual VOC emissions are not expected to exceed the 10 ton/year threshold.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

From a NEPA perspective, Alternative 3 unmitigated peak daily emissions would exceed SCAQMD thresholds for emissions of NOx in 2015, 2020, 2025, and 2027. Peak daily emissions would exceed SCAQMD thresholds for VOC in 2020. Unmitigated annual VOC emissions would exceed the 10 ton/year threshold in 2020, 2025, and 2027. The unmitigated air quality impacts associated with Alternative 3 are therefore anticipated to be significant under NEPA for NOx in 2015, 2020, 2025 and 2027, and VOC in 2020, 2025, and 2027.

Mitigation Measures

MM AQ-9 through MM AQ-16 would apply to Alternative 3. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5.

Tables 3.2-58 and 3.2-59 present average daily and peak daily mitigated emissions associated with Alternative 3.

Residual Impacts

Annual VOC emissions would continue to exceed the 10 tpy threshold in 2020, 2025, and 2027. Peak daily emissions after mitigation would remain significant for VOC and NOx in 2020. In addition, due to decreased container ship main engine efficiency at low speeds (VSR), peak daily VOC emissions would increase slightly in 2025 and would be significant and unavoidable. However, the decrease in NOx under the VSR program would result in an overall net decrease in ozone precursor emissions, and reduces NOx emissions to less than significant in 2015, 2025, and 2027. In summary, VOC emissions in 2020, 2025, and 2027, and NOx emissions in 2020 remain significant in unavoidable.

Table 3.2-58: Average Daily Operational Emissions With Mitigation – Alternative 3

Emission Source	Average Daily[a] Emissions (lb/day)[e]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2012						
Ships – Transit[b] and Anchoring	123	229	1,977	51	36	29
Ships – Hoteling[c]	56	142	1,563	91	37	29
Tugboats	3	15	57	0	2	2
Trucks[b]	117	358	1,336	3	74	22
Trains[b]	75	280	1,495	1	42	39
Terminal Equipment	25	172	686	1	21	19
Worker Trips	20	208	17	0	33	7
Total – Project Year 2012[d]	**419**	**1,404**	**7,130**	**148**	**245**	**147**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(80)	(462)	(15)	(2,442)	(317)	(287)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	419	1,404	7,130	148	245	147
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2015						
Ships – Transit[b] and Anchoring	133	237	1,678	42	33	27
Ships – Hoteling[c]	29	77	819	62	22	17
Tugboats	3	16	18	0	0	0
Trucks[b]	160	493	1,652	3	85	28
Trains[b]	72	329	1,582	1	41	38
Terminal Equipment	31	200	805	1	26	24
Worker Trips	18	175	14	0	35	7
Total – Project Year 2015[d]	**446**	**1,526**	**6,567**	**110**	**243**	**142**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(53)	(339)	(578)	(2,480)	(319)	(293)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	411	1,419	6,472	120	231	134

Table 3.2-58: Average Daily Operational Emissions With Mitigation – Alternative 3

Emission Source	Average Daily[a] Emissions (lb/day)[e]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project minus NEPA Baseline	35	108	96	(10)	12	7
Thresholds	55	550	55	150	150	55
Significant?	No	No	**Yes**	No	No	No
Project Year 2020						
Ships – Transit[b] and Anchoring	163	291	2,065	51	41	33
Ships – Hoteling[c]	17	48	469	52	15	12
Tugboats	4	21	24	0	1	0
Trucks[b]	185	594	1,719	4	99	36
Trains[b]	54	378	1,419	1	33	30
Terminal Equipment	14	195	58	1	2	2
Worker Trips	16	140	10	0	40	8
Total – Project Year 2020[d]	**453**	**1,667**	**5,763**	**111**	**231**	**122**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(46)	(198)	(1,382)	(2,479)	(331)	(312)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	379	1,437	5,237	107	206	108
Project minus NEPA Baseline	74	230	526	3	26	14
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	**Yes**	No	No	No
Project Year 2025						
Ships – Transit[b] and Anchoring	193	345	2,452	61	48	39
Ships – Hoteling[c]	15	43	425	47	14	11
Tugboats	5	26	29	0	1	1
Trucks[b]	144	464	1,233	4	106	38
Trains[b]	42	394	1,129	2	25	23
Terminal Equipment	17	224	67	1	3	2
Worker Trips	14	116	8	0	46	10
Total – Project Year 2025[d]	**431**	**1,613**	**5,343**	**115**	**243**	**123**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(68)	(253)	(1,802)	(2,474)	(319)	(311)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						

Table 3.2-58: Average Daily Operational Emissions With Mitigation – Alternative 3

Emission Source	Average Daily[a] Emissions (lb/day)[e]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
NEPA Baseline Emissions	360	1,364	5,007	118	213	110
Project minus NEPA Baseline	71	249	336	(2)	30	13
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	**Yes**	No	No	No
Project Year 2027						
Ships – Transit[b] and Anchoring	193	345	2,452	61	48	39
Ships – Hoteling[c]	8	27	227	41	10	8
Tugboats	5	26	30	0	1	1
Trucks[b]	150	483	1,293	4	110	40
Trains[b]	39	401	1,019	2	22	20
Terminal Equipment	18	236	70	1	3	3
Worker Trips	13	112	8	0	50	10
Total – Project Year 2027[d]	**427**	**1,631**	**5,099**	**109**	**244**	**120**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(72)	(235)	(2,046)	(2,481)	(318)	(314)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	360	1,373	4,951	118	212	109
Project minus NEPA Baseline	68	257	148	(9)	32	12
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	**Yes**	No	No	No

Notes:
a) Emissions represent annual emissions divided by 365 days per year of operation.
b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.
c) Hoteling emissions include regional power plant emissions from AMP electricity generation
d) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.
e) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available

Table 3.2-59: Peak Daily Operational Emissions With Mitigation – Alternative 3

Emission Source	Peak[a] Daily Emissions (lb/day)[e]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2012						
Ships – Transit[b] and Anchoring	205	381	3,278	84	60	48
Ships – Hoteling[c]	87	223	2,461	140	58	46
Tugboats	5	23	89	0	4	3
Trucks[b]	161	494	1,844	4	102	30
Trains[b]	86	319	1,703	1	48	44
Terminal Equipment	47	280	1,115	1	36	33
Worker Trips	29	296	24	0	47	10
Total – Project Year 2012[d]	**620**	**2,016**	**10,515**	**231**	**354**	**214**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(304)	(1,523)	(2,611)	(5,163)	(761)	(648)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	620	2,016	10,515	231	354	214
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2015						
Ships – Transit[b] and Anchoring	244	424	2,913	69	58	46
Ships – Hoteling[c]	38	102	1,079	82	29	23
Tugboats	5	25	29	0	1	1
Trucks[b]	221	681	2,281	5	118	39
Trains[b]	76	346	1,665	1	44	40
Terminal Equipment	42	307	423	2	19	17
Worker Trips	26	257	20	1	51	11
Total – Project Year 2015[d]	**652**	**2,143**	**8,411**	**159**	**319**	**177**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(273)	(1,396)	(4,714)	(5,235)	(796)	(686)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No

Table 3.2-59: Peak Daily Operational Emissions With Mitigation – Alternative 3

Emission Source	Peak[a] Daily Emissions (lb/day)[e]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
NEPA Impacts						
NEPA Baseline Emissions	606	2,013	9,474	190	333	196
Project minus NEPA Baseline	45	130	(1,062)	(30)	(13)	(19)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2020						
Ships – Transit[b] and Anchoring	244	424	2,913	69	58	46
Ships – Hoteling[c]	20	56	552	62	18	15
Tugboats	5	27	30	0	1	1
Trucks[b]	256	820	2,374	5	137	50
Trains[b]	64	453	1,697	2	39	36
Terminal Equipment	21	284	85	2	3	3
Worker Trips	22	194	14	1	56	12
Total – Project Year 2020[d]	**632**	**2,258**	**7,665**	**141**	**312**	**162**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(293)	(1,281)	(5,461)	(5,253)	(803)	(700)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	546	1,964	7,469	165	286	151
Project minus NEPA Baseline	85	294	196	(24)	26	12
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	**Yes**	No	No	No
Project Year 2025						
Ships – Transit[b] and Anchoring	244	424	2,913	69	58	46
Ships – Hoteling[c]	20	56	552	62	18	15
Tugboats	6	28	31	0	1	1
Trucks[b]	199	641	1,703	6	147	53
Trains[b]	48	456	1,299	2	28	26
Terminal Equipment	24	308	92	2	4	3
Worker Trips	18	151	11	1	60	12
Total – Project Year 2025[d]	**559**	**2,064**	**6,601**	**141**	**316**	**156**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(366)	(1,475)	(6,525)	(5,253)	(799)	(706)
Thresholds	55	550	55	150	150	55

Table 3.2-59: Peak Daily Operational Emissions With Mitigation – Alternative 3

Emission Source	Peak[a] Daily Emissions (lb/day)[e]					
	VOC	**CO**	**NO_X**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	504	1,803	6,810	162	288	148
Project minus NEPA Baseline	55	261	(209)	(21)	29	9
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	No	No	No	No
Project Year 2027						
Ships – Transit[b] and Anchoring	244	424	2,913	69	58	46
Ships – Hoteling[c]	10	34	288	52	13	10
Tugboats	6	29	32	0	1	1
Trucks[b]	207	667	1,785	6	152	55
Trains[b]	43	456	1,154	2	25	23
Terminal Equipment	22	293	88	2	3	3
Worker Trips	17	144	10	1	64	13
Total – Project Year 2027[d]	**550**	**2,047**	**6,270**	**131**	**316**	**151**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(375)	(1,492)	(6,856)	(5,262)	(799)	(711)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	506	1,834	6,780	163	289	147
Project minus NEPA Baseline	44	213	(509)	(31)	27	4
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No

Notes:

a) Emissions assume the simultaneous occurrence of maximum theoretical daily equipment activity levels. Such levels would rarely occur during day-to-day terminal operations.

b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.

c) Hoteling emissions include regional power plant emissions from AMP electricity generation

d) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.

e) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Impact AQ-4: Alternative 3 operations would result in off-site ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-19

Dispersion modeling of on-site and off-site Project operational emissions was performed to assess the impact of Alternative 3 on local ambient air concentrations. A summary of the dispersion modeling results is presented here; the complete dispersion modeling report is included in Appendix E2. Table 3.2-60 presents the maximum off-site ground-level concentrations of NO_2, SO_2, and CO for the Alternative 3 without mitigation. Table 3.2-61 shows the maximum CEQA and NEPA PM_{10} and $PM_{2.5}$ concentration increments without mitigation.

Table 3.2-60: Maximum Off-site NO_2, SO_2, and CO Concentrations Associated with Operation of Alternative 3 without Mitigation

Pollutant	Averaging Time	Maximum Modeled Concentration of Alt. 3 ($\mu g/m^3$)	Background Concentration[b] ($\mu g/m^3$)	Total Ground Level Concentration[a] ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
NO_2 [c]	Federal 1-hour[d,e]	163	146	**308**	188
	State 1-hour[e]	203	235	**438**	339
	State Annual	38	40	**78**	57
	Federal Annual	38	40	78	100
SO_2	Federal 1-hour[d]	5	53	59	196
	State 1-hour	9	228	236	655
	24-hour	1	33	33	105
CO	1-hour	273	4,600	4,873	23,000
	8-hour	115	2,878	2,993	10,000

Notes:

a) Exceedances of the thresholds are indicated in bold.

b) The background concentrations were obtained from the North Long Beach Monitoring Station. The maximum concentrations during the years of 2007, 2008, and 2009 were used.

c) NO_2 concentrations were calculated using ozone data from the North Long Beach monitoring station. The 1-hour NO_2 concentration is calculated using the 98^{th} percentile of the daily maximum 1-hour average to compare with the new federal 1-hour NO_2 standard of 0.100 ppm (188 $\mu g/m^3$) (effective January 22, 2010).

d) According to USEPA guidance, the modeled design values, 98^{th} percentile for 1-hour NO_2 and 99^{th} percentile for 1-hour SO_2, are added to the design background values for NO_2 and SO_2. (USEPA, 2011a).

e) The Federal and state 1-hour NO_2 background values differ because of different methodologies in calculating the design values. The Federal 1-hour NO_2 background is based on the 98^{th} percentile of the daily maximum 1-hour average, while the state background concentration is based on the peak value from 2007 through 2009.

Table 3.2-61: Maximum Off-site PM_{10} and $PM_{2.5}$ Concentrations Associated with Operation of Alternative 3

	Averaging Time	Maximum Modeled Concentration of Proposed Project[b] ($\mu g/m^3$)	Maximum Modeled Concentration of CEQA Baseline[b] ($\mu g/m^3$)	Maximum Modeled Concentration of NEPA Baseline[b] ($\mu g/m^3$)	Ground Level Concentration CEQA Increment ($\mu g/m^3$)[a,c]	Ground Level Concentration NEPA Increment ($\mu g/m^3$)[a,c]	SCAQMD Threshold ($\mu g/m^3$)
PM_{10}	24-hour	6.6	7.1	5.6	(0.1)	1.0	2.5
	Annual	1.0	1.9	1.5	0.1	0.2	1.0
$PM_{2.5}$	24-hour	4.4	6.2	4.4	(0.2)	0	2.5
	Federal Annual	1.1	NA	1.1	NA	0	0.3[d]

a) Exceedances of the threshold are indicated in bold. The thresholds for PM_{10} and $PM_{2.5}$ are incremental thresholds; therefore, the incremental concentration without background is compared to the threshold.

b) The maximum concentrations and increments presented in this table do not necessarily occur at the same receptor location. This means that the increments cannot necessarily be determined by simply subtracting the maximum baseline concentrations from the maximum Project concentration. The example provided in the discussion of Impact AQ-7 for the proposed Project describes how the increments are calculated.

c) The CEQA Increment represents the Mitigated Project minus CEQA baseline. The NEPA Increment represents the Mitigated Project minus NEPA baseline.

d) SCAQMD does not list a Significant Impact Level for annual $PM_{2.5}$, therefore the modeled annual average $PM_{2.5}$ was compared to the PSD SIL of 0.3 $\mu g/m^3$ for the determination of NEPA significance only

CEQA Impact Determination

Operation of this alternative would not produce significant off-site ambient concentrations for CO, PM_{10} and $PM_{2.5}$ under CEQA. Off-site ambient concentrations for Federal and state 1-hour and state annual NO_2 would exceed the NAAQS value. Therefore, impacts under CEQA would be significant for NO_2.

Mitigation Measures

Mitigation measures to reduce ambient pollutant concentrations during Alternative 3 operations would be the same as measures **MM AQ-9 through MM AQ-16** described for the proposed Project. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. Table 3.2-62 presents the maximum off-site ground-level concentrations of NO_2 after application of mitigation measures **MM AQ-9 through MM AQ-16**. After mitigation, the Federal 1-hour NO_2 concentration would remain significant.

Residual Impacts

Impacts would be significant and unavoidable for NO_2.

NEPA Impact Determination

Operation of this alternative would produce significant off-site ambient concentrations for NO_2 (1-hour) under NEPA. Therefore, impacts under NEPA would be significant for NO_2.

Mitigation Measures

Mitigation measures to reduce ambient pollutant concentrations during Alternative 3 operations would be the same as measures **MM AQ-9 through MM AQ-16** described for the proposed Project. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5.

Residual Impacts

The peak 1-hour NO_2 during Alternative 3 operations occur during the first year of operations in 2012. There are no mitigation measures that would be implemented during 2012. Impacts are significant and unavoidable.

Table 3.2-62: Maximum Off-site NO_2 Concentration Associated with Operation of Alternative 3 with Mitigation

Pollutant	Averaging Time	Maximum Modeled Concentration of Alt. 3 ($\mu g/m^3$)	Background Concentration[b] ($\mu g/m^3$)	Total Ground Level Concentration[a,e] ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
NO_2 [c]	Federal 1-hour[d]	163	146	**308**	188
	State 1-hour	203	235	**438**	339
	State Annual	38	40	**78**	57

Notes:

a) Exceedances of the thresholds are indicated in bold.

b) The background concentrations were obtained from the North Long Beach Monitoring Station. The maximum concentrations during the years of 2007, 2008, and 2009 were used.

c) NO_2 concentrations were calculated using ozone data from the North Long Beach monitoring station. The 1-hour NO_2 concentration is calculated using the 98th percentile of the daily maximum 1-hour average to compare with the new federal 1-hour NO_2 standard of 0.100 ppm (188 $\mu g/m^3$) (effective January 22, 2010).

d) According to USEPA guidance, the modeled design value (98th) for 1-hour NO_2 is added to the background design value for NO_2. (USEPA, 2011a).

e) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

Impact AQ-5: Alternative 3 would not generate on-road traffic that would contribute to an exceedance of the 1-hour or 8-hour CO standards.

This alternative would generate traffic levels comparable to or less than traffic generated by the proposed Project. As discussed in the proposed Project analysis, CO concentrations related to on-road traffic would not exceed state CO standards for any Project study year.

CEQA Impact Determination

Under CEQA, CO standards would not be exceeded, therefore impacts are less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Significant impacts under NEPA are not anticipated because CO standards would not be exceeded.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact AQ-6: Alternative 3 would not create an objectionable odor at the nearest sensitive receptor.

Similar to the proposed Project, the mobile nature of the emission sources associated with this alternative would help to disperse emissions. Additionally, the distance between proposed Project emission sources, and the nearest residents would be far enough to allow for adequate dispersion of these emissions to below objectionable odor levels. Thus, the potential is low for this alternative to produce objectionable odors that would affect a sensitive receptor.

CEQA Impact Determination

As a result of the above, the potential is low for the proposed Project to produce objectionable odors that would affect a sensitive receptor; significant odor impacts under CEQA, therefore, are not anticipated.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

As a result of the above, the potential is low for the proposed Project to produce objectionable odors that would affect a sensitive receptor; significant odor impacts under NEPA, therefore, are not anticipated.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact AQ-7: Alternative 3 would expose receptors to significant levels of toxic air contaminants.

The main sources of TACs from Alternative 3 operations would be DPM emissions from ships, tugboats, terminal equipment, locomotives, and trucks. Similar to the HRA for the proposed Project, PM_{10} and VOC emissions were projected over a 70-year period, from 2012 through 2081. An HRA was performed over this 70-year exposure period.

Table 3.2-63 presents the maximum predicted health impacts associated with this alternative without mitigation. The table includes estimates of individual lifetime cancer risk, chronic noncancer hazard index, and acute noncancer hazard index at the maximally exposed receptors. Results are presented for the future CEQA increment (alternative minus future CEQA baseline) and NEPA increment (alternative minus NEPA baseline).

CEQA Impact Determination

Alternative 3 would move fewer TEUs than the proposed Project and, therefore, would have lower DPM emissions and lower health risk impacts. Acute impacts would be slightly less than the proposed Project due to the smaller scope of the construction required for this Alternative. Table 3.2-63 shows that the maximum CEQA chronic hazard index increments associated with the unmitigated Alternative 3 are less than the CEQA baseline at all receptor types The CEQA chronic non-cancer risk increment therefore for all receptors would be less than significant.

However, the residential and occupational cancer risk and acute hazard index future CEQA increments are predicted to exceed the significance thresholds of 10 in one million for cancer risk and 1.0 for acute hazards.

Table 3.2-63: Maximum Incremental CEQA and NEPA Health Impacts Associated With Alternative 3 Without Mitigation, 2012 – 2081

Health Impact	Receptor Type	Maximum Predicted Impact[a,d]					Significance Threshold
		Alternative 3	Future CEQA Baseline	Future CEQA Increment[b,c]	NEPA Baseline	NEPA Increment[b,c]	
Cancer Risk[f]	Residential[e]	44	22	**22×10^{-6} (22 in a million)**	40	4×10^{-6} (4 in a million)	10×10^{-6} (10 in a million)
	Occupational	36	22	**14×10^{-6} (14 in a million)**	31	5×10^{-6} (5 in a million)	
	Sensitive	15	8	5×10^{-6} (5 in a million)	13	2×10^{-6} (2 in a million)	
	Student	0.6	0.4	0.1×10^{-6} (0.1 in a million)	0.5	0.1×10^{-6} (0.1 in a million)	
	Recreational	5	2	3×10^{-6} (3 in a million)	4.5	0.7×10^{-6} (0.7 in a million)	
Chronic Hazard Index	Residential	0.3	0.5	< 0 [g]	0.2	0.1	1.0
	Occupational	0.6	0.8	< 0 [g]	0.4	0.2	
	Sensitive	0.1	0.4	< 0 [g]	0.1	0.0	
	Student	0.09	0.3	< 0 [g]	0.09	0.0	
	Recreational	0.1	0.4	< 0 [g]	0.1	0.0	
Acute Hazard Index	Residential	1.3	0.2	**1.1**	0.2	**1.1**	1.0
	Occupational	1.9	0.2	**1.7**	0.2	**1.7**	
	Sensitive	0.5	0.06	0.4	0.06	0.4	
	Student	0.5	0.06	0.4	0.06	0.4	
	Recreational	0.6	0.09	0.5	0.09	0.5	

Notes:

a) Exceedances of the significance criteria are in **bold**. The significance thresholds apply to the CEQA and NEPA increments only.

b) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impacts. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.

c) The CEQA increment represents Project minus CEQA baseline. The NEPA increment represents Project minus NEPA baseline.

d) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.

e) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.

f) Construction emissions were modeled with the operational emissions for the determination of cancer risk.

g) When the predicted impact is less than zero, the Project risk is less than the respective baseline.

Mitigation Measures

Mitigation measures to reduce TAC emissions would be the same as measures **MM AQ-9 through MM AQ-20** described above for the proposed Project. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5.

Residual Impacts

Table 3.2-64 shows that the maximum CEQA acute risk increment at residential receptors is reduced to a less than significant level. The maximum acute risk at occupational receptors remains significant and unavoidable. In addition, the maximum future CEQA cancer risk increment at the residential and occupational receptors remains significant and unavoidable.

See the residual impacts discussion for the proposed Project Impact AQ-7, above, and Appendix E3 for additional detail on the impacted receptors and risk drivers.

Table 3.2-64: Maximum Incremental CEQA and NEPA Health Impacts Associated With Alternative 3 With Mitigation, 2012 – 2081

Health Impact	Receptor Type	Maximum Predicted Impact[a,d]					Significance Threshold
		Alternative 3	Future CEQA Baseline	Future CEQA Increment[b,c]	NEPA Baseline	NEPA Increment[b,c]	
Cancer Risk[f]	Residential[e]	42	22	**20×10^{-6} (20 in a million)**	-[g]	-[g]	10×10^{-6} (10 in a million)
	Occupational	27	18	9×10^{-6} (9 in a million)	-[g]	-[g]	
Acute Hazard Index	Residential	1.0	0.2	0.8	0.2	0.8	1.0
	Occupational	1.3	0.2	**1.1**	0.2	**1.1**	

Notes:

a) Exceedances of the significance criteria are in **bold**. The significance thresholds apply to the CEQA and NEPA increments only.

b) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impacts. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.

c) The CEQA increment represents Project minus CEQA baseline.

d) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.

e) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.

f) Construction emissions were modeled with the operational emissions for the determination of cancer risk.

g) Unmitigated impacts that were less than the significance threshold were not reanalyzed for mitigation.

NEPA Impact Determination

The maximum NEPA cancer risk increment associated with the unmitigated Alternative 3 is predicted to be 5 in a million (5×10^{-6}), at an occupational receptor. This risk value does not exceed the significance criterion of 10 in a million and would not be considered a significant impact.

The maximum chronic hazard index NEPA increment associated with the Alternative 3 is predicted to be 0.2 at an occupational receptor. The acute hazard index NEPA increment is predicted to be 1.7 at an occupational receptor.

From a NEPA perspective, the 24-hour $PM_{2.5}$ NEPA incremental impact shown in Table 3.2-61 is zero. The NEPA incremental impact is less than the SCAQMD threshold of 2.5 $\mu g/m^3$; therefore, the 24-hour $PM_{2.5}$ concentration is less than significant and a mortality and morbidity determination is not required.

Mitigation Measures

Mitigation measures to reduce TAC emissions would be the same as measures **MM AQ-9 through MM AQ-20** described above for the proposed Project. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5.

Residual Impacts

Table 3.2-64 shows that the maximum NEPA incremental acute risks at residential receptors are reduced to a less than significant level. The maximum acute risk increment at occupational receptors remains significant and unavoidable.

Impact AQ-8: Alternative 3 would not conflict with or obstruct implementation of an applicable AQMP.

Similar to the proposed Project, this alternative would comply with SCAQMD rules and regulations, and would be consistent with SCAG regional employment and population growth forecasts.

CEQA Impact Determination

This alternative would not conflict with or obstruct implementation of the AQMP; therefore, impacts under CEQA are not anticipated.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

This alternative would not conflict with or obstruct implementation of the AQMP; therefore, impacts under NEPA are not anticipated.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact AQ-9: Alternative 3 would produce GHG emissions that would exceed CEQA and NEPA baseline levels.

Table 3.2-65 summarizes the total GHG construction emissions associated with Alternative 3. Table 3.2-66 summarizes the annual GHG emissions that would occur within California from the operation of Alternative 3.

Table 3.2-65: Total GHG Emissions from Berth 302-306 Terminal Construction Activities – Alternative 3

Emission Source	CO_2	CH_4	N_2O	CO_2e[d]
	Total Emissions[b] (Metric Tons)			
Total Construction				
Reefer Area Expansion	161	0.01	0.01	162
Utility Infrastructure	127	0.01	0.00	128
Cranes Installation	59	0.00	0.00	59
Worker Commute	443	0.02	0.01	446
Total Construction – CEQA Impact[a,e]	798	0.04	0.02	797
Total Construction – NEPA Impact[e]	59	0.00	0.00	59

CEQA Impact Determination

Table 3.2-65 shows that total CO_2e emissions during project construction would exceed CEQA baseline construction emissions (which are zero for construction). In addition, the data in Table 3.2-66 show that in each future Project year, annual operational CO_2e emissions would increase from CEQA baseline levels. As a result, Alternative 3 would produce significant levels of GHG emissions under CEQA.

Mitigation Measures

Measures that reduce fuel usage and electricity consumption from Alternative 3 emission sources would reduce proposed GHG emissions. Project mitigation measures that would accomplish this effect include **MM AQ-2 through MM AQ-4** for construction; and **MM AQ-9, MM AQ-10**, and **MM AQ-16 through MM AQ-20** for operations.

Table 3.2-67 presents the annual operational GHG emissions with mitigation. The effects of **MM AQ-9** (AMP) and **MM AQ-10** (VSRP) were included in the emission estimates. The potential effects of the remaining mitigation measures are described qualitatively under each measure's heading in the proposed Project analysis for Impact AQ-9.

Residual Impacts

Impacts would be significant and unavoidable.

NEPA Impact Determination

There are no science-based GHG significance thresholds, nor has the Federal government or the state adopted any by regulations. In the absence of an adopted or science-based GHG standard, in compliance with the NEPA implementing regulations, a significance determination regarding GHGs will not be made under NEPA.

In accordance with CEQ *Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions*, GHG emissions exceed the CEQ reference level of 25,000 $MTCO_2$e for further analysis in a NEPA document (CEQ, 2010). Therefore GHG emissions are calculated for Alternative 3 emission sources and mitigation measures are considered for the reduction of GHG emissions.

Mitigation Measures

No mitigation is required.

Residual Impacts

An impact determination is not applicable.

Table 3.2-66: Annual Operational GHG Emissions – Alternative 3 without Mitigation

Project Scenario/ Source Type	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
Project Year 2012					
Ships – Transit	48,660	1	2	0	49,413
Ships – Hoteling	21,378	0	1	0	21,749
Tugboats	340	0	0	0	345
Trucks	59,452	0	0	0	59,497
Trains	43,445	1	4	0	44,572
Terminal Equipment	13,376	0	0	0	13,429
Reefer Refrigerant Losses	0	0	0	1	841
AMP Usage	0	0	0	0	0
On-Terminal Electricity Usage	22,448	1	0	0	22,506
Worker Trips	5,340	0	1	0	5,525
Total For Project Year 2012[c]	**214,440**	**4**	**8**	**1**	**217,876**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	65,198	(1)	4	0	66,612
NEPA Baseline	214,440	4	8	1	217,876
Project Minus NEPA Baseline	0	0	0	0	0
Project Year 2015					
Ships – Transit	50,258	1	2	0	51,037
Ships – Hoteling	14,026	0	1	0	14,296
Tugboats	340	0	0	0	345
Trucks	65,566	0	0	0	65,615
Trains	51,327	1	4	0	52,659
Terminal Equipment	15,052	0	0	0	15,112
Reefer Refrigerant Losses	0	0	0	1	927
AMP Usage	5,245	0	0	0	5,256
On-Terminal Electricity Usage	24,756	1	0	0	24,820
Worker Trips	5,130	0	0	0	5,257
Total For Project Year 2015[c]	**231,702**	**4**	**8**	**1**	**235,324**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	82,461	(0)	4	0	84,060
NEPA Baseline	215,143	4	8	1	218,469
Project Minus NEPA Baseline	16,559	0	1	0	16,855
Project Year 2020					
Ships – Transit	61,848	1	3	0	62,805
Ships – Hoteling	11,239	0	1	0	11,479
Tugboats	416	0	0	0	422
Trucks	70,353	0	0	0	70,406
Trains	59,478	2	5	0	61,023
Terminal Equipment	16,766	0	0	0	16,833
Reefer Refrigerant Losses	0	0	0	1	1,015

Table 3.2-66: Annual Operational GHG Emissions – Alternative 3 without Mitigation

Project Scenario/ Source Type	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
AMP Usage	6,884	0	0	0	6,898
On-Terminal Electricity Usage	19,795	1	0	0	19,846
Worker Trips	4,848	0	0	0	4,922
Total Project Year 2020[c]	**251,628**	**5**	**9**	**1**	**255,650**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	102,387	(0)	5	0	104,386
NEPA Baseline	215,045	4	8	1	218,469
Project Minus NEPA Baseline	36,583	1	2	0	37,181
Project Year 2025					
Ships – Transit	73,438	2	4	0	74,575
Ships – Hoteling	10,414	0	1	0	10,636
Tugboats	491	0	0	0	499
Trucks	76,477	0	0	0	76,535
Trains	61,841	2	5	0	63,447
Terminal Equipment	18,480	0	0	0	18,553
Reefer Refrigerant Losses	0	0	0	1	1,104
AMP Usage	6,450	0	0	0	6,463
On-Terminal Electricity Usage	21,518	1	0	0	21,574
Worker Trips	5,096	0	0	0	5,190
Total Project Year 2025[c]	**274,207**	**5**	**10**	**1**	**278,576**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	124,966	0	6	0	127,312
NEPA Baseline	232,166	4	9	1	235,867
Project Minus NEPA Baseline	42,041	1	2	0	42,709
Project Year 2027					
Ships – Transit	73,438	2	4	0	74,575
Ships – Hoteling	10,414	0	1	0	10,636
Tugboats	491	0	0	0	499
Trucks	78,927	0	0	0	78,986
Trains	62,837	2	5	0	64,468
Terminal Equipment	19,166	0	0	0	19,242
Reefer Refrigerant Losses	0	0	0	1	1,139
AMP Usage	6,450	0	0	0	6,463
On-Terminal Electricity Usage	22,208	1	0	0	22,265
Worker Trips	5,325	0	0	0	5,414
Total Project Year 2027[c]	**279,256**	**5**	**10**	**1**	**283,687**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	130,014	0	6	0	132,423
NEPA Baseline	234,217	4	9	1	237,940

Table 3.2-66: Annual Operational GHG Emissions – Alternative 3 without Mitigation

Project Scenario/ Source Type	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
Project Minus NEPA Baseline	45,039	1	2	0	45,747

Notes:
a) 1 metric ton equals 1,000 kilograms, 2,205 lbs, or 1.1 U.S. (short) tons.
b) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; 1,300 for HFC-134a.
c) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

Table 3.2-67: Annual Operational GHG Emissions – Alternative 3 with Mitigation

Project Scenario/ Source Type	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
Project Year 2012					
Ships – Transit	48,660	1	2	0	49,413
Ships – Hoteling	21,378	0	1	0	21,749
Tugboats	340	0	0	0	345
Trucks	59,452	0	0	0	59,497
Trains	43,445	1	4	0	44,572
Terminal Equipment	13,376	0	0	0	13,429
Reefer Refrigerant Losses	0	0	0	1	841
AMP Usage	0	0	0	0	0
On-Terminal Electricity Usage	22,448	1	0	0	22,506
Worker Trips	5,340	0	1	0	5,525
Total For Project Year 2012[c]	**214,440**	**4**	**8**	**1**	**217,876**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	65,198	(1)	4	0	66,612
NEPA Baseline	214,440	4	8	1	217,876
Project Minus NEPA Baseline	0	0	0	0	0
Project Year 2015					
Ships – Transit	47,727	1	2	0	48,469
Ships – Hoteling	14,026	0	1	0	14,296
Tugboats	340	0	0	0	345
Trucks	65,566	0	0	0	65,615
Trains	51,327	1	4	0	52,659
Terminal Equipment	15,052	0	0	0	15,112
Reefer Refrigerant Losses	0	0	0	1	927
AMP Usage	5,245	0	0	0	5,256
On-Terminal Electricity Usage	24,756	1	0	0	24,820
Worker Trips	5,130	0	0	0	5,257
Total For Project Year 2015[c]	**229,170**	**4**	**8**	**1**	**232,756**

Table 3.2-67: Annual Operational GHG Emissions – Alternative 3 with Mitigation

Project Scenario/ Source Type	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	79,929	(1)	4	0	81,492
NEPA Baseline	215,143	4	8	1	218,469
Project Minus NEPA Baseline	14,027	0	1	0	14,287
Project Year 2020					
Ships – Transit	58,729	1	3	0	59,642
Ships – Hoteling	11,239	0	1	0	11,479
Tugboats	416	0	0	0	422
Trucks	70,353	0	0	0	70,406
Trains	59,478	2	5	0	61,023
Terminal Equipment	16,766	0	0	0	16,833
Reefer Refrigerant Losses	0	0	0	1	1,015
AMP Usage	6,884	0	0	0	6,898
On-Terminal Electricity Usage	19,795	1	0	0	19,846
Worker Trips	4,848	0	0	0	4,922
Total Project Year 2020[c]	**248,509**	**4**	**9**	**1**	**252,487**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	99,268	(0)	5	0	101,223
NEPA Baseline	215,045	4	8	1	218,469
Project Minus NEPA Baseline	33,464	1	1	0	34,018
Project Year 2025					
Ships – Transit	69,731	2	3	0	70,815
Ships – Hoteling	8,381	0	1	0	8,576
Tugboats	491	0	0	0	499
Trucks	76,477	0	0	0	76,535
Trains	61,841	2	5	0	63,447
Rail Yard Equipment	18,480	0	0	0	18,553
Reefer Refrigerant Losses	0	0	0	1	1,104
AMP Usage	7,659	0	0	0	7,675
On-Terminal Electricity Usage	21,518	1	0	0	21,574
Worker Trips	5,096	0	0	0	5,190
Total Project Year 2025[c]	**269,677**	**5**	**10**	**1**	**273,968**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	120,435	0	5	0	122,704
NEPA Baseline	232,166	4	9	1	235,867
Project Minus NEPA Baseline	37,511	1	1	0	38,101

Table 3.2-67: Annual Operational GHG Emissions – Alternative 3 with Mitigation

Project Scenario/ Source Type	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
Project Year 2027					
Ships – Transit	69,731	2	3	0	70,815
Ships – Hoteling	8,381	0	1	0	8,576
Tugboats	491	0	0	0	499
Trucks	78,927	0	0	0	78,986
Trains	62,837	2	5	0	64,468
Terminal Equipment	19,166	0	0	0	19,242
Reefer Refrigerant Losses	0	0	0	1	1,139
AMP Usage	7,659	0	0	0	7,675
On-Terminal Electricity Usage	22,208	1	0	0	22,265
Worker Trips	5,325	0	0	0	5,414
Total Project Year 2027[c]	**274,726**	**5**	**10**	**1**	**279,079**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	125,484	0	5	0	127,815
NEPA Baseline	234,217	4	9	1	237,940
Project Minus NEPA Baseline	40,509	1	1	0	41,139

Notes:

a) 1 metric ton equals 1,000 kilograms, 2,205 lbs, or 1.1 U.S. (short) tons.

b) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; and 1,300 for HFC-134a.

c) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

3.2.4.4.4 Alternative 4 – Reduced Project: No New Wharf

Under Alternative 4, six cranes would be added to the existing terminal wharf at Berths 302-305, and the 41-acre fill area adjacent to the APL Terminal would be developed as container yard backlands. EMS would relinquish the 30 acres of backlands under space assignment. EMS would not add the nine acres of land behind Berth 301 or the two acres at the main gate to its permit. Because no new wharf would be constructed at Berth 306, the 41-acre backland would be operated using traditional methods and would not be expected to transition to use of automated equipment. As the existing wharf would not be extended to create Berth 306, no dredging would occur.

Under Alternative 4, the total terminal acreage would be 302 acres, which is less than the proposed Project. Based on the throughput projections, TEU throughput would be less than the proposed Project, with an expected throughput of approximately 2.78 million TEUs by 2027. This would translate into 338 annual ship calls at Berths 302-305. In addition, Alternative 4 would result in up to 9,401 peak daily truck trips (2,485,050 annual), and up to 2,563 annual one-way rail trip movements. Configuration of all other landside terminal components (i.e., Main Gate improvements) would be identical to the proposed Project.

Impact AQ-1: Alternative 4 would result in construction-related emissions that exceed an SCAQMD threshold of significance in Table 3.2-16.

Alternative 4 construction activities are similar to construction emissions for the proposed Project with the exception of no new wharf construction.

CEQA Impact Determination

Maximum daily emissions for construction of Alternative 4 would be slightly lower than those from the proposed Project; however, emissions would still exceed the SCAQMD daily thresholds for VOC, NO_X, PM_{10} and $PM_{2.5}$ under CEQA. Detailed emissions calculations of Alternative 4 construction are presented in Appendix E1.1.

Alternative 4 would exceed the daily construction emission thresholds for VOC, NO_X, PM_{10} and $PM_{2.5}$ during construction. Therefore, significant impacts under CEQA would occur.

Mitigation Measures

To reduce the level of impact, **MM AQ-1 through MM AQ-8** would apply to this alternative. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. However, despite implementation of mitigation, emissions from the construction of Alternative 4 would still exceed the SCAQMD daily thresholds for VOC, NO_X, PM_{10} and $PM_{2.5}$.

Residual Impacts

Impacts would be temporary but significant and unavoidable for VOC, NOx, PM_{10} and $PM_{2.5}$.

NEPA Impact Determination

Maximum daily emissions for construction of Alternative 4 would exceed the thresholds for VOC, NOx, PM_{10} and $PM_{2.5}$ under NEPA without mitigation. Therefore, significant impacts under NEPA would occur.

Mitigation Measures

To reduce the level of impact, **MM AQ-1 through MM AQ-8** would apply to this alternative. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. Implementation of mitigation would reduce PM_{10} emissions from the construction of Alternative 4 to less than significant levels. Emissions of VOC, NOx, and $PM_{2.5}$ would still exceed the SCAQMD daily threshold.

Residual Impacts

Impacts would be temporary but significant and unavoidable for VOC, NOx, and $PM_{2.5}$.

Impact AQ-2: Alternative 4 construction would result in off-site ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-17.

Although this alternative has less construction than the proposed Project (no wharf construction), the majority of the upland construction activities required for the proposed Project also would be required for this alternative.

Maximum off-site ambient pollutant concentrations associated with proposed Project construction were significant for NO_X and PM_{10}.

CEQA Impact Determination

Because the dispersion modeling analysis for unmitigated proposed Project construction activities for the proposed Project (Table 3.2-23a) predicted no exceedances of the CO and $PM_{2.5}$ standards, the construction activity for Alternative 4 also would not result in an exceedance of these standards.

Based on the relative source contributions from the dispersion modeling analysis for the proposed Project, maximum Federal and state 1-hour off-site ambient pollutant concentrations of NO_2 and annual PM_{10} concentrations associated with Alternative 4 construction activities would exceed SCAQMD significance thresholds. Therefore, CEQA impacts would be significant for NO_2 and PM_{10} during Alternative 4 construction. In addition to the impact noted above for construction alone, the overlap of construction and operations would result in a significant impact for 24-hour $PM_{2.5}$.

Mitigation Measures

To reduce the level of impact during construction, **MM AQ-1 through MM AQ-8** would be applied to Alternative 4 construction. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. Despite implementation of these mitigation measures, off-site ambient concentrations from construction activities remained significant for NO_2 (Federal and state 1-hour average) and PM_{10} (annual average).

Residual Impacts

Impacts would be temporary but significant and unavoidable for NO_2 and PM_{10}.

NEPA Impact Determination

Because the dispersion modeling analysis for unmitigated proposed Project construction activities for the proposed Project (Table 3.2-23a) predicted no exceedances of the CO standard, the construction activity for Alternative 4 also would not result in an exceedance of this standard.

Based on the relative source contributions from the dispersion modeling analysis for the proposed Project, maximum Federal 1-hour off-site ambient pollutant concentrations of NO_2, annual PM_{10}, and annual $PM_{2.5}$ concentrations associated with Alternative 4 construction activities would exceed the significance thresholds. In addition to the impact noted above for construction alone, the overlap of construction and operations would result in a significant impact for 24-hour $PM_{2.5}$. Therefore, NEPA impacts would be significant for NO_2, PM_{10}, and $PM_{2.5}$ during Alternative 4 construction.

Mitigation Measures

To reduce the level of impact during construction, **MM AQ-1 through MM AQ-8** would be applied to Alternative 4 construction. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. Despite implementation of these mitigation measures, off-site ambient concentrations from construction activities remained significant for NO_2 (Federal 1-hour average), PM_{10} and $PM_{2.5}$ (annual average).

Residual Impacts

Impacts would be temporary but significant and unavoidable for NO_2, PM_{10}, and $PM_{2.5}$.

Impact AQ-3: Alternative 4 would result in operational emissions that exceed 10 tons per year of VOCs or an SCAQMD threshold of significance in Table 3.2-18.

Table 3.2-68 presents the unmitigated average daily criteria pollutant emissions associated with operation of this alternative. Emissions were estimated for five Project study years: 2012, 2015, 2020, 2025 and 2027. Comparisons to the CEQA baseline and NEPA baseline emissions are presented to determine CEQA and NEPA significance, respectively.

Table 3.2-68: Average Daily Operational Emissions Without Mitigation – Alternative 4

Emission Source	Average[a] Daily Emissions (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2012						
Ships – Transit[b] and Anchoring	123	229	1,977	51	36	29
Ships – Hoteling	56	142	1,563	91	37	29
Tugboats	3	15	57	0	2	2
Trucks[b]	117	358	1,336	3	74	22
Trains[b]	75	280	1,495	1	42	39
Terminal Equipment	25	172	686	1	21	19
Worker Trips	20	208	17	0	33	7
Total – Project Year 2012[c]	**419**	**1,404**	**7,130**	**148**	**245**	**147**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(80)	(462)	(15)	(2,442)	(317)	(287)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	419	1,404	7,130	148	245	147
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2015						
Ships – Transit[b] and Anchoring	127	237	2,033	52	37	30
Ships – Hoteling	29	77	811	62	22	17
Tugboats	3	16	18	0	0	0
Trucks[b]	174	535	1,790	4	93	31

Table 3.2-68: Average Daily Operational Emissions Without Mitigation – Alternative 4

Emission Source	Average[a] Daily Emissions (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Trains[b]	82	375	1,807	1	47	44
Terminal Equipment	37	226	917	1	30	28
Worker Trips	21	205	16	0	41	8
Total – Project Year 2015[c]	**473**	**1,670**	**7,392**	**121**	**270**	**158**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(26)	(196)	247	(2,469)	(292)	(277)
Thresholds	55	550	55	150	150	55
Significant?	No	No	**Yes**	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	411	1,419	6,472	120	231	134
Project minus NEPA Baseline	61	251	920	0	39	23
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	**Yes**	No	No	No
Project Year 2020						
Ships – Transit[b] and Anchoring	157	292	2,501	64	46	37
Ships – Hoteling	17	47	465	52	15	12
Tugboats	4	21	24	0	1	0
Trucks[b]	201	644	1,863	4	108	39
Trains[b]	56	391	1,464	2	34	31
Terminal Equipment	16	218	65	1	2	2
Worker Trips	19	168	12	0	48	10
Total – Project Year 2020[c]	**469**	**1,781**	**6,400**	**124**	**254**	**132**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(30)	(86)	(752)	(2,466)	(308)	(302)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	379	1,437	5,237	107	206	108
Project minus NEPA Baseline	90	343	1,157	16	48	24
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	**Yes**	No	No	No
Project Year 2025						
Ships – Transit[b] and Anchoring	186	345	2,970	76	54	43
Ships – Hoteling	15	44	427	48	14	11
Tugboats	5	26	29	0	1	1
Trucks[b]	156	503	1,336	4	116	41
Trains[b]	42	391	1,120	2	24	22
Terminal Equipment	20	253	76	2	3	3
Worker Trips	17	141	10	1	56	12
Total – Project Year 2025[c]	**441**	**1,703**	**5,968**	**132**	**268**	**133**

Table 3.2-68: Average Daily Operational Emissions Without Mitigation – Alternative 4

Emission Source	Average[a] Daily Emissions (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(58)	(163)	(1,177)	(2,458)	(294)	(301)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	360	1,364	5,007	118	213	110
Project minus NEPA Baseline	81	339	961	14	55	24
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	**Yes**	No	No	No
Project Year 2027						
Ships – Transit[b] and Anchoring	190	353	3,025	78	55	44
Ships – Hoteling	15	43	424	47	14	11
Tugboats	5	26	30	0	1	1
Trucks[b]	163	524	1,401	5	120	43
Trains[b]	39	404	1,026	2	22	21
Terminal Equipment	21	267	80	2	3	3
Worker Trips	15	123	9	1	55	11
Total – Project Year 2027[c]	**448**	**1,741**	**5,994**	**133**	**270**	**134**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(51)	(125)	(1,151)	(2,456)	(292)	(300)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	360	1,373	4,951	118	212	109
Project minus NEPA Baseline	89	367	1,043	15	58	25
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	**Yes**	No	No	No

Notes:
a) Emissions represent annual emissions divided by 365 days per year of operation.
b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.
c) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.
d) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

The operational emissions associated with this alternative assume the following activity levels:

a) Annual container volumes for Berths 302-305 are estimated to be 1,906,000 TEUs in 2012; 2,263,000 TEUs in 2015, 2,479 in 667 TEUs in 2020, 2,696,333 in 2025 and 2,783,000 TEUs in 2027.

b) Annual ship calls to Berths 302-305 are estimated to be 234 visits in 2012 and 2015, 286 visits in 2020, and 338 visits in 2025 and 2027.

c) Without mitigation, the VSRP compliance rate was assumed to be 95 percent for all study years. This represents the required compliance rate for designation by the Port as being in compliance with the VSRP.

d) The fraction of all TEUs moving through on-dock rail is estimated to be 35 percent in 2012, 2015, 2020, 2025, and 2027. The fraction of all TEUs moving through off-dock rail yards (ICTF and Hobart) is estimated to be 10 percent in 2012, 2015, 2020, 2025, and 2027. The fraction of all TEUs hauled by truck to nonrail-yard destinations is estimated to be 65 percent in 2012, 2015, 2020, 2025, and 2027.

e) This alternative would generate 2,197; 2,389; 2,495; 2,484; and 2,563 annual one-way train trips in 2012, 2015, 2020, 2025 and 2027 respectively.

Table 3.2-69 shows the peak daily operational emissions for Alternative 4. The peak daily emission estimates for operations include the following assumptions that were chosen to identify a maximum theoretical activity scenario:

a) Ships at berth: The peak day scenario assumes that the largest combination of ships in the Project fleet that could be simultaneously accommodated at the wharf would call at the terminal. The specific ship activity assumed for each analysis year is (a) in 2012, one 6,000-TEU-capacity vessel arrives, hotels and departs; and (b) in 2015 through 2027, one 9,000-TEU-capacity vessel arrives, hotels, and departs. The time each vessel is assumed to hotel equals 24 hours minus the ship transit time between the South Coast Air Basin overwater boundary and the berth.

b) Trains: Of the annual TEUs moved to or from ships through the APL Terminal, 45 percent are moved by rail, with 35 percent of the annual TEUs moved are through the APL Terminal rail yard, and the other 10 percent moved through off-dock rail yards (ICTF and Hobart). The peak month throughput, which represents approximately 9.1 percent of annual throughput, was used to calculate peak day rail activity for each year. Following the train calculation methodology described in Section 3.2.1.1, the number of locomotives needed to move APL containers in the peak day were: 22 in 2012, 32 in 2015, 2020, and 2025, and 34 in 2027.

c) Trucks: Peak day truck trips generated by Alternative 4 were provided by the traffic study for each analysis year. The peak day represents a weekday during a peak month of container throughput. This equates to about 40 percent more truck trips on the peak day compared to an average day for 2012, 2015, 2020, 2025 and 2027. This alternative would generate 6,438; 7,644; 8,376; 9,108; and 9,401 peak daily truck trips in 2012, 2015, 2020, 2025 and 2027 respectively.

d) Terminal equipment: Activity, horsepower, and load factors for diesel CHE, and fuel usage for LPG forklifts was provided by APL for both the peak day and annual equipment. The peak day equates to between 28 and 42 percent more operating hours compared to an average day for 2012, 2015, 2020, 2025, and 2027.

Tables 3.2-68 and 3.2-69 show that operational activities and cargo throughput associated with this alternative would be similar to the proposed Project in 2012, and slightly less than the proposed Project in 2015, 2020, 2025 and 2027.

Table 3.2-69: Peak Daily Operational Emissions Without Mitigation – Alternative 4

Emission Source	Peak Daily Emissions[a] (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2012						
Ships – Transit[b] and Anchoring	205	381	3,278	84	60	48
Ships – Hoteling	87	223	2,461	140	58	46
Tugboats	5	23	89	0	4	3
Trucks[b]	161	494	1,844	4	102	30
Trains[b]	86	319	1,703	1	48	44
Terminal Equipment	47	280	1,115	1	36	33
Worker Trips	29	296	24	0	47	10
Total – Project Year 2012[c]	**620**	**2,016**	**10,515**	**231**	**354**	**214**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(304)	(1,523)	(2,611)	(5,163)	(761)	(648)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	620	2,016	10,515	231	354	214
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2015						
Ships – Transit[b] and Anchoring	236	430	3,658	92	67	54
Ships – Hoteling	39	103	1,089	83	29	23
Tugboats	5	25	29	0	1	1
Trucks[b]	240	738	2,471	5	128	42
Trains[b]	99	453	2,186	2	57	53
Terminal Equipment	64	351	1,412	2	49	45
Worker Trips	29	288	23	1	57	12
Total – Project Year 2015[c]	**711**	**2,388**	**10,868**	**183**	**388**	**229**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(214)	(1,151)	(2,258)	(5,210)	(727)	(634)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	606	2,013	9,474	190	333	196
Project minus NEPA Baseline	105	376	1,394	(6)	56	33
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	**Yes**	No	No	No
Project Year 2020						

Table 3.2-69: Peak Daily Operational Emissions Without Mitigation – Alternative 4

Emission Source	Peak Daily Emissions[a] (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Ships – Transit[b] and Anchoring	236	430	3,658	92	67	54
Ships – Hoteling	20	57	557	63	18	15
Tugboats	5	27	30	0	1	1
Trucks[b]	277	889	2,572	6	148	54
Trains[b]	64	453	1,697	2	39	36
Terminal Equipment	22	298	90	2	3	3
Worker Trips	25	222	16	1	64	13
Total – Project Year 2020[c]	**649**	**2,377**	**8,620**	**164**	**341**	**175**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(275)	(1,162)	(4,506)	(5,230)	(774)	(687)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	546	1,964	7,469	165	286	151
Project minus NEPA Baseline	103	412	1,151	(1)	55	25
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	**Yes**	No	No	No
Project Year 2025						
Ships – Transit[b] and Anchoring	236	430	3,658	92	67	54
Ships – Hoteling	20	57	557	63	18	15
Tugboats	6	28	31	0	1	1
Trucks[b]	216	695	1,845	6	160	57
Trains[b]	48	456	1,299	2	28	26
Terminal Equipment	26	334	100	2	4	4
Worker Trips	21	181	13	1	72	15
Total – Project Year 2025[c]	**573**	**2,180**	**7,503**	**165**	**350**	**170**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(352)	(1,359)	(5,623)	(5,229)	(766)	(692)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	504	1,803	6,810	162	288	148
Project minus NEPA Baseline	69	378	693	2	62	23
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	**Yes**	No	No	No
Project Year 2027						
Ships – Transit[b] and Anchoring	236	430	3,658	92	67	54
Ships – Hoteling	20	57	557	63	18	15
Tugboats	6	29	32	0	1	1
Trucks[b]	225	724	1,934	6	165	59

Table 3.2-69: Peak Daily Operational Emissions Without Mitigation – Alternative 4

Emission Source	Peak Daily Emissions[a] (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Trains[b]	46	483	1,220	2	26	24
Terminal Equipment	29	372	112	2	4	4
Worker Trips	20	168	12	1	75	15
Total – Project Year 2027[c]	**581**	**2,263**	**7,524**	**165**	**357**	**172**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(343)	(1,276)	(5,602)	(5,229)	(758)	(690)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	506	1,834	6,780	163	289	147
Project minus NEPA Baseline	76	429	745	3	68	25
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	**Yes**	No	No	No

Notes:

a) Emissions assume the simultaneous occurrence of maximum theoretical daily equipment activity levels. Such levels would rarely occur during day-to-day terminal operations.

b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.

c) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.

d) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

CEQA Impact Determination

From a CEQA perspective, Alternative 4 peak-daily emissions are not expected to exceed CEQA baseline emissions for any criteria pollutants in any study year. The unmitigated air quality impacts associated with Alternative 4 would therefore be less than significant for all criteria pollutants in 2012, 2015, 2020, 2025 and 2027. VOC emissions would not exceed the 10 tpy threshold in any study year.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

From a NEPA perspective, Alternative 4 peak daily emissions would exceed SCAQMD thresholds for NOx and VOC in 2015, 2020, 2025, and 2027. Annual emissions of VOCs would exceed the 10 tpy threshold in 2015, 2020, 2025, and 2027. The unmitigated peak daily emissions for Alternative 4 are therefore expected to be significant for NOx and VOC in 2015, 2020, 2025, and 2027.

Mitigation Measures

MM AQ-9 through MM AQ-16 would apply to Alternative 4. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. From a NEPA perspective, Alternative 4 peak daily emissions after mitigation are expected to exceed the threshold for VOC in 2015, 2020, 2025, and 2027 and for NOx in 2015. Therefore air quality impacts associated with Alternative 4 after mitigation are expected to remain significant for VOC and NOx. Tables 3.2-70 and 3.2-71 show mitigated emissions and impacts associated with Alternative 4 for the study years.

Residual Impacts

Impacts would remain significant and unavoidable for VOC and NOx.

Table 3.2-70: Average Daily Operational Emissions With Mitigation – Alternative 4

Emission Source	Average[a] Daily Emissions (lb/day)[e]					
	VOC	**CO**	**NO_X**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Project Year 2012						
Ships – Transit[b] and Anchoring	123	229	1,977	51	36	29
Ships – Hoteling[c]	56	142	1,563	91	37	29
Tugboats	3	15	57	0	2	2
Trucks[b]	117	358	1,336	3	74	22
Trains[b]	75	280	1,495	1	42	39
Terminal Equipment	25	172	686	1	21	19
Worker Trips	20	208	17	0	33	7
Total – Project Year 2012[d]	**419**	**1,404**	**7,130**	**148**	**245**	**147**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(80)	(462)	(15)	(2,442)	(317)	(287)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	419	1,404	7,130	148	245	147
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2015						
Ships – Transit[b] and Anchoring	133	237	1,678	42	33	27
Ships – Hoteling[c]	29	77	811	62	22	17
Tugboats	3	16	18	0	0	0
Trucks[b]	174	535	1,790	4	93	31
Trains[b]	82	375	1,807	1	47	44
Terminal Equipment	25	212	228	1	10	9
Worker Trips	21	205	16	0	41	8
Total – Project Year 2015[d]	**466**	**1,656**	**6,349**	**110**	**246**	**136**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434

Table 3.2-70: Average Daily Operational Emissions With Mitigation – Alternative 4

Emission Source	Average[a] Daily Emissions (lb/day)[e]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project minus CEQA Baseline	(33)	(210)	(797)	(2,480)	(316)	(298)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	411	1,419	6,472	120	231	134
Project minus NEPA Baseline	55	237	(123)	(10)	15	2
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2020						
Ships – Transit[b] and Anchoring	163	291	2,065	51	41	33
Ships – Hoteling[c]	17	47	465	52	15	12
Tugboats	4	21	24	0	1	0
Trucks[b]	201	644	1,863	4	108	39
Trains[b]	56	391	1,464	2	34	31
Terminal Equipment	17	222	66	1	2	2
Worker Trips	19	168	12	0	48	10
Total – Project Year 2020[d]	**475**	**1,784**	**5,958**	**111**	**249**	**128**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(24)	(82)	(1,187)	(2,479)	(313)	(306)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	379	1,437	5,237	107	206	108
Project minus NEPA Baseline	96	347	722	4	43	20
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	**Yes**	No	No	No
Project Year 2025						
Ships – Transit[b] and Anchoring	193	345	2,452	61	48	39
Ships – Hoteling[c]	15	44	427	48	14	11
Tugboats	5	26	29	0	1	1
Trucks[b]	156	503	1,336	4	116	41
Trains[b]	42	391	1,120	2	24	22
Terminal Equipment	20	257	77	2	3	3
Worker Trips	17	141	10	1	56	12
Total – Project Year 2025[d]	**449**	**1,707**	**5,451**	**116**	**262**	**129**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(50)	(158)	(1,694)	(2,474)	(299)	(305)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						

Table 3.2-70: Average Daily Operational Emissions With Mitigation – Alternative 4

Emission Source	Average[a] Daily Emissions (lb/day)[e]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
NEPA Baseline Emissions	360	1,364	5,007	118	213	110
Project minus NEPA Baseline	89	343	444	(1)	49	19
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	**Yes**	No	No	No
Project Year 2027						
Ships – Transit[b] and Anchoring	198	352	2,483	61	49	39
Ships – Hoteling[c]	8	26	221	40	10	8
Tugboats	5	26	30	0	1	1
Trucks[b]	163	524	1,401	5	120	43
Trains[b]	39	404	1,026	2	22	21
Terminal Equipment	18	245	74	2	3	2
Worker Trips	15	123	9	1	55	11
Total – Project Year 2027[d]	**446**	**1,700**	**5,243**	**109**	**259**	**125**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(54)	(166)	(1,903)	(2,480)	(303)	(309)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	360	1,373	4,951	118	212	109
Project minus NEPA Baseline	86	327	292	(9)	47	16
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	**Yes**	No	No	No

Notes:

a) Emissions represent annual emissions divided by 365 days per year of operation.
b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.
c) Hoteling emissions include regional power plant emissions from AMP electricity generation
d) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.
e) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Table 3.2-71: Peak Daily Operational Emissions With Mitigation – Alternative 4

Emission Source	Peak[a] Daily Emissions (lb/day)[e]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2012						
Ships – Transit[b] and Anchoring	205	381	3,278	84	60	48
Ships – Hoteling[c]	87	223	2,461	140	58	46
Tugboats	5	23	89	0	4	3
Trucks[b]	161	494	1,844	4	102	30
Trains[b]	86	319	1,703	1	48	44
Terminal Equipment	47	280	1,115	1	36	33
Worker Trips	29	296	24	0	47	10
Total – Project Year 2012[d]	**620**	**2,016**	**10,515**	**231**	**354**	**214**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(304)	(1,523)	(2,611)	(5,163)	(761)	(648)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	620	2,016	10,515	231	354	214
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2015						
Ships – Transit[b] and Anchoring	244	424	2,913	69	58	46
Ships – Hoteling[c]	38	102	1,079	82	29	23
Tugboats	5	25	29	0	1	1
Trucks[b]	240	738	2,471	5	128	42
Trains[b]	99	453	2,186	2	57	53
Terminal Equipment	47	332	490	2	22	20
Worker Trips	29	288	23	1	57	12
Total – Project Year 2015[d]	**702**	**2,363**	**9,192**	**160**	**352**	**197**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(222)	(1,176)	(3,934)	(5,234)	(763)	(666)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	606	2,013	9,474	190	333	196
Project minus NEPA Baseline	96	350	(282)	(29)	20	1
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	No	No	No	No
Project Year 2020						
Ships – Transit[b] and Anchoring	244	424	2,913	69	58	46

Table 3.2-71: Peak Daily Operational Emissions With Mitigation – Alternative 4

Emission Source	Peak[a] Daily Emissions (lb/day)[e]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Ships – Hoteling[c]	20	56	552	62	18	15
Tugboats	5	27	30	0	1	1
Trucks[b]	277	889	2,572	6	148	54
Trains[b]	64	453	1,697	2	39	36
Terminal Equipment	23	303	91	2	3	3
Worker Trips	25	222	16	1	64	13
Total – Project Year 2015[d]	**658**	**2,375**	**7,872**	**141**	**332**	**168**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(266)	(1,163)	(5,254)	(5,253)	(783)	(694)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	546	1,964	7,469	165	286	151
Project minus NEPA Baseline	111	411	402	(24)	46	18
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	**Yes**	No	No	No
Project Year 2025						
Ships – Transit[b] and Anchoring	244	424	2,913	69	58	46
Ships – Hoteling[c]	20	56	552	62	18	15
Tugboats	6	28	31	0	1	1
Trucks[b]	216	695	1,845	6	160	57
Trains[b]	48	456	1,299	2	28	26
Terminal Equipment	27	340	102	2	4	4
Worker Trips	21	181	13	1	72	15
Total – Project Year 2025[d]	**581**	**2,179**	**6,755**	**142**	**341**	**163**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(343)	(1,360)	(6,371)	(5,252)	(774)	(699)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	504	1,803	6,810	162	288	148
Project minus NEPA Baseline	78	377	(55)	(21)	53	16
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	No	No	No	No
Project Year 2027						
Ships – Transit[b] and Anchoring	244	424	2,913	769	58	46
Ships – Hoteling[c]	10	34	288	52	13	10
Tugboats	6	29	32	0	1	1
Trucks[b]	225	724	1,934	6	165	59
Trains[b]	46	483	1,220	2	26	24

Table 3.2-71: Peak Daily Operational Emissions With Mitigation – Alternative 4

Emission Source	Peak[a] Daily Emissions (lb/day)[e]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Terminal Equipment	25	343	104	2	4	3
Worker Trips	20	168	12	1	75	15
Total – Project Year 2027[d]	**576**	**2,204**	**6,502**	**133**	**342**	**160**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(348)	(1,333)	(6,624)	(5,261)	(774)	(702)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	506	1,834	6,780	163	289	147
Project minus NEPA Baseline	71	371	(277)	(30)	53	13
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	No	No	No	No

Notes:

a) Emissions assume the simultaneous occurrence of maximum theoretical daily equipment activity levels. Such levels would rarely occur during day-to-day terminal operations.
b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.
c) Hoteling emissions include regional power plant emissions from AMP electricity generation
d) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.
e) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Impact AQ-4: Alternative 4 operations would result in off-site ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-19.

Dispersion modeling of on-site and off-site Project operational emissions was performed to assess the impact of Alternative 4 on local ambient air concentrations. A summary of the dispersion modeling results is presented here; the complete dispersion modeling report is included in Appendix E2. Table 3.2-72 presents the maximum off-site ground-level concentrations of NO_2, SO_2, and CO Alternative 4 without mitigation. Table 3.2-73 shows the maximum CEQA and NEPA PM_{10} and $PM_{2.5}$ concentration increments without mitigation.

Table 3.2-72: Maximum Off-site NO_2, SO_2, and CO Concentrations Associated with Operation of Alternative 4 without Mitigation

Pollutant	Averaging Time	Maximum Modeled Concentration of Alt. 4 ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Ground Level Concentration[e] ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
NO_2 [c]	Federal 1-hour	178	147	**325**	188
	State 1-hour	224	235	**459**	339
	State Annual	50	40	**90**	57
	Federal Annual	50	40	90	100
SO_2	Federal 1-hour[d]	6	53	59	196
	State 1-hour	10	228	238	655
	24-hour	1	32	33	105
CO	1-hour	291	4,600	4,891	23,000
	8-hour	122	2,878	3,000	10,000

Notes:

a) Exceedances of the thresholds are indicated in **bold**.

b) The background concentrations were obtained from the North Long Beach Monitoring Station. The maximum concentrations during the years of 2007, 2008, and 2009 were used.

c) NO_2 concentrations were calculated using ozone data from the North Long Beach monitoring station. The 1-hour NO_2 concentration is calculated using the 98th percentile of the daily maximum 1-hour average to compare with the new federal 1-hour NO_2 standard of 0.100 ppm (188 $\mu g/m^3$) (effective January 22, 2010).

d) According to USEPA guidance, the modeled design values, 98^{th} percentile for 1-hour NO_2 and 99^{th} percentile for 1-hour SO_2, are added to the design background values for NO_2 and SO_2. (USEPA, 2011a).

e) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

Table 3.2-73: Maximum Off-site PM_{10} and $PM_{2.5}$ Concentrations Associated with Operation of the Alternative 4

	Averaging Time	Maximum Modeled Concentration of Proposed Project[b] ($\mu g/m^3$)	Maximum Modeled Concentration of CEQA Baseline[b] ($\mu g/m^3$)	Maximum Modeled Concentration of NEPA Baseline[b] ($\mu g/m^3$)	Ground Level Concentration CEQA Increment ($\mu g/m^3$)[a,c]	Ground Level Concentration NEPA Increment ($\mu g/m^3$)[a,c]	SCAQMD Threshold ($\mu g/m^3$)
PM_{10}	24-hour	6.8	7.1	5.6	0.1	1.4	2.5
	Annual	1.9	1.9	1.5	0.5	0.4	1.0
$PM_{2.5}$	24-hour	5.6	6.2	4.4	0.1	1.2	2.5
	Federal Annual	1.5	NA	1.1	NA	**0.3**	0.3[d]

a) Exceedances of the threshold are indicated in bold. The thresholds for PM_{10} and $PM_{2.5}$ are incremental thresholds; therefore, the incremental concentration without background is compared to the threshold.

b) The maximum concentrations and increments presented in this table do not necessarily occur at the same receptor location. This means that the increments cannot necessarily be determined by simply subtracting the baseline concentrations from the Project concentration. The example provided in the discussion of Impact AQ-7 for the proposed Project describes how the increments are calculated.

c) The CEQA Increment represents the Project minus CEQA baseline. The NEPA Increment represents the Project minus NEPA baseline.

d) SCAQMD does not list a Significant Impact Level for annual $PM_{2.5}$, therefore the modeled annual average $PM_{2.5}$ was compared to the PSD SIL of 0.3 $\mu g/m^3$ for the determination of NEPA significance only.

CEQA Impact Determination

Operation of this alternative would not produce significant off-site ambient concentrations for NO_2 (Federal annual), CO, PM_{10} or $PM_{2.5}$. Operation of this alternative would produce significant off-site ambient concentrations of NO_2 (Federal and state 1-hour and state annual). Therefore, significant impacts under CEQA would occur.

Mitigation Measures

Mitigation measures to reduce ambient pollutant concentrations during Project operations under Alternative 4 would be the same as measures **MM AQ-9 through MM AQ-16** described for the proposed Project. Mitigation measures **MM AQ-9 through MM AQ-16** will be implemented by the responsible parties identified in Section 3.2.4.5. Table 3.2-74 presents the maximum off-site concentrations of NO_2 after mitigation.

Residual Impacts

Impacts would be significant and unavoidable for Federal and state 1-hour and state annual NO_2.

NEPA Impact Determination

Operation of this alternative would not produce significant off-site ambient concentrations for CO or PM_{10}. Operation of this alternative would produce significant off-site ambient concentrations of NO_2 (Federal 1-hour) and $PM_{2.5}$ (annual). Therefore, significant impacts under NEPA would occur.

Mitigation Measures

Mitigation measures to reduce ambient pollutant concentrations during Project operations under Alternative 4 would be the same as measures **MM AQ-9 through MM AQ-16** described for the proposed Project. Table 3.2-75 presents the maximum annual $PM_{2.5}$ concentration after mitigation. Mitigation measures **MM AQ-9 through MM AQ-16** will be implemented by the responsible parties identified in Section 3.2.4.5.

Residual Impacts

Impacts would be significant and unavoidable for 1-hour NO_2.

Table 3.2-74: Maximum Off-site NO_2 Concentration Associated with Operation of Alternative 4 With Mitigation

Pollutant	Averaging Time	Maximum Modeled Concentration of Alt. 4 ($\mu g/m^3$)	Background Concentration[b] ($\mu g/m^3$)	Total Ground Level Concentration[a,e] ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
NO_2[c]	Federal 1-hour[d]	165	146	**311**	188
	State 1-hour	206	235	**441**	339
	State Annual	45	40	**85**	57
	Federal Annual	45	40	85	100

Notes:
a) Exceedances of the thresholds are indicated in **bold**.
b) The background concentrations were obtained from the North Long Beach Monitoring Station. The maximum concentrations during the years of 2007, 2008, and 2009 were used.
c) NO_2 concentrations were calculated using ozone data from the North Long Beach monitoring station. The 1-hour NO_2 concentration is calculated using the 98th percentile of the daily maximum 1-hour average to compare with the new federal 1-hour NO_2 standard of 0.100 ppm (188 $\mu g/m^3$) (effective January 22, 2010).
d) According to USEPA guidance, the modeled design value (98th percentile) for 1-hour NO_2 is added to the background design value for NO_2. (USEPA, 2011a).
e) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

Table 3.2-75: Maximum Off-site $PM_{2.5}$ Concentration Associated with Operation of Alternative 4 With Mitigation

	Averaging Time	Maximum Modeled Concentration of Alt. 4[b] ($\mu g/m^3$)	Maximum Modeled Concentration of NEPA Baseline[b] ($\mu g/m^3$)	Ground-Level Concentration NEPA Increment[a,c] ($\mu g/m^3$)	Threshold ($\mu g/m^3$)
$PM_{2.5}$	Annual	1.0	1.1	0.1	0.3

Notes:
a) Exceedances of the threshold are indicated in bold. The threshold for PM_{10} is an incremental threshold; therefore, the incremental concentration without background is compared to the threshold.
b) The maximum concentrations and increments presented in this table might not occur at the same receptor location. This means that the increments cannot necessarily be determined by simply subtracting the baseline concentrations from Alternative 4 concentration. The example provided in the discussion of Impact AQ-7 for the proposed Project illustrates how the increments are calculated.
c) The CEQA Increment represents project minus CEQA baseline. The NEPA Increment represents project minus NEPA baseline.
d) SCAQMD does not list a Significant Impact Level for annual $PM_{2.5}$, therefore the modeled annual average $PM_{2.5}$ was compared to the PSD SIL of 0.3 $\mu g/m^3$ for the determination of NEPA significance only.

Impact AQ-5: Alternative 4 would not generate on-road traffic that would contribute to an exceedance of the 1-hour or 8-hour CO standards.

This alternative would generate traffic levels comparable to or less than the traffic generated by the proposed Project. As discussed in the proposed Project analysis, CO concentrations related to on-road traffic would not exceed state CO standards for any Project study year.

CEQA Impact Determination

Under CEQA, CO standards would not be exceeded, therefore impacts are less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would not be less than significant.

NEPA Impact Determination

Under NEPA, CO standards would not be exceeded, therefore impacts are less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would not be less than significant.

Impact AQ-6: Alternative 4 would not create an objectionable odor at the nearest sensitive receptor.

Similar to the proposed Project, the mobile nature of the emission sources associated with this alternative would help to disperse emissions. Additionally, the distance between proposed Project emission sources and the nearest residents would be far enough to allow for adequate dispersion of these emissions to below objectionable odor levels. Thus, the potential is low for this alternative to produce objectionable odors that would affect a sensitive receptor.

CEQA Impact Determination

As a result of the above, the potential is low for the proposed Project to produce objectionable odors that would affect a sensitive receptor; and significant odor impacts under CEQA, therefore, are not anticipated.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would not be less than significant.

NEPA Impact Determination

As a result of the above, the potential is low for the proposed Project to produce objectionable odors that would affect a sensitive receptor; and significant odor impacts under NEPA, therefore, are not anticipated.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would not be less than significant.

Impact AQ-7: Alternative 4 would expose receptors to significant levels of toxic air contaminants.

Operational activities and cargo throughput associated with this alternative would be similar to the proposed Project in 2012, and slightly less than the proposed Project in 2015, 2020, 2025 and 2027. The main sources of TACs from Alternative 4 operations would be DPM emissions from ships, tugboats, terminal equipment, locomotives, and trucks. Similar to the HRA for the proposed Project, PM_{10} and VOC emissions were projected over a 70-year period, from 2012 through 2081. An HRA was performed over this 70-year exposure period.

Table 3.2-76 presents the maximum predicted health impacts associated with this alternative without mitigation. The table includes estimates of individual lifetime cancer risk, chronic noncancer hazard index, and acute noncancer hazard index at the maximally exposed receptors. Results are presented for the CEQA increment (alternative minus CEQA baseline) and NEPA increment (alternative minus NEPA baseline).

CEQA Impact Determination

Alternative 4 would move slightly fewer TEUs than the proposed Project and, therefore, would have lower DPM emissions and lower health risk impacts. Acute impacts would be slightly less than the proposed Project due to the smaller scope of the construction required for this Alternative. Table 3.2-76 shows that the maximum CEQA chronic hazard index increments associated with the unmitigated Alternative 4 are less than the significance threshold of 1.0. These impacts would be less than significant under CEQA.

The maximum future CEQA incremental cancer risks for residential and occupational receptors would exceed the significance threshold of 10 in a million. In addition, the maximum acute hazard index CEQA increment is predicted to be greater than the significance threshold of 1.0 at residential and occupational receptors.

From a CEQA perspective, the 24-hour $PM_{2.5}$ CEQA incremental impact shown in Table 3.2-73 is 1.1 $\mu g/m^3$. The CEQA incremental impact is less than the SCAQMD threshold of 2.5 $\mu g/m^3$, therefore the 24-hour $PM_{2.5}$ concentration is less than significant and a mortality and morbidity evaluation is not required.

Table 3.2-76: Maximum Incremental CEQA and NEPA Health Impacts Associated With Alternative 4 Without Mitigation, 2012 – 2081

Health Impact	Receptor Type	Maximum Predicted Impact[a,d]					Significance Threshold
		Alternative 4	Future CEQA Baseline	Future CEQA Increment[b,c]	NEPA Baseline	NEPA Increment[b,c]	
Cancer Risk[f]	Residential[e]	45	22	**23 x 10^{-6} (23 in a million)**	40	5 x 10^{-6} (5 in a million)	10 x 10^{-6} (10 in a million)
	Occupational	37	22	**15 x 10^{-6} (15 in a million)**	31	6 x 10^{-6} (6 in a million)	
	Sensitive	15	8	5 x 10^{-6} (5 in a million)	13	2 x 10^{-6} (2 in a million)	
	Student	0.6	0.4	0.1 x 10^{-6} (0.1 in a million)	0.5	0.2 x 10^{-6} (0.2 in a million)	
	Recreational	5	2	3 x 10^{-6} (3 in a million)	4.5	0.8 x 10^{-6} (0.8 in a million)	
Chronic Hazard Index	Residential	0.3	0.5	< 0[g]	0.2	0.1	1.0
	Occupational	0.6	0.8	< 0[g]	0.4	0.2	
	Sensitive	0.1	0.4	< 0[g]	0.1	0.0	
	Student	0.09	0.3	< 0[g]	0.09	0.0	
	Recreational	0.1	0.4	< 0[g]	0.1	0.0	
Acute Hazard Index	Residential	1.3	0.2	**1.1**	0.2	**1.1**	1.0
	Occupational	1.9	0.2	**1.7**	0.2	**1.7**	
	Sensitive	0.5	0.06	0.4	0.06	0.4	
	Student	0.5	0.06	0.4	0.06	0.4	
	Recreational	0.6	0.09	0.5	0.09	0.5	

Notes:

a) Exceedances of the significance criteria are in **bold**. The significance thresholds apply to the CEQA and NEPA increments only.

b) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impacts. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.

c) The CEQA increment represents Project minus CEQA baseline. The NEPA increment represents Project minus NEPA baseline.

d) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.

e) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.

f) Construction emissions were modeled with the operational emissions for the determination of cancer risk.

g) When the predicted impact is less than zero, the Project risk is less than the respective baseline.

Mitigation Measures

Mitigation measures to reduce TAC emissions would be the same as measures **MM AQ-9 through MM AQ-16** described above for the proposed Project. These mitigation measures will be implemented by the responsible parties identified in Section 3.2.4.5.

Residual Impacts

Table 3.2-77 shows that the maximum CEQA acute risk increment at residential receptors is reduced to a less than significant level. The maximum acute risk at occupational receptors remains significant and unavoidable. In addition, the maximum future CEQA cancer risk increment at the residential and occupational receptors remain significant and unavoidable.

See the residual impacts discussion for the proposed Project Impact AQ-7, above, and Appendix E3 for additional detail on the impacted receptors and risk drivers.

Table 3.2-77: Maximum Incremental CEQA and NEPA Health Impacts Associated With Alternative 4 With Mitigation, 2012 – 2081

Health Impact	Receptor Type	Maximum Predicted Impact[a,d]					Significance Threshold
		Alternative 4	Future CEQA Baseline	Future CEQA Increment[b,c]	NEPA Baseline	NEPA Increment[b,c]	
Cancer Risk[f]	Residential[e]	44	22	**22 x 10^{-6} (22 in a million)**	-[g]	-[g]	10 x 10^{-6} (10 in a million)
	Occupational	28	18	**10 x 10^{-6} (10 in a million)**	-[g]	-[g]	
Acute Hazard Index	Residential	1.0	0.2	0.8	0.2	0.8	1.0
	Occupational	1.3	0.2	**1.1**	0.2	**1.1**	

Notes:
h) Exceedances of the significance criteria are in **bold**. The significance thresholds apply to the CEQA and NEPA increments only.
i) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impacts. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.
j) The CEQA increment represents Project minus CEQA baseline.
k) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.
l) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.
m) Construction emissions were modeled with the operational emissions for the determination of cancer risk.
n) Unmitigated impacts that were less than the significance threshold were not reanalyzed for mitigation.

NEPA Impact Determination

The maximum NEPA cancer risk increment associated with the unmitigated Alternative 4 is predicted to be 6 in a million (6 x 10^{-6}), at an occupational receptor. This risk value does not exceed the significance criterion of 10 in a million and would not be considered a significant impact.

The maximum chronic hazard index NEPA increment associated with the unmitigated Project is predicted to be 0.2 at an occupational receptor. The acute hazard index NEPA increment is predicted to be 1.7 at an occupational receptor.

From a NEPA perspective, the 24-hour $PM_{2.5}$ NEPA incremental impact shown in Table 3.2-73 is 1.1 µg/m^3. The NEPA incremental impact is less than the SCAQMD threshold of 2.5 µg/m^3, therefore the 24-hour $PM_{2.5}$ concentration is less than significant and a mortality and morbidity determination is not required.

Mitigation Measures

Mitigation measures to reduce TAC emissions would be the same as measures **MM AQ-9 through MM AQ-16** described above for Impact AQ-3. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5.

Residual Impacts

The maximum NEPA incremental acute risk at residential receptors is reduced to a less than significant level. The maximum acute risk at occupational receptors remains significant and unavoidable.

Impact AQ-8: Alternative 4 would not conflict with or obstruct implementation of an applicable AQMP.

Similar to the proposed Project, this alternative would comply with SCAQMD rules and regulations, and would be consistent with SCAG regional employment and population growth forecasts. Thus, this alternative would not conflict with or obstruct implementation of the AQMP.

CEQA Impact Determination

This alternative would not conflict with or obstruct implementation of the AQMP; therefore, impacts under CEQA are not anticipated.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

This alternative would not conflict with or obstruct implementation of the AQMP; therefore, impacts under NEPA are not anticipated.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact AQ-9: Alternative 4 would produce GHG emissions that would exceed CEQA and NEPA baseline levels.

Table 3.2-78 summarizes the total GHG construction emissions associated with Alternative 4. Table 3.2-79 summarizes the annual GHG emissions that would occur within California from the operation of Alternative 4.

Table 3.2-78: Total GHG Emissions from Berth 302-306 Terminal Construction Activities – Alternative 4

Emission Source	CO_2	CH_4	N_2O	CO_2e[d]
	Total Emissions[b] (Metric Tons[c])			
Total Construction				
Backland Construction	1,107	0.07	0.03	1,108
Demolition	46	0.00	0.00	46
Building Construction	712	0.04	0.02	713
Reefer Area Expansion	161	0.01	0.01	161
Utility Infrastructure	127	0.01	0.00	127
Cranes Installation	59	0.00	0.00	67
Modify Earle Street Gate	122	0.01	0.00	122
Worker Commute	443	0.02	0.10	443
Total Construction – CEQA Impact[a,e]	2,776	0.15	0.08	2,803
Total Construction – NEPA Impact [e]	2,045	0.121	0.06	2,065

Notes:

a) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

b) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

c) One metric ton equals 1,000 kilograms, 2,205 lbs, or 1.1 U.S. (short) tons.

d) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; and 310 for N_2O.

e) The CEQA Impact equals total Project construction emissions minus CEQA baseline emissions. In the case of construction, CEQA baseline emissions are zero. The NEPA impact equals total Project construction emissions minus NEPA baseline emissions. The activities considered to be part of the NEPA construction analysis are reported in Table 3.2-11.

Table 3.2-79: Annual Operational GHG Emissions – Alternative 4 – Without Mitigation

Project Scenario/ Source Type	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
Project Year 2012					
Ships – Transit	48,660	1	2	0	49,413
Ships – Hoteling	21,378	0	1	0	21,749
Tugboats	340	0	0	0	345
Trucks	59,452	0	0	0	59,497
Trains	43,445	1	4	0	44,572
Terminal Equipment	13,376	0	0	0	13,429
Reefer Refrigerant Losses	0	0	0	1	841
AMP Usage	0	0	0	0	0
On-Terminal Electricity Usage	22,448	1	0	0	22,506
Worker Trips	5,340	0	1	0	5,525
Total For Project Year 2012[c]	**214,440**	**4**	**8**	**1**	**217,876**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	65,198	(1)	4	0	66,612
NEPA Baseline	214,440	4	8	1	217,876
Project Minus NEPA Baseline	0	0	0	0	0
Project Year 2015					
Ships – Transit	50,258	1	2	0	51,037
Ships – Hoteling	13,899	0	1	0	14,166
Tugboats	340	0	0	0	345
Trucks	71,101	0	0	0	71,154
Trains	58,920	2	5	0	60,449
Terminal Equipment	16,832	0	0	0	16,898
Reefer Refrigerant Losses	0	0	0	1	998
AMP Usage	5,197	0	0	0	5,208
On-Terminal Electricity Usage	22,448	1	0	0	22,506
Worker Trips	5,998	0	0	0	6,147
Total For Project Year 2015[c]	**244,993**	**4**	**9**	**1**	**248,908**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	95,752	(0)	5	0	97,643
NEPA Baseline	215,143	4	8	1	218,469
Project Minus NEPA Baseline	29,850	1	1	0	30,439
Project Year 2020					
Ships – Transit	61,848	1	3	0	62,805
Ships – Hoteling	11,142	0	1	0	11,379
Tugboats	416	0	0	0	422

Table 3.2-79: Annual Operational GHG Emissions – Alternative 4 – Without Mitigation

Project Scenario/ Source Type	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
Trucks	76,320	0	0	0	76,377
Trains	61,462	2	5	0	63,058
Terminal Equipment	18,930	0	0	0	19,004
Reefer Refrigerant Losses	0	0	0	1	1,094
AMP Usage	6,824	0	0	0	6,838
On-Terminal Electricity Usage	19,456	1	0	0	19,507
Worker Trips	5,813	0	0	0	5,902
Total Project Year 2020[c]	**262,211**	**5**	**10**	**1**	**266,387**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	112,970	0	5	0	115,123
NEPA Baseline	215,045	4	8	1	218,469
Project Minus NEPA Baseline	47,166	1	2	0	47,918
Project Year 2025					
Ships – Transit	73,438	2	4	0	74,575
Ships – Hoteling	10,164	0	1	0	10,380
Tugboats	491	0	0	0	499
Trucks	82,988	0	0	0	83,051
Trains	61,337	2	5	0	62,929
Terminal Equipment	21,028	1	0	0	21,110
Reefer Refrigerant Losses	0	0	0	1	1,189
AMP Usage	6,294	0	0	0	6,307
On-Terminal Electricity Usage	21,319	1	0	0	21,374
Worker Trips	6,207	0	0	0	6,322
Total Project Year 2025[c]	**283,267**	**5**	**10**	**1**	**287,736**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	134,025	0	6	1	136,471
NEPA Baseline	232,166	4	9	1	235,867
Project Minus NEPA Baseline	51,101	1	2	0	51,869
Project Year 2027					
Ships – Transit	75,035	2	4	0	76,198
Ships – Hoteling	10,176	0	1	0	10,393
Tugboats	491	0	0	0	499
Trucks	85,655	0	0	0	85,720
Trains	63,300	2	5	0	64,943
Terminal Equipment	21,867	1	0	0	21,952
Reefer Refrigerant Losses	0	0	0	1	1,227

Table 3.2-79: Annual Operational GHG Emissions – Alternative 4 – Without Mitigation

Project Scenario/ Source Type	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
AMP Usage	16,399	0	1	0	16,629
On-Terminal Electricity Usage	23,182	1	0	0	23,242
Worker Trips	5,882	0	0	0	5,981
Total Project Year 2027[c]	**301,989**	**5**	**11**	**1**	**306,784**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	152,747	1	7	1	155,520
NEPA Baseline	234,217	4	9	1	237,940
Project Minus NEPA Baseline	67,772	1	2	0	68,845

Notes:

a) 1 metric ton equals 1,000 kilograms, 2205 lbs, or 1.1 U.S. (short) tons.

b) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; and 1,300 for HFC-134a.

c) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

CEQA Impact Determination

Table 3.2-78 shows that total CO_2e emissions during project construction would exceed CEQA baseline construction emissions (which are zero for construction). In addition, the data in Table 3.2-79 show that in each future Project year, annual operational CO_2e emissions would increase from CEQA baseline levels. As a result, Alternative 4 would produce significant levels of GHG emissions under CEQA.

Mitigation Measures

Measures that reduce fuel usage and electricity consumption from Alternative 4 emission sources would reduce proposed GHG emissions. Project mitigation measures that would accomplish this effect include **MM AQ-2 through MM AQ-4** for construction; and **MM AQ-9, MM AQ-10**, and **MM AQ-16 through MM AQ-20** for operations.

Table 3.2-80 presents the annual operational GHG emissions with mitigation. The effects of **MM AQ-9** (AMP) and **MM AQ-10** (VSRP) were included in the emission estimates. The potential effects of the remaining mitigation measures are described qualitatively under each measure's heading in the proposed Project analysis for Impact AQ-9.

Table 3.2-80: Annual Operational GHG Emissions – Alternative 4 With Mitigation

Project Scenario/ Source Type	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
Project Year 2012					
Ships – Transit	48,660	1	2	0	49,413
Ships – Hoteling	21,378	0	1	0	21,749
Tugboats	340	0	0	0	345
Trucks	59,452	0	0	0	59,497
Trains	43,445	1	4	0	44,572
Terminal Equipment	13,376	0	0	0	13,429
Reefer Refrigerant Losses	0	0	0	1	841
AMP Usage	0	0	0	0	0
On-Terminal Electricity Usage	22,448	1	0	0	22,506
Worker Trips	5,340	0	1	0	5,525
Total For Project Year 2012[c]	**214,440**	**4**	**8**	**1**	**217,876**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	65,198	(1)	4	0	66,612
NEPA Baseline	214,440	4	8	1	217,876
Project Minus NEPA Baseline	0	0	0	0	0
Project Year 2015					
Ships – Transit	47,727	1	2	0	48,469
Ships – Hoteling	13,899	0	1	0	14,166
Tugboats	340	0	0	0	345
Trucks	71,101	0	0	0	71,154
Trains	58,920	2	5	0	60,449
Terminal Equipment	16,832	0	0	0	16,898
Reefer Refrigerant Losses	0	0	0	1	998
AMP Usage	5,197	0	0	0	5,208
On-Terminal Electricity Usage	22,448	1	0	0	22,506
Worker Trips	5,998	0	0	0	6,147
Total For Project Year 2015[c]	**242,462**	**4**	**9**	**1**	**246,340**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	93,220	(0)	4	0	95,076
NEPA Baseline	215,143	4	8	1	218,469
Project Minus NEPA Baseline	27,318	1	1	0	27,871
Project Year 2020					
Ships – Transit	58,729	1	3	0	59,642
Ships – Hoteling	11,142	0	1	0	11,379
Tugboats	416	0	0	0	422
Trucks	76,320	0	0	0	76,377
Trains	61,462	2	5	0	63,058

Table 3.2-80: Annual Operational GHG Emissions – Alternative 4 With Mitigation

Project Scenario/ Source Type	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
Rail Yard Equipment	18,930	0	0	0	19,004
Reefer Refrigerant Losses	0	0	0	1	1,094
AMP Usage	6,824	0	0	0	6,838
On-Terminal Electricity Usage	19,456	1	0	0	19,507
Worker Trips	5,813	0	0	0	5,902
Total Project Year 2020[c]	**259,092**	**5**	**9**	**1**	**263,224**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	109,851	(0)	5	0	111,959
NEPA Baseline	215,045	4	8	1	218,469
Project Minus NEPA Baseline	44,047	1	2	0	44,755
Project Year 2025					
Ships – Transit	69,731	2	3	0	70,815
Ships – Hoteling	10,164	0	1	0	10,380
Tugboats	491	0	0	0	499
Trucks	82,988	0	0	0	83,051
Trains	61,337	2	5	0	62,929
Terminal Equipment	21,028	1	0	0	21,110
Reefer Refrigerant Losses	0	0	0	1	1,189
AMP Usage	6,294	0	0	0	6,307
On-Terminal Electricity Usage	21,319	1	0	0	21,374
Worker Trips	6,207	0	0	0	6,322
Total Project Year 2025[c]	**279,560**	**5**	**10**	**1**	**283,976**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	130,319	0	5	1	132,712
NEPA Baseline	232,166	4	9	1	235,867
Project Minus NEPA Baseline	47,394	1	1	0	48,109
Project Year 2027					
Ships – Transit	71,159	2	3	0	72,266
Ships – Hoteling	8,214	0	1	0	8,405
Tugboats	491	0	0	0	499
Trucks	85,655	0	0	0	85,720
Trains	63,300	2	5	0	64,943
Terminal Equipment	21,867	1	0	0	21,952
Reefer Refrigerant Losses	0	0	0	1	1,227
AMP Usage	15,605	0	1	0	15,811

Table 3.2-80: Annual Operational GHG Emissions – Alternative 4 With Mitigation

Project Scenario/ Source Type	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
On-Terminal Electricity Usage	23,182	1	0	0	23,242
Worker Trips	5,882	0	0	0	5,981
Total Project Year 2027[c]	**295,355**	**5**	**11**	**1**	**300,046**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	146,114	0	6	1	148,782
NEPA Baseline	234,217	4	9	1	237,940
Project Minus NEPA Baseline	61,139	1	2	0	62,106

Notes:
a) 1 metric ton equals 1,000 kilograms, 2205 lbs, or 1.1 U.S. (short) tons.
b) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; and 1,300 for HFC-134a.
c) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

Residual Impacts

Impacts would be significant and unavoidable.

NEPA Impact Determination

There are no science-based GHG significance thresholds, nor has the Federal government or the state adopted any by regulations. In the absence of an adopted or science-based GHG standard, in compliance with the NEPA implementing regulations, a significance determination regarding GHGs will not be made under NEPA.

In accordance with CEQ *Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions*, GHG emissions exceed the CEQ reference level of 25,000 $MTCO_2e$ for further analysis in a NEPA document (CEQ, 2010). Therefore GHG emissions are calculated for Alternative 4 emission sources and mitigation measures are considered for the reduction of GHG emissions.

Mitigation Measures

No mitigation is required.

Residual Impacts

An impact determination is not applicable.

3.2.4.4.5 Alternative 5 – Reduced Project: No Space Assignment

Alternative 5 would improve the existing terminal, construct a new wharf (1,250 ft) creating Berth 306, add 12 new cranes to Berths 302-306, add 56 acres for backlands, wharfs, and gates improvements, construct electrification infrastructure in the backlands behind Berths 305-306, and relinquish the 30 acres currently on space assignment. This alternative would be the same as the proposed Project, except that EMS would relinquish the 30 acres of backlands under space assignment. As with the proposed Project, the 41-acre backlands and Berth 306 under Alterative 5 could utilize traditional container operations, electric automated operations, or a combination of the two over time. Dredging of the Pier 300 Channel along the new wharf at Berth 306 (approximately 20,000 cy) would occur, with the dredged material beneficially reused, and/or disposed of at an approved disposal site (such as the CDF at Berths 243-245 and/or Cabrillo shallow water habitat) or, if needed, disposed of at an ocean disposal site (i.e., LA-2).

Under Alternative 5, the total gross terminal acreage would be 317 acres, which is less than the proposed Project. TEU throughput would be the same as the proposed Project, with an expected throughput of approximately 3.2 million TEUs by 2027. This would translate into 390 annual ship calls at Berths 302-306. In addition, this alternative would result in up to 11,361 peak daily truck trips (3,003,157 annual) including drayage, and up to 2,953 annual one-way rail trip movements. Configuration of all other landside terminal components would be identical to the existing terminal.

Impact AQ-1: Alternative 5 would result in construction-related emissions that exceed an SCAQMD threshold of significance in Table 3.2-16.

Alternative 5 construction, including an automated backlands option, would be identical to the proposed Project.

CEQA Impact Determination

As shown in Table 3.2-20a, the unmitigated peak daily construction emissions during the peak year of construction exceeded the SCAQMD daily emission thresholds for VOC, CO, NO_X, PM_{10}, and $PM_{2.5}$ under CEQA. Therefore, significant impacts under CEQA would occur.

Mitigation Measures

To reduce the level of impact, **MM AQ-1 through MM AQ-8** were applied to Alternative 5 construction. Mitigated construction emissions for Alternative 5 are equivalent to the mitigated emissions shown for the proposed Project in Table 3.2-22a. Although reductions were achieved with mitigation, impacts under CEQA would be significant and unavoidable during construction for VOC, CO, NO_X, PM_{10} and $PM_{2.5}$.

Residual Impacts

Impacts would be temporary but significant and unavoidable for VOC, CO, NOx, PM_{10} and $PM_{2.5}$.

NEPA Impact Determination

Without mitigation, the unmitigated peak daily construction emissions shown in Table 3.2-20a would exceed peak daily thresholds for VOC, CO, NOx, PM_{10}, and $PM_{2.5}$ under NEPA. Therefore significant impacts under NEPA would occur.

Mitigation Measures

To reduce the level of impact, **MM AQ-1 through MM AQ-8** were applied to Alternative 5 construction. Mitigated construction emissions for Alternative 5 are equivalent to the mitigated emissions shown for the proposed Project in Table 3.2-22a. However, despite implementation of mitigation, emissions from the construction of Although reductions were achieved with mitigation, impacts under NEPA would be significant and unavoidable during construction for VOC, CO, NO_X, PM_{10} and $PM_{2.5}$.

Residual Impacts

Impacts would be temporary but significant and unavoidable for VOC, CO, NOx, PM_{10} and $PM_{2.5}$.

Impact AQ-2: Alternative 5 construction would result in off-site ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-17.

Alternative 5 construction emissions, including construction of automated backlands, are equivalent to the proposed Project. Therefore unmitigated ambient air pollutant concentrations for Alternative 5 would be equivalent to ambient air pollutant concentrations predicted for the proposed Project in Table 3.2-23a.

CEQA Impact Determination

Table 3.2-23a shows that the maximum off-site 24-hour $PM_{2.5}$ concentration increment and the maximum 1-hour and 8-hour CO concentrations would not exceed the SCAQMD thresholds. The maximum off-site 24-hour and annual PM_{10}concentration increments would exceed SCAQMD significance thresholds. In addition, the maximum off-site state and Federal 1-hour NO_2 concentrations and state annual NO_2 concentration would exceed the SCAQMD significance threshold.

Without mitigation, maximum off-site ambient pollutant concentrations associated with the construction of the proposed Project would be significant for PM_{10} (24-hour and annual average) and NO_2 (state and Federal 1-hour and state annual averages). In addition to the impact noted above for construction alone, the overlap of construction and operations would result in a significant impact for 24-hour $PM_{2.5}$. Therefore, significant impacts under CEQA would occur.

Mitigation Measures

To reduce the level of impact during construction, **MM AQ-1 through MM AQ-8** were applied to Alternative 5 construction. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. Alternative 5 mitigated impacts would be equivalent to the proposed Project impacts shown in Table 3.2-24a. With implementation of these mitigation measures, off-site ambient concentrations from construction activities would be significant for PM_{10} (annual average) and NO_2 (1-hour average), but less than significant for $PM_{2.5}$ and CO.

Residual Impacts

Impacts would be significant and unavoidable during construction for Federal and state 1-hour NO_2 and annual PM_{10}.

NEPA Impact Determination

Table 3.2-23a shows that without mitigation, maximum off-site ambient pollutant concentrations associated with the construction of the proposed Project would be significant for PM_{10} (24-hour and annual average) and NO_2 (1-hour) in addition to $PM_{2.5}$ (annual). In addition to the impact noted above for construction alone, the overlap of construction and operations would result in a significant impact for 24-hour $PM_{2.5}$. Therefore, significant impacts under NEPA would occur.

Mitigation Measures

To reduce the level of impact during construction, **MM AQ-1 through MM AQ-8** was applied to Alternative 5 construction. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. Alternative 5 mitigated impacts would be equivalent to the proposed Project impacts shown in Table 3.2-24a. With implementation of these mitigation measures, off-site ambient concentrations from construction activities would be significant for PM_{10} (annual average), $PM_{2.5}$ (annual) and NO_2 (1-hour average), but less than significant CO.

Residual Impacts

Impacts would be significant and unavoidable during construction for 1-hour NO_2, annual PM_{10} and annual $PM_{2.5}$.

Impact AQ-3: Alternative 5 would result in operational emissions that exceed 10 tons per year of VOCs or an SCAQMD threshold of significance in Table 3.2-18.

Table 3.2-81 presents the unmitigated average daily criteria pollutant emissions associated with operation of this alternative. Emissions were estimated for five Project study years: 2012, 2015, 2020, 2025 and 2027. Comparisons to the CEQA baseline and NEPA baseline emissions are presented to determine CEQA and NEPA significance, respectively.

The operational emissions associated with this alternative assume the following activity levels:

a) Annual container volumes for Berths 302-306 are estimated to be 1,906,000 TEUs in 2012, 2,702,000 TEUs in 2015, 2,912,000 TEUs in 2020, 3,122,000 TEUs in 2025, and 3,206,000 TEUs in 2027.

b) Annual ship calls to Berths 302-306 are estimated to be 234 visits in 2012, 286 visits in 2015, 338 visits in 2020, 364 visits in 2025 and 390 visits in 2027.

c) Without mitigation, the VSRP compliance rate was assumed to be 95 percent for all study years. This represents the required compliance rate for designation by the Port as being in compliance with the VSRP.

d) The fraction of all TEUs moving through on-dock rail is estimated to be 35 percent in 2012-2020, 33.2 percent in 2025 and 32.4 percent in 2027. The fraction of all TEUs moving through off-dock rail yards (Carson ICTF, Los Angeles rail yards, or Inland Empire rail yards) is estimated to be 10 percent in 2012-2020, 11.8 percent in 2025 and 12.6 percent in 2027. The fraction of all TEUs hauled by truck to nonrail-yard destinations is estimated to be 65 percent in 2012-2020, 66.8 percent in 2025 and 67.6 percent in 2027.

e) This alternative would generate 2,197; 2,627; 2,831; 2,876; and 2,953 annual one-way train trips in 2012, 2015, 2020, 2025 and 2027, respectively.

Table 3.2-81: Average Daily Operational Emissions Without Mitigation – Alternative 5

Emission Source	Average[a] Daily Emissions (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2012						
Ships – Transit[b] and Anchoring	123	229	1,977	51	36	29
Ships – Hoteling	56	142	1,563	91	37	29
Tugboats	3	15	57	0	2	2
Trucks[b]	117	358	1,336	3	74	22
Trains[b]	75	280	1,495	1	42	39
Terminal Equipment	25	172	686	1	21	19
Worker Trips	20	208	17	0	33	7
Total – Project Year 2012[c]	**419**	**1,404**	**7,130**	**148**	**245**	**147**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(80)	(462)	(15)	(2,442)	(317)	(287)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	419	1,404	7,130	148	245	147
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2015						
Ships – Transit[b] and Anchoring	143	268	2,312	60	42	34
Ships – Hoteling	40	106	1,126	85	30	24
Tugboats	4	20	23	0	0	0
Trucks[b]	207	638	2,137	4	111	37
Trains[b]	89	410	1,977	2	52	48
Terminal Equipment	47	272	1,110	1	37	34
Worker Trips	27	269	21	1	54	11
Total – Project Year 2015[c]	**557**	**1,983**	**8,706**	**153**	**326**	**188**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	58	118	1,561	(2,437)	(236)	(247)
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	**Yes**	No	No	No

Table 3.2-81: Average Daily Operational Emissions Without Mitigation – Alternative 5

Emission Source	Average[a] Daily Emissions (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
NEPA Impacts						
NEPA Baseline Emissions	411	1,419	6,472	120	231	134
Project minus NEPA Baseline	146	564	2,234	32	95	53
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	No	No
Project Year 2020						
Ships – Transit[b] and Anchoring	177	329	2,836	73	52	42
Ships – Hoteling	21	61	597	67	20	16
Tugboats	5	25	28	0	1	1
Trucks[b]	236	756	2,188	5	126	46
Trains[b]	63	440	1,648	2	38	35
Terminal Equipment	19	255	77	2	3	2
Worker Trips	22	194	14	1	56	12
Total – Project Year 2020[c]	**541**	**2,060**	**7,388**	**149**	**295**	**153**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	42	194	243	(2,441)	(266)	(281)
Thresholds	55	550	55	150	150	55
Significant?	No	No	**Yes**	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	379	1,437	5,237	107	206	108
Project minus NEPA Baseline	162	623	2,151	41	90	45
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	No	No
Project Year 2025						
Ships – Transit[b] and Anchoring	212	393	3,366	86	62	49
Ships – Hoteling	17	48	474	53	16	12
Tugboats	6	28	31	0	1	1
Trucks[b]	184	591	1,574	5	135	48
Trains[b]	48	449	1,281	2	28	26
Terminal Equipment	23	294	88	2	3	3
Worker Trips	18	151	11	1	60	12
Total – Project Year 2025[c]	**507**	**1,953**	**6,826**	**148**	**305**	**152**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	8	88	(319)	(2,442)	(257)	(282)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	360	1,364	5,007	118	213	110
Project minus NEPA Baseline	147	589	1,819	31	92	42

Table 3.2-81: Average Daily Operational Emissions Without Mitigation – Alternative 5

Emission Source	Average[a] Daily Emissions (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	No	No
Project Year 2027						
Ships – Transit[b] and Anchoring	232	428	3,667	94	67	54
Ships – Hoteling	17	50	492	54	16	13
Tugboats	6	30	34	0	1	1
Trucks[b]	192	617	1,655	5	140	50
Trains[b]	44	461	1,166	2	25	23
Terminal Equipment	24	310	93	2	4	3
Worker Trips	17	142	10	1	63	13
Total – Project Year 2027[c]	**532**	**2,039**	**7,118**	**158**	**317**	**158**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	33	173	(27)	(2,432)	(245)	(277)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	360	1,373	4,951	118	212	109
Project minus NEPA Baseline	173	666	2,167	39	104	49
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	No	No

Notes:
a) Emissions represent annual emissions divided by 365 days per year of operation.
b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.
c) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.
d) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Table 3.2-82 shows and the peak daily emissions and impacts associated with Alternative 5. The peak daily emission estimates for operations include the following assumptions that were chosen to identify a maximum theoretical activity scenario:

a) Ships at berth: The peak day scenario assumes that the largest combination of ships in the Project's fleet that could be simultaneously accommodated at the wharf would call at the terminal. The specific ship activity assumed for each analysis year is (a) in 2012, one 6,000 TEU capacity vessel arrives and hotels another 6,000 TEU capacity vessel hotels and departs; (b) in 2015, one 6,000 TEU capacity vessel arrives/departs and hotels, and another 6,000 TEU capacity vessel hotels and departs; (c) in 2020, two 9,000 TEU capacity vessels arrive and hotel, and two 6,000 TEU capacity vessels hotel and departs; (d) and in 2025 and 2027, two 10,000 TEU capacity vessels arrive and hotel, and two 10,000 TEU capacity vessels hotel and depart. The time each vessel is assumed to hotel equals 24 hours minus the ship's transit time between the SCAB overwater boundary and the berth. Without mitigation, the emissions also assume that each ship uses fuel with a worst case sulfur content of 0.1 percent.

b) Trains: Of the annual TEUs moved to or from ships through the APL Terminal, 45 percent are moved by rail, with generally 35 percent of the annual TEUs moved are through the APL Terminal rail yard, and the other 10 percent moved through off-dock rail yards (ICTF and Hobart). The exceptions to this distribution are (1) 2025 Alternative 5 with 33.2 percent on-dock and 11.8 percent off-dock; and (3) 2027 Alternative 5 with 32.4 percent on-dock and 12.6 percent off-dock. The peak month throughput, which represents approximately 9.1 percent of annual throughput, was used to calculate peak day rail activity for each year. Following the train calculation methodology described in Section 3.2.1.1, the number of locomotives needed to move APL containers in the peak day are: 22 in 2012, 32 in 2015, 34 in 2020, 36 in 2025, and 38 in 2027.

c) Trucks: Peak day truck trips generated by the proposed Project were provided by the traffic study for each analysis year. The peak day represents a weekday during a peak month of container throughput. This equates to about 38 percent more truck trips on the peak day compared to an average day for 2012, 2015, 2020, 2025 and 2027. This alternative would generate 6,438; 9,127; 9,836; 10,892; and 11,361 peak daily truck trips in 2012, 2015, 2020, 2025 and 2027, respectively.

d) Terminal equipment: Activity, horsepower, and load factors for diesel CHE, and fuel usage for LPG forklifts were provided by APL for both the peak day and annual equipment. The peak day equates to between 26 and 42 percent more operating hours compared to an average day for 2012, 2015, 2020, 2025, and 2027.

Table 3.2-82: Peak Daily Operational Emissions Without Mitigation – Alternative 5

Emission Source	Peak[a] Daily Emissions (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2012						
Ships – Transit[b] and Anchoring	205	381	3,278	84	60	48
Ships – Hoteling	87	223	2,461	140	58	46
Tugboats	5	23	89	0	4	3
Trucks[b]	161	494	1,844	4	102	30
Trains[b]	86	319	1,703	1	48	44
Terminal Equipment	47	280	1,115	1	36	33
Worker Trips	29	296	24	0	47	10
Total – Project Year 2012[c]	**620**	**2,016**	**10,515**	**231**	**354**	**214**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(304)	(1,523)	(2,611)	(5,163)	(761)	(648)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	620	2,016	10,515	231	354	214
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2015						
Ships – Transit[b] and Anchoring	409	762	6,556	168	120	96
Ships – Hoteling	60	159	1,686	123	44	35
Tugboats	9	50	58	0	1	1
Trucks[b]	286	881	2,951	6	153	51
Trains[b]	99	453	2,186	2	57	53
Terminal Equipment	69	375	1,503	2	52	48
Worker Trips	34	340	27	1	68	14
Total – Project Year 2015[c]	**967**	**3,021**	**14,967**	**301**	**496**	**298**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	42	(518)	1,841	(5,093)	(620)	(565)
Thresholds	55	550	55	150	150	55
Significant?	No	No	**Yes**	No	No	No

Table 3.2-82: Peak Daily Operational Emissions Without Mitigation – Alternative 5

Emission Source	Peak[a] Daily Emissions (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
NEPA Impacts						
NEPA Baseline Emissions	606	2,013	9,474	190	333	196
Project minus NEPA Baseline	360	1,008	5,494	111	163	102
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	**Yes**	**Yes**
Project Year 2020						
Ships – Transit[b] and Anchoring	471	860	7,316	183	134	107
Ships – Hoteling	25	71	697	78	23	18
Tugboats	10	53	60	0	1	1
Trucks[b]	325	1,044	3,021	7	174	64
Trains[b]	68	480	1,797	2	42	38
Terminal Equipment	26	348	105	2	4	3
Worker Trips	29	263	19	1	76	16
Total – Project Year 2020[c]	**955**	**3,120**	**13,015**	**273**	**454**	**248**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	31	(419)	(111)	(5,121)	(662)	(615)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	546	1,964	7,469	165	286	151
Project minus NEPA Baseline	409	1,155	5,546	108	168	97
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	**Yes**	**Yes**
Project Year 2025						
Ships – Transit[b] and Anchoring	578	1,054	8,956	222	164	131
Ships – Hoteling	28	82	806	84	26	21
Tugboats	11	56	63	0	2	1
Trucks[b]	254	816	2,173	7	187	67
Trains[b]	54	509	1,448	2	31	29
Terminal Equipment	32	408	124	3	5	4
Worker Trips	24	207	15	1	83	17
Total – Project Year 2025[c]	**981**	**3,132**	**13,584**	**319**	**496**	**270**

Table 3.2-82: Peak Daily Operational Emissions Without Mitigation – Alternative 5

Emission Source	Peak[a] Daily Emissions (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	57	(407)	459	(5,075)	(619)	(593)
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	**Yes**	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	504	1,803	6,810	162	288	148
Project minus NEPA Baseline	477	1,330	6,775	156	209	122
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2027						
Ships – Transit[b] and Anchoring	578	1,054	8,956	222	164	131
Ships – Hoteling	28	82	806	84	26	21
Tugboats	12	57	64	0	2	1
Trucks[b]	265	852	2,286	7	194	70
Trains[b]	50	537	1,351	2	29	27
Terminal Equipment	33	423	128	3	5	5
Worker Trips	23	192	13	1	85	18
Total – Project Year 2027[c]	**989**	**3,197**	**13,604**	**319**	**504**	**272**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	65	(342)	478	(5,075)	(611)	(591)
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	**Yes**	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	506	1,834	6,780	163	289	147
Project minus NEPA Baseline	484	1,363	6,824	156	215	124
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Notes:

a) Emissions assume the simultaneous occurrence of maximum theoretical daily equipment activity levels. Such levels would rarely occur during day-to-day terminal operations.

b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.

c) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.

d) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

As noted in the Methodology discussion in Section 3.2.4.1.2, operational emissions of criteria pollutants from cargo handling equipment would be lower with an automated cargo handling system than with the conventional handling system analyzed above. Therefore, potential impacts associated with the automated cargo handling system would be less than shown above.

CEQA Impact Determination

From a CEQA perspective, Alternative 5 peak daily emissions are expected to exceed SCAQMD thresholds for NOx in 2015, 2025, and 2027 and for VOC in 2025 and 2027. Emissions of VOC are expected to exceed the 10 tpy annual threshold in 2015. The unmitigated air quality impacts associated with Alternative 5 would therefore be significant for NOx and VOC in 2015, 2025 and 2027.

Mitigation Measures

To reduce the level of impact during Alternative 5 operation, **MM AQ-9 through MM AQ-16** described above for Impact AQ-3 would be applied to Alternative 5. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. Tables 3.2-83 and 3.2-84 show average and peak daily operational emissions and impacts associated with Alternative 5 after mitigation.

From a CEQA perspective, Alternative 5 peak daily air emissions after mitigation are expected to exceed SCAQMD thresholds for VOC in 2025 and 2027. Emissions of VOC are not expected to exceed the 10 tpy annual threshold in any study year. The air quality impacts associated with Alternative 5 after mitigation are therefore expected to be significant for VOC in 2025 and 2027. Emissions of NOx would be reduced to less than significant levels in 2015, 2025 and 2027. Emissions of VOC (annual) would be reduced to less than significant levels in 2015.

Residual Impacts

Impacts would be significant and unavoidable for VOC.

NEPA Impact Determination

From a NEPA perspective, Alternative 5 peak daily emissions are expected to exceed SCAQMD thresholds for VOC, CO, NOx, PM_{10} and $PM_{2.5}$ in 2015, 2020, 2025, and 2027 and for SOx in 2025, and 2027. In addition, annual VOC emissions would exceed the annual threshold in 2015, 2020, 2025, and 2027. The unmitigated air quality impacts associated with Alternative 5 would therefore be significant for VOC, CO, NOx, PM_{10} and $PM_{2.5}$ in 2015, 2020, 2025 and 2027 and for SOx in 2025, and 2027.

Mitigation Measures

To reduce the level of impact during Alternative 5 operation, **MM AQ-9 through MM AQ-16** described above for Impact AQ-3 would be applied to Alternative 5. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. Tables 3.2-83 and 3.2-84 show average and peak daily operational emissions and impacts associated with Alternative 5 after mitigation. From a NEPA perspective, Alternative 5 peak daily emissions after mitigation are expected to exceed SCAQMD thresholds for VOC, CO, NOx, and $PM_{2.5}$ in 2015, 2020, 2025, and 2027 and PM_{10} in 2020, 2025 and 2027. Annual VOC emissions would exceed the annual threshold in 2015, 2020, 2025, and 2027. Emissions of SO_X

would be reduced to less than significant levels in 2025 and 2027 and emissions of PM_{10} would be reduced to less than significant levels in 2015.

Residual Impacts

Impacts would be significant and unavoidable for CO, VOC, NOx, PM_{10} and $PM_{2.5}$.

Table 3.2-83: Average Daily Operational Emissions With Mitigation – Alternative 5

Emission Source	Average[a] Daily Emissions (lb/day)[e]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2012						
Ships – Transit[b] and Anchoring	123	229	1,977	51	36	29
Ships – Hoteling[c]	56	142	1,563	91	37	29
Tugboats	3	15	57	0	2	2
Trucks[b]	117	358	1,336	3	74	22
Trains[b]	75	280	1,495	1	42	39
Terminal Equipment	25	172	686	1	21	19
Worker Trips	20	208	17	0	33	7
Total – Project Year 2012[d]	**419**	**1,404**	**7,130**	**148**	**245**	**147**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(80)	(462)	(15)	(2,442)	(317)	(287)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	419	1,404	7,130	148	245	147
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2015						
Ships – Transit[b] and Anchoring	149	270	1,946	49	38	31
Ships – Hoteling[c]	40	106	1,126	85	30	24
Tugboats	4	20	23	0	0	0
Trucks[b]	207	638	2,137	4	111	37
Trains[b]	89	410	1,977	2	52	48
Terminal Equipment	33	256	315	1	14	13
Worker Trips	27	269	21	1	54	11
Total – Project Year 2015[d]	**550**	**1,970**	**7,544**	**142**	**299**	**163**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	51	104	399	(2,448)	(263)	(271)
Thresholds	55	550	55	150	150	55
Significant?	No	No	**Yes**	No	No	No

Table 3.2-83: Average Daily Operational Emissions With Mitigation – Alternative 5

Emission Source	Average[a] Daily Emissions (lb/day)[e]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
NEPA Impacts						
NEPA Baseline Emissions	411	1,419	6,472	120	231	134
Project minus NEPA Baseline	138	551	1,073	21	67	29
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	No	No
Project Year 2020						
Ships – Transit[b] and Anchoring	184	331	2,364	59	47	37
Ships – Hoteling[c]	21	61	597	67	20	16
Tugboats	5	25	28	0	1	1
Trucks[b]	236	756	2,188	5	126	46
Trains[b]	63	440	1,648	2	38	35
Terminal Equipment	20	259	78	2	3	3
Worker Trips	22	194	14	1	56	12
Total – Project Year 2020[d]	**550**	**2,066**	**6,917**	**135**	**290**	**149**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	50	200	(228)	(2,455)	(272)	(285)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	379	1,437	5,237	107	206	108
Project minus NEPA Baseline	171	629	1,680	27	85	41
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	No	No
Project Year 2025						
Ships – Transit[b] and Anchoring	221	392	2,757	68	55	44
Ships – Hoteling[c]	17	48	474	53	16	12
Tugboats	6	28	31	0	1	1
Trucks[b]	184	591	1,574	5	135	48
Trains[b]	48	449	1,281	2	28	26
Terminal Equipment	23	299	90	2	4	3
Worker Trips	18	151	11	1	60	12
Total – Project Year 2025[d]	**516**	**1,957**	**6,218**	**130**	**298**	**147**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	17	92	(927)	(2,460)	(264)	(288)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No

Table 3.2-83: Average Daily Operational Emissions With Mitigation – Alternative 5

Emission Source	Average[a] Daily Emissions (lb/day)[e]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
NEPA Impacts						
NEPA Baseline Emissions	360	1,364	5,007	118	213	110
Project minus NEPA Baseline	156	593	1,211	12	85	37
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	No	No
Project Year 2027						
Ships – Transit[b] and Anchoring	241	426	2,994	73	59	47
Ships – Hoteling[c]	9	30	255	45	11	9
Tugboats	6	30	34	0	1	1
Trucks[b]	192	617	1,655	5	140	50
Trains[b]	44	461	1,166	2	25	23
Terminal Equipment	21	284	86	2	3	3
Worker Trips	17	142	10	1	63	13
Total – Project Year 2027[d]	**529**	**1,991**	**6,200**	**128**	**303**	**147**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	30	125	(945)	(2,461)	(259)	(287)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	360	1,373	4,951	118	212	109
Project minus NEPA Baseline	170	618	1,249	10	91	38
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	No	No

Notes:

a) Emissions represent annual emissions divided by 365 days per year of operation.
b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.
c) Hoteling emissions include regional power plant emissions from AMP electricity generation
d) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.
e) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Table 3.2-84: Peak Daily Operational Emissions With Mitigation – Alternative 5

Emission Source	Peak[a] Daily Emissions (lb/day)[e]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2012						
Ships – Transit[b] and Anchoring	205	381	3,278	84	60	48
Ships – Hoteling[c]	87	223	2,461	140	58	46
Tugboats	5	23	89	0	4	3
Trucks[b]	161	494	1,844	4	102	30
Trains[b]	86	319	1,703	1	48	44
Terminal Equipment	47	280	1,115	1	36	33
Worker Trips	29	296	24	0	47	10
Total – Project Year 2012[d]	**620**	**2,016**	**10,515**	**231**	**354**	**214**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(304)	(1,523)	(2,611)	(5,163)	(761)	(648)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	620	2,016	10,515	231	354	214
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2015						
Ships – Transit[b] and Anchoring	425	761	5,411	133	107	85
Ships – Hoteling[c]	59	157	1,663	121	44	35
Tugboats	9	50	58	0	1	1
Trucks[b]	286	881	2,951	6	153	51
Trains[b]	99	453	2,186	2	57	53
Terminal Equipment	52	356	546	2	24	22
Worker Trips	34	340	27	1	68	14
Total – Project Year 2015[d]	**965**	**2,998**	**12,842**	**264**	**454**	**261**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	41	(541)	(284)	(5,130)	(662)	(602)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No

Table 3.2-84: Peak Daily Operational Emissions With Mitigation – Alternative 5

Emission Source	Peak[a] Daily Emissions (lb/day)[e]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
NEPA Impacts						
NEPA Baseline Emissions	606	2,013	9,474	190	333	196
Project minus NEPA Baseline	358	986	3,368	75	121	65
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	No	**Yes**
Project Year 2020						
Ships – Transit[b] and Anchoring	488	849	5,827	138	116	93
Ships – Hoteling[c]	25	70	687	77	23	18
Tugboats	10	53	60	0	1	1
Trucks[b]	325	1,044	3,021	7	174	64
Trains[b]	68	480	1,797	2	42	38
Terminal Equipment	27	354	107	2	4	4
Worker Trips	29	263	19	1	76	16
Total – Project Year 2020[d]	**972**	**3,113**	**11,517**	**227**	**436**	**233**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	48	(426)	(1,609)	(5,167)	(679)	(629)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	546	1,964	7,469	165	286	151
Project minus NEPA Baseline	426	1,149	4,048	62	150	83
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	**Yes**	**Yes**
Project Year 2025						
Ships – Transit[b] and Anchoring	598	1,039	7,122	166	142	113
Ships – Hoteling[c]	27	65	700	73	22	17
Tugboats	11	56	63	0	2	1
Trucks[b]	254	816	2,173	7	187	67
Trains[b]	54	509	1,448	2	31	29
Terminal Equipment	33	415	125	3	5	5
Worker Trips	24	207	15	1	83	17
Total – Project Year 2025[d]	**1,001**	**3,107**	**11,646**	**252**	**471**	**249**

Table 3.2-84: Peak Daily Operational Emissions With Mitigation – Alternative 5

Emission Source	Peak[a] Daily Emissions (lb/day)[e]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	76	(432)	(1,480)	(5,142)	(644)	(614)
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	504	1,803	6,810	162	288	148
Project minus NEPA Baseline	497	1,304	4,836	89	183	101
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	**Yes**	**Yes**
Project Year 2027						
Ships – Transit[b] and Anchoring	598	1,039	7,122	166	142	113
Ships – Hoteling[c]	14	47	400	68	17	14
Tugboats	12	57	64	0	2	1
Trucks[b]	265	852	2,286	7	194	70
Trains[b]	50	537	1,351	2	29	27
Terminal Equipment	29	389	118	3	4	4
Worker Trips	23	192	13	1	85	18
Total – Project Year 2027[d]	**990**	**3,114**	**11,354**	**247**	**473**	**247**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	66	(425)	(1,772)	(5,147)	(642)	(616)
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	506	1,834	6,780	163	289	147
Project minus NEPA Baseline	485	1,280	4,574	84	184	99
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	**Yes**	**Yes**

Notes:

a) Emissions assume the simultaneous occurrence of maximum theoretical daily equipment activity levels. Such levels would rarely occur during day-to-day terminal operations.

b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.

c) Hoteling emissions include regional power plant emissions from AMP electricity generation

d) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.

e) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Impact AQ-4: Alternative 5 operations would result in off-site ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-19.

Dispersion modeling of on-site and off-site Project operational emissions was performed to assess the impact of Alternative 5 on local ambient air concentrations. A summary of the dispersion modeling results is presented here; the complete dispersion modeling report is included in Appendix E2. Table 3.2-85 presents the maximum off-site ground-level concentrations of NO_2, SO_2, and CO for Alternative 5 without mitigation.

As noted in the Methodology discussion in Section 3.2.4.1.2, operational emissions of criteria pollutants from cargo handling equipment would be lower with an automated cargo handling system than with the conventional handling system analyzed above. Therefore, potential impacts associated with the automated cargo handling system would be less than shown below.

Table 3.2-85: Maximum Off-site NO_2, SO_2, and CO Concentrations Associated with Operation of Alternative 5 without Mitigation

Pollutant	Averaging Time	Maximum Modeled Concentration of Alt. 5 (µg/m³)	Background Concentration[b] (µg/m³)	Total Ground Level Concentration[a,e] (µg/m³)	SCAQMD Threshold (µg/m³)
NO_2[c]	Federal 1-hour[d]	192	146	**338**	188
	State 1-hour	244	235	**479**	339
	State Annual	45	40	**85**	57
	Federal Annual	45	40	85	100
SO_2	Federal 1-hour[d]	6	53	59	196
	State 1-hour	10	228	238	655
	24-hour	1	32	33	105
CO	1-hour	392	4,600	4,992	23,000
	8-hour	165	2,878	3,043	10,000

Notes:

a) Exceedances of the thresholds are indicated in bold.

b) The background concentrations were obtained from the North Long Beach Monitoring Station. The maximum concentrations during the years of 2007, 2008, and 2009 were used.

c) NO_2 concentrations were calculated using ozone data from the North Long Beach monitoring station. The 1-hour NO_2 concentration is calculated using the 98th percentile of the daily maximum 1-hour average to compare with the new federal 1-hour NO_2 standard of 0.100 ppm (188 µg/m³) (effective January 22, 2010).

d) According to USEPA guidance, the modeled design values, 98th percentile for 1-hour NO_2 and 99th percentile for 1-hour SO_2, are added to the design background values for NO_2 and SO_2. (USEPA, 2011a).

e) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

Tables 3.2-86 and 3.2-87 shows the maximum CEQA and NEPA PM_{10} and $PM_{2.5}$ concentration increments without mitigation.

Table 3.2-86: Maximum Off-site PM_{10} and $PM_{2.5}$ Concentrations Associated with Operation of Alternative 5 without Mitigation

	Averaging Time	Maximum Modeled Concentration of Proposed Project[b] ($\mu g/m^3$)	Maximum Modeled Concentration of CEQA Baseline[b] ($\mu g/m^3$)	Maximum Modeled Concentration of NEPA Baseline[b] ($\mu g/m^3$)	Ground Level Concentration CEQA Increment[a,c] ($\mu g/m^3$)	Ground Level Concentration NEPA Increment[a,c] ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
PM_{10}	24-hour	6.2	7.1	5.6	0.6	1.3	2.5
	Annual	1.8	1.9	1.5	0.6	0.7	1.0
$PM_{2.5}$	24-hour	5.8	6.2	4.4	0.9	1.9	2.5
	Federal Annual	1.8	NA	1.1	NA	**0.8**	0.3[d]

a) Exceedances of the threshold are indicated in bold. The thresholds for PM_{10} and $PM_{2.5}$ are incremental thresholds; therefore, the incremental concentration without background is compared to the threshold.
b) The maximum concentrations and increments presented in this table do not necessarily occur at the same receptor location. This means that the increments cannot necessarily be determined by simply subtracting the baseline concentrations from the Project concentration. The example provided in the discussion of Impact AQ-7 for the proposed Project describes how the increments are calculated.
c) The CEQA Increment represents the Project minus CEQA baseline. The NEPA Increment represents the Project minus NEPA baseline.
d) SCAQMD does not list a Significant Impact Level for annual $PM_{2.5}$, therefore the modeled annual average $PM_{2.5}$ was compared to the PSD SIL of 0.3 $\mu g/m^3$ for the determination of NEPA significance only.

CEQA Impact Determination

Operation of this alternative would produce significant off-site ambient concentrations for NO_2 (Federal and state 1-hour and state annual). Therefore, significant impacts under CEQA would occur.

Mitigation Measures

Mitigation measures to reduce ambient pollutant concentrations during Alternative 5 operations would be the same as measures **MM AQ-9 through MM AQ-16** described for the proposed Project. Table 3.2-87 shows the concentration of NO_2 and after mitigation. These mitigation measures will be implemented by the responsible parties identified in Section 3.2.4.5. The state annual and Federal and state 1-hour NO_2 concentrations would remain significant after mitigation.

Residual Impacts

Impacts would be significant and unavoidable for Federal and state 1-hour and state annual NO_2.

NEPA Impact Determination

Operation of this alternative would produce significant off-site ambient concentrations for NO_2 (1-hour) and $PM_{2.5}$ (annual). Therefore, significant impacts under NEPA would occur.

Mitigation Measures

Mitigation measures to reduce ambient pollutant concentrations during Alternative 5 operations would be the same as measures **MM AQ-9 through MM AQ-16** described for the proposed Project. Table 3.2-87 and Table 3.2-88 show the concentrations of NO_2 and $PM_{2.5}$ after mitigation. These mitigation measures will be implemented by the responsible parties identified in Section 3.2.4.5. The annual $PM_{2.5}$ concentration would be reduced to a less than significant level. 1-hour NO_2 concentrations would remain significant after mitigation.

Residual Impacts

Impacts would be significant and unavoidable for NO_2.

Table 3.2-87: Maximum Off-site NO_2 Concentration Associated with Operation of Alternative 5 With Mitigation

Pollutant	Averaging Time	Maximum Modeled Concentration of Alt. 5 ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Ground Level Concentration ($\mu g/m^3$)[e]	SCAQMD Threshold ($\mu g/m^3$)
NO_2 [c]	Federal 1-hour[d]	189	146	**335**	188
	State 1-hour	227	235	**462**	339
	State Annual	41	40	**81**	57
	Federal Annual	41	40	81	100

Notes:

a) Exceedances of the thresholds are indicated in **bold**.

b) The background concentrations were obtained from the North Long Beach Monitoring Station. The maximum concentrations during the years of 2007, 2008, and 2009 were used.

c) NO_2 concentrations were calculated using ozone data from the North Long Beach monitoring station. The 1-hour NO_2 concentration is calculated using the 98th percentile of the daily maximum 1-hour average to compare with the new federal 1-hour NO_2 standard of 0.100 ppm (188 $\mu g/m^3$) (effective January 22, 2010).

d) According to USEPA guidance, the modeled design value (98th) for 1-hour NO_2 is added to the background design value for NO_2. (USEPA, 2011a).

e) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

Table 3.2-88: Maximum Off-site $PM_{2.5}$ Concentration Associated with Operation of Alternative 5 With Mitigation

	Averaging Period	Maximum Modeled Concentration of Alt. 5 ($\mu g/m^3$)	Maximum Modeled Concentration of NEPA Baseline ($\mu g/m^3$)	Ground-Level Concentration NEPA Increment [c] ($\mu g/m^3$)	Federal Threshold[d] ($\mu g/m^3$)
$PM_{2.5}$	Federal Annual	0.8	1.1	0.1	0.3

Notes:

a) Exceedances of the threshold are indicated in **bold**. The threshold for PM_{10} is an incremental threshold; therefore, the incremental concentration without background is compared to the threshold.

b) The maximum concentrations and increments presented in this table might not occur at the same receptor location. This means that the increments cannot necessarily be determined by simply subtracting the baseline concentrations from Alternative 5 concentration. The example provided in the discussion of Impact AQ-7 for the proposed Project illustrates how the increments are calculated.

c) The CEQA Increment represents project minus CEQA baseline. The NEPA Increment represents project minus NEPA baseline.

d) SCAQMD does not list a Significant Impact Level for annual $PM_{2.5}$, therefore the modeled annual average $PM_{2.5}$ was compared to the PSD SIL of 0.3 $\mu g/m^3$ for the determination of NEPA significance only.

Impact AQ-5: Alternative 5 would not generate on-road traffic that would contribute to an exceedance of the 1-hour or 8-hour CO standards.

This alternative would generate traffic levels comparable to or less than the traffic generated by the proposed Project. As discussed in the proposed Project analysis, CO concentrations related to on-road traffic would not exceed state CO standards for any Project study year.

CEQA Impact Determination

Under CEQA, CO standards would not be exceeded, therefore impacts are less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Under NEPA, CO standards would not be exceeded, therefore impacts are less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact AQ-6: Alternative 5 would not create an objectionable odor at the nearest sensitive receptor.

Similar to the proposed Project, the mobile nature of the emission sources associated with this alternative would help to disperse emissions. Additionally, the distance between proposed Project emission sources and the nearest residents would be far enough to allow for adequate dispersion of these emissions to below objectionable odor levels. Thus, the potential is low for this alternative to produce objectionable odors that would affect a sensitive receptor.

CEQA Impact Determination

As a result of the above, the potential is low for the proposed Project to produce objectionable odors that would affect a sensitive receptor; and significant odor impacts under CEQA, therefore, are not anticipated.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

As a result of the above, the potential is low for the proposed Project to produce objectionable odors that would affect a sensitive receptor; and significant odor impacts under NEPA, therefore, are not anticipated.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact AQ-7: Alternative 5 would expose receptors to significant levels of toxic air contaminants.

The main sources of TACs from Alternative 5 operations would be DPM emissions from ships, tugboats, terminal equipment, locomotives, and trucks. As a result of the reduced site area and increased need for cargo handling equipment, DPM emissions are slightly higher in Alternative 5 than for the proposed Project. Construction emissions are equivalent to the proposed Project, therefore acute impacts are the same as the proposed Project. Similar to the HRA for the proposed Project, PM_{10} and VOC emissions were projected over a 70-year period, from 2012 through 2081. An HRA was performed over this 70-year exposure period.

Table 3.2-89 presents the maximum predicted health impacts associated with this alternative without mitigation. The table includes estimates of individual lifetime cancer risk, chronic noncancer hazard index, and acute noncancer hazard index at the maximally exposed receptors. Results are presented for the future CEQA increment (alternative minus future CEQA baseline) and NEPA increment (alternative minus NEPA baseline).

As noted in the Methodology discussion in Section 3.2.4.1.2, operational emissions of DPM from cargo handling equipment would be lower with an automated cargo handling system than with the conventional handling system analyzed above. Therefore, potential impacts associated with the automated cargo handling system would be less than shown below.

Table 3.2-89: Maximum Incremental CEQA and NEPA Health Impacts Associated With Alternative 5 Without Mitigation, 2012 – 2081

Health Impact	Receptor Type	Maximum Predicted Impact[a,d]					Significance Threshold
		Alternative 5	Future CEQA Baseline	Future CEQA Increment[b,c]	NEPA Baseline	NEPA Increment[b,c]	
Cancer Risk[f]	Residential[e]	47	22	**25×10^{-6} (25 in a million)**	40	7×10^{-6} (5 in a million)	10×10^{-6} (10 in a million)
	Occupational	39	22	**17×10^{-6} (17 in a million)**	31	8×10^{-6} (8 in a million)	
	Sensitive	15	8	7×10^{-6} (7 in a million)	13	2×10^{-6} (2 in a million)	
	Student	0.6	0.4	0.2×10^{-6} (0.2 in a million)	0.5	0.2×10^{-6} (0.2 in a million)	
	Recreational	5	2	3×10^{-6} (3 in a million)	4.5	0.8×10^{-6} (0.8 in a million)	
Chronic Hazard Index	Residential	0.3	0.5	< 0 [g]	0.2	0.1	1.0
	Occupational	0.6	0.8	< 0 [g]	0.4	0.2	
	Sensitive	0.1	0.4	< 0 [g]	0.1	0.0	
	Student	0.1	0.3	< 0 [g]	0.09	0.0	
	Recreational	0.1	0.4	< 0 [g]	0.1	0.0	
Acute Hazard Index	Residential	1.4	0.2	**1.1**	0.2	**1.1**	1.0
	Occupational	2.0	0.2	**1.7**	0.2	**1.7**	
	Sensitive	0.5	0.06	0.4	0.06	0.4	
	Student	0.5	0.06	0.4	0.06	0.4	
	Recreational	0.6	0.09	0.5	0.09	0.5	

Notes:

a) Exceedances of the significance criteria are in **bold**. The significance thresholds apply to the CEQA and NEPA increments only.
b) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impacts. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.
c) The CEQA increment represents Project minus CEQA baseline. The NEPA increment represents Project minus NEPA baseline.
d) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.
e) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.
f) Construction emissions were modeled with the operational emissions for the determination of cancer risk.
g) When the predicted impact is less than zero, the Project risk is less than the respective baseline.

CEQA Impact Determination

Table 3.2-89 shows that the maximum CEQA chronic hazard index increments associated with the unmitigated Alternative 5 are predicted to be less than the CEQA baseline at all receptor types. The CEQA incremental chronic hazard index therefore for all receptors would be less than significant.

The maximum future CEQA incremental cancer risks for residential and occupational receptors would exceed the significance threshold of 10 in a million. In addition, the maximum acute hazard index CEQA increment is predicted to be greater than the significance threshold of 1.0 at residential and occupational receptors.

From a CEQA perspective, the 24-hour $PM_{2.5}$ CEQA incremental impact shown in Table 3.2-86 is 1.1 µg/m^3. The CEQA incremental impact is less than the SCAQMD threshold of 2.5 µg/m^3, therefore the 24-hour $PM_{2.5}$ concentration is less than significant and a mortality and morbidity determination is not required.

Mitigation Measures

Mitigation measures to reduce TAC emissions would be the same as measures **MM AQ-9 through MM AQ-16** described above for Impact AQ-3. These mitigation measures would-be implemented by the responsible parties identified in Section 3.2.4.5.

Residual Impacts

Table 3.2-90 shows that the maximum CEQA acute risk increment at residential receptors is reduced to a less than significant level. The maximum acute risk at occupational receptors remains significant and unavoidable. In addition, the maximum future CEQA cancer risk increment at the residential and occupational receptors remain significant and unavoidable.

See the residual impacts discussion for the proposed Project Impact AQ-7, above, and Appendix E3 for additional detail on the impacted receptors and risk drivers.

NEPA Impact Determination

The maximum NEPA cancer risk increment associated with the unmitigated Alternative 5 is predicted to be 8 in a million (8×10^{-6}), at an occupational receptor. This risk value does not exceed the significance criterion of 10 in a million and would not be considered a significant impact.

The maximum chronic hazard index NEPA increment associated with the unmitigated Alternative 5 is predicted to be 0.2 at an occupational receptor. The acute hazard index NEPA increment is predicted to be 1.8 at an occupational receptor. From a NEPA perspective, the 24-hour $PM_{2.5}$ NEPA incremental impact shown in Table 3.2-86 is 1.8 $\mu g/m^3$. The NEPA incremental impact is less than the SCAQMD threshold of 2.5 $\mu g/m^3$, therefore the 24-hour $PM_{2.5}$ concentration is less than significant and a mortality and morbidity determination is not required.

Mitigation Measures

Mitigation measures to reduce TAC emissions would be the same as measures **MM AQ-9 through MM AQ-16** described above for Impact AQ-3. These mitigation measures would-be implemented by the responsible parties identified in Section 3.2.4.5.

Residual Impacts

Table 3.2-90 shows that the maximum NEPA acute risk increment at residential receptors is reduced to a less than significant level. The maximum acute risk increment at occupational receptors remains significant and unavoidable.

Table 3.2-90: Maximum Incremental CEQA and NEPA Health Impacts Associated With Alternative 5 With Mitigation, 2012 – 2081

Health Impact	Receptor Type	Maximum Predicted Impact[a,d]					Significance Threshold
		Alternative 5	Future CEQA Baseline	Future CEQA Increment[b,c]	NEPA Baseline	NEPA Increment[b,c]	
Cancer Risk[f]	Residential[e]	45	22	**23×10^{-6} (23 in a million)**	-[g]	-[g]	10×10^{-6} (10 in a million)
	Occupational	29	18	**11×10^{-6} (11 in a million)**	-[g]	-[g]	
Acute Hazard Index	Residential	1.1	0.2	0.9	0.2	0.9	1.0
	Occupational	1.3	0.2	**1.1**	0.2	**1.1**	

Notes:

a) Exceedances of the significance criteria are in **bold**. The significance thresholds apply to the CEQA and NEPA increments only.

b) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impacts. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.

c) The CEQA increment represents Project minus CEQA baseline.

d) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.

e) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.

f) Construction emissions were modeled with the operational emissions for the determination of cancer risk.

g) Unmitigated impacts that were less than the significance threshold were not reanalyzed for mitigation.

Impact AQ-8: Alternative 5 would not conflict with or obstruct implementation of an applicable AQMP.

Similar to the proposed Project, this alternative would comply with SCAQMD rules and regulations, and would be consistent with SCAG regional employment and population growth forecasts.

CEQA Impact Determination

This alternative would not conflict with or obstruct implementation of the AQMP; therefore, impacts under CEQA are not anticipated.

Mitigation Measures

No mitigation is required.

Residual Impacts

There would be no impacts.

NEPA Impact Determination

This alternative would not conflict with or obstruct implementation of the AQMP; therefore, impacts under NEPA are not anticipated.

Mitigation Measures

No mitigation is required.

Residual Impacts

There would be no impacts.

Impact AQ-9: Alternative 5 would produce GHG emissions that would exceed CEQA and NEPA baseline levels.

All of the activities for the proposed Project in Table 3.2-39 would approximate annual construction GHG emissions for this alternative. Table 3.2-91 summarizes the annual GHG emissions that would occur in California from the operation of Alternative 5.

Table 3.2-91: Annual Operational GHG Emissions – Alternative 5 Without Mitigation

Project Scenario/ Source Type	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
Project Year 2012					
Ships – Transit	48,660	1	2	0	49,413
Ships – Hoteling	21,378	0	1	0	21,749
Tugboats	340	0	0	0	345
Trucks	59,452	0	0	0	59,497
Trains	43,445	1	4	0	44,572
Terminal Equipment	13,376	0	0	0	13,429
Reefer Refrigerant Losses	0	0	0	1	841
AMP Usage	0	0	0	0	0
On-Terminal Electricity Usage	22,448	1	0	0	22,506
Worker Trips	5,340	0	1	0	5,525
Total For Project Year 2012[c]	**214,440**	**4**	**8**	**1**	**217,876**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	65,198	(1)	4	0	66,612
NEPA Baseline	214,440	4	8	1	217,876
Project Minus NEPA Baseline	0	0	0	0	0
Project Year 2015					
Ships – Transit	56,648	1	3	0	57,523
Ships – Hoteling	19,029	0	1	0	19,393
Tugboats	416	0	0	0	422
Trucks	84,894	0	0	0	84,957
Trains	64,649	2	5	0	66,327
Terminal Equipment	20,174	0	0	0	20,253
Reefer Refrigerant Losses	0	0	0	1	1,192
AMP Usage	7,244	0	0	0	7,259
On-Terminal Electricity Usage	31,823	1	0	0	31,905
Worker Trips	7,879	0	1	0	8,074
Total For Project Year 2015[c]	**292,755**	**5**	**10**	**1**	**297,305**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	143,514	1	6	1	146,041
NEPA Baseline	215,143	4	8	1	218,469
Project Minus NEPA Baseline	77,612	1	3	0	78,836
Project Year 2020					
Ships – Transit	69,834	2	3	0	70,915
Ships – Hoteling	14,265	0	1	0	14,569

Table 3.2-91: Annual Operational GHG Emissions – Alternative 5 Without Mitigation

Project Scenario/ Source Type	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
Tugboats	491	0	0	0	499
Trucks	89,626	0	0	0	89,693
Trains	69,560	2	6	0	71,367
Terminal Equipment	22,477	1	0	0	22,565
Reefer Refrigerant Losses	0	0	0	1	1,284
AMP Usage	8,785	0	0	0	8,803
On-Terminal Electricity Usage	25,036	1	0	0	25,101
Worker Trips	6,713	0	0	0	6,816
Total Project Year 2020[c]	**306,787**	**5**	**11**	**1**	**311,611**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	157,546	1	6	1	160,347
NEPA Baseline	215,045	4	8	1	218,469
Project Minus NEPA Baseline	91,742	2	3	0	93,142
Project Year 2025					
Ships – Transit	83,563	2	4	0	84,858
Ships – Hoteling	11,243	0	1	0	11,483
Tugboats	529	0	0	0	537
Trucks	97,307	0	0	0	97,381
Trains	70,775	2	6	0	72,613
Terminal Equipment	24,780	1	0	0	24,877
Reefer Refrigerant Losses	0	0	0	1	1,377
AMP Usage	7,004	0	0	0	7,018
On-Terminal Electricity Usage	26,842	1	0	0	26,911
Worker Trips	6,628	0	0	0	6,750
Total Project Year 2025[c]	**328,671**	**6**	**12**	**1**	**333,805**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	179,430	1	7	1	182,541
NEPA Baseline	232,166	4	9	1	235,867
Project Minus NEPA Baseline	96,505	2	3	0	97,938
Project Year 2027					
Ships – Transit	91,160	2	4	0	92,573
Ships – Hoteling	11,607	0	1	0	11,854
Tugboats	567	0	0	0	575
Trucks	100,567	0	0	0	100,643
Trains	72,673	2	6	0	74,560
Terminal Equipment	25,702	1	0	0	25,802
Reefer Refrigerant Losses	0	0	0	1	1,414
AMP Usage	7,269	0	0	0	7,284
On-Terminal Electricity Usage	27,564	1	0	0	27,635
Worker Trips	6,792	0	0	0	6,906
Total Project Year 2027[c]	**343,900**	**6**	**12**	**1**	**349,246**

Table 3.2-91: Annual Operational GHG Emissions – Alternative 5 Without Mitigation

Project Scenario/ Source Type	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	194,659	1	8	1	197,981
NEPA Baseline	234,217	4	9	1	237,940
Project Minus NEPA Baseline	109,684	2	4	0	111,306

Notes:
a) 1 metric ton equals 1,000 kilograms, 2,205 lbs, or 1.1 U.S. (short) tons.
b) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; and 1,300 for HFC-134a.
c) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

As noted in the Methodology discussion in Section 3.2.4.1.2, operational emissions of GHGs from cargo handling equipment would be similar between an automated cargo handling system and the conventional handling system analyzed above. Therefore, potential impacts associated with the automated cargo handling system would be roughly the same as shown above.

CEQA Impact Determination

Table 3.2-39 shows that total CO_2e emissions during project construction would exceed CEQA baseline construction emissions (which are zero for construction). In addition, the data in Table 3.2-91 show that in each future Project year, annual operational CO_2e emissions would increase from CEQA baseline levels. As a result, Alternative 5 would produce significant levels of GHG emissions under CEQA.

Mitigation Measures

Measures that reduce fuel usage and electricity consumption from Alternative 5 emission sources would reduce proposed GHG emissions. Project mitigation measures that would accomplish this effect include **MM AQ-2 through MM AQ-4** for construction; and **MM AQ-9, MM AQ-10**, and **MM AQ-16 through MM AQ-20** for operations.

Table 3.2-92 presents the annual operational GHG emissions with mitigation. The effects of **MM AQ-9** (AMP) and **MM AQ-10** (VSRP) were included in the emission estimates. The potential effects of the remaining mitigation measures are described qualitatively under each measure's heading in the proposed Project analysis for Impact AQ-9.

Residual Impacts

Impacts would be significant and unavoidable.

Table 3.2-92: Annual Operational GHG Emissions – Alternative 5 with Mitigation

Project Scenario/ Source Type	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
Project Year 2012					
Ships – Transit	48,660	1	2	0	49,413
Ships – Hoteling	21,378	0	1	0	21,749
Tugboats	340	0	0	0	345
Trucks	59,452	0	0	0	59,497
Trains	43,445	1	4	0	44,572
Terminal Equipment	13,376	0	0	0	13,429
Reefer Refrigerant Losses	0	0	0	1	841
AMP Usage	0	0	0	0	0
On-Terminal Electricity Usage	22,448	1	0	0	22,506
Worker Trips	5,340	0	1	0	5,525
Total For Project Year 2012[c]	**214,440**	**4**	**8**	**1**	**217,876**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	65,198	(1)	4	0	66,612
NEPA Baseline	214,440	4	8	1	217,876
Project Minus NEPA Baseline	0	0	0	0	0
Project Year 2015					
Ships – Transit	54,041	1	3	0	54,880
Ships – Hoteling	19,029	0	1	0	19,393
Tugboats	416	0	0	0	422
Trucks	84,894	0	0	0	84,957
Trains	64,649	2	5	0	66,327
Terminal Equipment	20,174	0	0	0	20,253
Reefer Refrigerant Losses	0	0	0	1	1,192
AMP Usage	7,244	0	0	0	7,259
On-Terminal Electricity Usage	31,823	1	0	0	31,905
Worker Trips	7,879	0	1	0	8,074
Total For Project Year 2015[c]	**290,149**	**5**	**10**	**1**	**294,663**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	140,908	1	6	1	143,398
NEPA Baseline	215,143	4	8	1	218,469
Project Minus NEPA Baseline	75,006	1	3	0	76,194
Project Year 2020					
Ships – Transit	66,471	1	3	0	67,504
Ships – Hoteling	14,265	0	1	0	14,569
Tugboats	491	0	0	0	499
Trucks	89,626	0	0	0	89,693

Table 3.2-92: Annual Operational GHG Emissions – Alternative 5 with Mitigation

Project Scenario/ Source Type	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
Trains	69,560	2	6	0	71,367
Terminal Equipment	22,477	1	0	0	22,565
Reefer Refrigerant Losses	0	0	0	1	1,284
AMP Usage	8,785	0	0	0	8,803
On-Terminal Electricity Usage	25,036	1	0	0	25,101
Worker Trips	6,713	0	0	0	6,816
Total Project Year 2020[c]	**303,424**	**5**	**11**	**1**	**308,201**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	154,183	1	6	1	156,936
NEPA Baseline	215,045	4	8	1	218,469
Project Minus NEPA Baseline	88,379	2	3	0	89,732
Project Year 2025					
Ships – Transit	79,204	2	4	0	80,437
Ships – Hoteling	11,243	0	1	0	11,483
Tugboats	529	0	0	0	537
Trucks	97,307	0	0	0	97,381
Trains	70,775	2	6	0	72,613
Terminal Equipment	24,780	1	0	0	24,877
Reefer Refrigerant Losses	0	0	0	1	1,377
AMP Usage	7,004	0	0	0	7,018
On0Terminal Electricity Usage	26,842	1	0	0	26,911
Worker Trips	6,628	0	0	0	6,750
Total Project Year 2025[c]	**324,312**	**6**	**12**	**1**	**329,384**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	175,071	1	7	1	178,120
NEPA Baseline	232,166	4	9	1	235,867
Project Minus NEPA Baseline	92,146	2	3	0	93,517
Project Year 2027					
Ships – Transit	86,335	2	4	0	87,679
Ships – Hoteling	9,316	0	1	0	9,532
Tugboats	567	0	0	0	575
Trucks	100,567	0	0	0	100,643
Trains	72,673	2	6	0	74,560
Terminal Equipment	25,702	1	0	0	25,802
Reefer Refrigerant Losses	0	0	0	1	1,414
AMP Usage	8,632	0	0	0	8,649

Table 3.2-92: Annual Operational GHG Emissions – Alternative 5 with Mitigation

Project Scenario/ Source Type	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
On-Terminal Electricity Usage	27,564	1	0	0	27,635
Worker Trips	6,792	0	0	0	6,906
Total Project Year 2027[c]	**338,147**	**6**	**12**	**1**	**343,396**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	188,906	1	7	1	192,131
NEPA Baseline	234,217	4	9	1	237,940
Project Minus NEPA Baseline	103,930	2	3	0	105,456

Notes:
a) 1 metric ton equals 1,000 kilograms, 2,205 lbs, or 1.1 U.S. (short) tons.
b) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; and 1,300 for HFC-134a.
c) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

NEPA Impact Determination

There are no science-based GHG significance thresholds, nor has the Federal government or the state adopted any by regulations. In the absence of an adopted or science-based GHG standard, in compliance with the NEPA implementing regulations, a significance determination regarding GHGs will not be made under NEPA.

In accordance with CEQ *Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions*, GHG emissions exceed the CEQ reference level of 25,000 $MTCO_2e$ for further analysis in a NEPA document CEQ, 2010). Therefore GHG emissions are calculated for Alternative 5 emission sources and mitigation measures are considered for the reduction of GHG emissions.

Mitigation Measures

No mitigation is required.

Residual Impacts

An impact determination is not applicable.

3.2.4.4.6 Alternative 6 – Proposed Project with Expanded On-Dock Rail Yard

Alternative 6 would be the same as the proposed Project; however, the existing on-dock railyard on the terminal would be redeveloped and expanded. Under this alternative, approximately 10 acres of backlands would be removed from container storage for the railyard expansion. Alternative 6 would improve the existing terminal, develop the existing 41-acre fill area as backlands, add 1,250 ft of new wharf creating Berth 306, and dredge the Pier 300 Channel along Berth 306. Under this alternative, 12 new cranes would be added to the wharves along Berths 302-306, for a total of 24 cranes. As with the proposed Project, the 41-acre backlands and Berth 306 under Alterative 6 could utilize traditional container operations, electric automated operations, or a combination of the two over time. Dredging of the Pier 300 Channel along Berth 306 would occur (removal of approximately 20,000 cy of material), with the dredged material beneficially reused and/or disposed of at an approved disposal site (such as the CDF at Berths 243-245 and/or Cabrillo shallow water habitat) or, if needed, disposed of at an ocean disposal site (i.e., LA-2). Total terminal acreage (347) would be the same as the proposed Project.

Based on the throughput projections, TEU throughput would be the same as the proposed Project, with an expected throughput of approximately 3.2 million TEUs by 2027. This would translate into 390 annual ship calls at Berths 302-306. In addition, Alternative 6 would result in up to 10,830 peak daily truck trips (2,862,760 annual), and up to 2,953 annual rail trip movements. Configuration of all other landside terminal components would be identical to the existing terminal.

Impact AQ-1: Alternative 6 would result in construction-related emissions that exceed an SCAQMD threshold of significance in Table 3.2-16.

Construction activities would be all activities included in the proposed Project in addition to the removal of 10 acres of backlands for rail yard expansion and a ninth set of double tracks to meet the terminal needs. All of the activities for the proposed Project in Table 3.2-22a would approximate maximum daily construction emissions for this alternative. However, depending on the overlap of construction activities, emissions for Alternative 6 could be slightly greater than emissions from the proposed Project because of the additional construction activities described. Future construction emissions associated with the conversion of the Berth 306 backlands to an automated cargo handling system would be the same as described under the proposed Project.

CEQA Impact Determination

As a result, unmitigated emissions for this alternative would exceed SCAQMD daily thresholds for VOC, CO, NO_X, PM_{10}, and $PM_{2.5}$ under CEQA.

Alternative 6 would exceed the daily construction emission thresholds for VOC, CO, NO_X, PM_{10}, and $PM_{2.5}$ during construction. Therefore, significant impacts under CEQA would occur.

Mitigation Measures

To reduce the level of impact, **MM AQ-1 through MM AQ-8** would apply to this alternative. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. Although reductions were achieved with mitigation, impacts under CEQA would be significant and unavoidable during construction for VOC, CO, NOx, PM_{10} and $PM_{2.5}$.

Residual Impacts

Impacts would be temporary but significant and unavoidable for VOC, CO, NOx, PM_{10} and $PM_{2.5}$.

NEPA Impact Determination

Alternative 6 would exceed the daily construction thresholds for VOC, CO, NO_X, PM_{10}, and $PM_{2.5}$ under NEPA. Therefore significant impacts under NEPA would occur.

Mitigation Measures

To reduce the level of impact, **MM AQ-1 through MM AQ-8** would apply to this alternative. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. Although reductions were achieved with mitigation, impacts under CEQA would be significant and unavoidable during construction for VOC, CO, NOx, PM_{10} and $PM_{2.5}$.

Residual Impacts

Impacts would be temporary but significant and unavoidable for VOC, CO, NOx, PM_{10} and $PM_{2.5}$.

Impact AQ-2: Alternative 6 construction would result in off-site ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-17.

Depending on the overlap of construction activities, construction emissions for Alternative 6 are expected to be comparable to or even slightly greater than emissions from the proposed Project. . Future construction concentrations associated with the conversion of the Berth 306 backlands to an automated cargo handling system would be the same as described under the proposed Project.

CEQA Impact Determination

Maximum off-site ambient pollutant concentrations associated with proposed Project construction were significant for NO_2 and PM_{10}.

The dispersion modeling analysis for unmitigated construction activities for the proposed Project (Table 3.2-23a) predicted no exceedances of the CO and $PM_{2.5}$ standards; therefore, the slight increase in activity for Alternative 6 is unlikely to result in an exceedance of these standards.

Maximum off-site ambient pollutant concentrations of NO_2 and PM_{10} associated with Alternative 6 construction activities would be comparable to or slightly higher than the proposed Project. In addition to the impact noted above for construction alone, the overlap of construction and operations would result in a significant impact for 24-hour $PM_{2.5}$. These NO_2, PM_{10} and $PM_{2.5}$ concentrations would represent a significant impact under CEQA.

Mitigation Measures

To reduce the level of impact during construction, **MM AQ-1 through MM AQ-8** would be applied. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. Despite implementation of these mitigation measures, off-site ambient concentrations from construction activities remained significant for NO_2 and PM_{10}.

Residual Impacts

Impacts would be temporary but significant and unavoidable for NO_2 and PM_{10}.

NEPA Impact Determination

From a NEPA perspective, maximum off-site ambient pollutant concentrations associated with proposed Project construction were significant for NO_2, PM_{10}, and $PM_{2.5}$ (annual average). In addition to the impact noted above for construction alone, the overlap of construction and operations would result in a significant impact for 24-hour $PM_{2.5}$.

The dispersion modeling analysis for unmitigated construction activities for the proposed Project (Table 3.2-23a) predicted no exceedance of CO standards; thus, the slight increase in activity for Alternative 6 is unlikely to result in exceedance of these standards.

Mitigation Measures

To reduce the level of impact during construction, **MM AQ-1 through MM AQ-8** would be applied. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5. Despite implementation of these mitigation measures, off-site ambient concentrations from construction activities remained significant for NO_2, PM_{10} and $PM_{2.5}$.

Residual Impacts

Impacts would be temporary but significant and unavoidable for NO_2, PM_{10}, and $PM_{2.5}$.

Impact AQ-3: Alternative 6 would result in operational emissions that exceed 10 tons per year of VOCs or an SCAQMD threshold of significance in Table 3.2-18.

Table 3.2-93 presents the unmitigated average daily criteria pollutant emissions associated with operation of this alternative. Emissions were estimated for five Project study years: 2012, 2015, 2020, 2025 and 2027. Comparisons to the CEQA baseline and NEPA baseline emissions are presented to determine CEQA and NEPA significance, respectively.

The operational emissions associated with this alternative assume the following activity levels:

a) Annual cargo throughput volumes for Berths 302-306 are estimated to be 1,906,000 TEUs in 2012; 2,702,000 TEUs in 2015, 2,912,000 TEUs in 2020, 3,122,000 TEUs in 2025, and 3,206,000 TEUs in 2027.

b) Annual ship calls to Berths 302-306 are estimated to be 234 visits in 2012, 286 visits in 2015, 338 visits in 2020, 364 visits in 2025 and 390 visits in 2027.

c) Without mitigation, the VSRP compliance rate was assumed to be 95 for all study years. This represents the required compliance rate for designation by the Port as being in compliance with the VSRP.

d) The fraction of all TEUs moving through on-dock rail is estimated to be 35 percent in 2012, 2015, 2020, 2025 and 2027. The fraction of all TEUs moving through off-dock rail yards (Carson ICTF, Los Angeles rail yards, or Inland Empire rail yards) is estimated to be 10 percent in 2012, 2015, 2020, 2025 and 2027. The fraction of all TEUs hauled by truck to nonrail-yard destinations is estimated to 65 percent in n 2012, 2015, 2020, 2025 and 2027.

e) This alternative would generate 2,197; 2,627; 2,831; 2,876 and 2,953 annual one-way train trips in 2012, 2015, 2020, 2025 and 2027, respectively.

Table 3.2-93: Average Daily Operational Emissions Without Mitigation – Alternative 6

Emission Source	Average Daily[a] Emissions (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2012						
Ships – Transit[b] and Anchoring	123	229	1,977	51	36	29
Ships – Hoteling	56	142	1,563	91	37	29
Tugboats	3	15	57	0	2	2
Trucks[b]	117	358	1,336	3	74	22
Trains[b]	75	280	1,495	1	42	39
Terminal Equipment	25	172	686	1	21	19
Worker Trips	20	208	17	0	33	7
Total – Project Year 2012[c]	**419**	**1,404**	**7,130**	**148**	**245**	**147**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(80)	(462)	(15)	(2,442)	(317)	(287)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	419	1,404	7,130	148	245	147
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2015						
Ships – Transit[b] and Anchoring	143	268	2,312	60	42	34
Ships – Hoteling	40	106	1,126	85	30	24
Tugboats	4	20	23	0	0	0
Trucks[b]	207	638	2,135	4	110	37
Trains[b]	89	410	1,977	2	52	48
Terminal Equipment	44	263	1,074	1	35	32
Worker Trips	26	260	20	1	52	11
Total – Project Year 2015[c]	**553**	**1,965**	**8,667**	**153**	**322**	**186**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	54	99	1,522	(2,437)	(239)	(249)
Thresholds	55	550	55	150	150	55
Significant?	No	No	**Yes**	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	411	1,419	6,472	120	231	134
Project minus NEPA Baseline	142	546	2,195	32	91	51
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	**Yes**	No	No	No
Project Year 2020						

Table 3.2-93: Average Daily Operational Emissions Without Mitigation – Alternative 6

Emission Source	Average Daily[a] Emissions (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Ships – Transit[b] and Anchoring	177	329	2,836	73	52	42
Ships – Hoteling	21	61	597	67	20	16
Tugboats	5	25	28	0	1	1
Trucks[b]	235	755	2,185	5	126	46
Trains[b]	63	440	1,648	2	38	35
Terminal Equipment	18	245	73	2	3	2
Worker Trips	21	192	14	1	55	11
Total – Project Year 2020[c]	**540**	**2,047**	**7,382**	**149**	**295**	**153**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	41	181	237	(2,441)	(267)	(281)
Thresholds	55	550	55	150	150	55
Significant?	No	No	**Yes**	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	379	1,437	5,237	107	206	108
Project minus NEPA Baseline	161	610	2,145	41	89	45
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	No	No
Project Year 2025						
Ships – Transit[b] and Anchoring	212	393	3,366	86	62	49
Ships – Hoteling	17	48	474	53	16	12
Tugboats	6	28	31	0	1	1
Trucks[b]	181	582	1,545	5	134	48
Trains[b]	48	449	1,281	2	28	26
Terminal Equipment	21	277	83	2	3	3
Worker Trips	18	151	11	1	60	12
Total – Project Year 2025[c]	**503**	**1,927**	**6,792**	**148**	**303**	**151**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	4	62	(353)	(2,442)	(259)	(283)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	360	1,364	5,007	118	213	110
Project minus NEPA Baseline	143	563	1,785	30	90	41
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	No	No
Project Year 2027						

Table 3.2-93: Average Daily Operational Emissions Without Mitigation – Alternative 6

Emission Source	Average Daily[a] Emissions (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Ships – Transit[b] and Anchoring	232	428	3,667	94	67	54
Ships – Hoteling	17	50	492	54	16	13
Tugboats	6	30	34	0	1	1
Trucks[b]	188	603	1,612	5	138	50
Trains[b]	44	461	1,166	2	25	23
Terminal Equipment	23	291	87	2	3	3
Worker Trips	17	141	10	1	62	13
Total – Project Year 2027[c]	**526**	**2,005**	**7,068**	**157**	**313**	**156**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	27	139	(77)	(2,432)	(249)	(278)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	360	1,373	4,951	118	212	109
Project minus NEPA Baseline	167	632	2,117	39	101	47
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	No	No

Notes:
a) Emissions represent annual emissions divided by 365 days per year of operation.
b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.
c) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.
d) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Table 3.2-94 shows the peak daily operational emissions and impacts associated with Alternative 6. The peak daily emission estimates for operations include the following assumptions that were chosen to identify a maximum theoretical activity scenario:

a) Ships at berth: The peak day scenario assumes that the largest combination of ships in the Project fleet that could be simultaneously accommodated at the wharf would call at the terminal. The specific ship activity assumed for each analysis year is (a) in 2012, one 6,000-TEU-capacity vessel arrives and hotels; (b) in 2015, one 6,000-TEU-capacity vessel arrives and hotels, and another 6,000-TEU-capacity vessel hotels and departs; (c) in 2020, one 9,000 -TEU-capacity vessel arrives and hotels, and another 9,000-TEU-capacity vessel hotels and departs; and (d) in 2025 and 2027, one 10,000 -TEU-capacity vessel arrives and hotels, and another 10,000-TEU-capacity vessel hotels and departs. The time each vessel is assumed to hotel equals 24 hours minus the ship transit time between the South Coast Air Basin overwater boundary and the berth.

b) Trains: Of the annual TEUs moved to or from ships through the APL Terminal, 45 percent are moved by rail, with 35 percent of the annual TEUs moved are through the APL Terminal rail yard, and the other 10 percent moved through off-dock rail yards (ICTF and Hobart). The peak month throughput, which represents approximately 9.1 percent of annual throughput, was used to calculate peak day rail activity for each year. Following the train calculation methodology described in Section 3.2.1.1, the number of locomotives needed to move APL containers in the peak day were: 15 in the CEQA Baseline, 22 in 2012, 32 in 2015, 34 in 2020, and 38 in 2025 and 2027.

c) Trucks: Peak day truck trips generated by the proposed Project were provided by the traffic study for each analysis year. The peak day represents a weekday during a peak month of container throughput. This equates to about 38 percent more truck trips on the peak day compared to an average day for 2012, 2015, 2020, 2025 and 2027. This alternative would generate 6,438; 9,127; 9,836; 10,546 and 10,830 daily truck trips in 2012, 2015, 2020, 2025, and 2027, respectively.

d) Terminal equipment: Activity, horsepower, and load factors for diesel CHE, and fuel usage for LPG forklifts was provided by APL for both the peak day and annual equipment. The peak day equates to between 33 and 42 percent more operating hours compared to an average day for 2012, 2015, 2020, 2025, and 2027.

e)

Table 3.2-94: Peak Daily Operational Emissions Without Mitigation – Alternative 6

Emission Source	Peak Daily[a] Emissions (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2012						
Ships – Transit[b] and Anchoring	205	381	3,278	84	60	48
Ships – Hoteling	87	223	2,461	140	58	46
Tugboats	5	23	89	0	4	3
Trucks[b]	161	494	1,844	4	102	30
Trains[b]	86	319	1,703	1	48	44
Terminal Equipment	47	280	1,115	1	36	33
Worker Trips	29	296	24	0	47	10
Total – Project Year 2012[c]	**620**	**2,016**	**10,515**	**231**	**354**	**214**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(304)	(1,523)	(2,611)	(5,163)	(761)	(648)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	620	2,016	10,515	231	354	214
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2015						
Ships – Transit[b] and Anchoring	409	762	6,556	168	120	96
Ships – Hoteling	60	159	1,686	123	44	35
Tugboats	9	50	58	0	1	1
Trucks[b]	286	880	2,948	6	153	51
Trains[b]	99	453	2,186	2	57	53
Terminal Equipment	66	374	1,515	2	52	48
Worker Trips	35	347	27	1	69	14
Total – Project Year 2015[c]	**965**	**3,026**	**14,976**	**301**	**496**	**297**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	40	(513)	1,850	(5,093)	(619)	(565)
Thresholds	55	550	55	150	150	55
Significant?	No	No	**Yes**	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	606	2,013	9,474	190	333	196

Table 3.2-94: Peak Daily Operational Emissions Without Mitigation – Alternative 6

Emission Source	Peak Daily[a] Emissions (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project minus NEPA Baseline	358	1,013	5,502	111	163	102
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	**Yes**	**Yes**
Project Year 2020						
Ships – Transit[b] and Anchoring	471	860	7,316	183	134	107
Ships – Hoteling	25	71	697	78	23	18
Tugboats	10	53	60	0	1	1
Trucks[b]	325	1,043	3,017	7	174	63
Trains[b]	68	480	1,797	2	42	38
Terminal Equipment	26	344	104	2	4	3
Worker Trips	29	263	19	1	76	16
Total – Project Year 2020[c]	**955**	**3,115**	**13,011**	**273**	**454**	**248**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	30	(424)	(115)	(5,121)	(662)	(615)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	546	1,964	7,469	165	286	151
Project minus NEPA Baseline	408	1,151	5,542	108	168	97
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	**Yes**	**Yes**
Project Year 2025						
Ships – Transit[b] and Anchoring	578	1,054	8,956	222	164	131
Ships – Hoteling	28	82	806	84	26	21
Tugboats	11	56	63	0	2	1
Trucks[b]	250	803	2,134	7	184	66
Trains[b]	56	536	1,523	2	33	30
Terminal Equipment	30	387	117	2	4	4
Worker Trips	24	206	15	1	82	17
Total – Project Year 2025[c]	**978**	**3,124**	**13,613**	**319**	**495**	**270**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	53	(414)	487	(5,075)	(620)	(592)
Thresholds	55	550	55	150	150	55
Significant?	No	No	**Yes**	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	504	1,803	6,810	162	288	148

Table 3.2-94: Peak Daily Operational Emissions Without Mitigation – Alternative 6

Emission Source	Peak Daily[a] Emissions (lb/day)[d]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project minus NEPA Baseline	474	1,322	6,803	156	207	123
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Project Year 2027						
Ships – Transit[b] and Anchoring	578	1,054	8,956	222	164	131
Ships – Hoteling	28	82	806	84	26	21
Tugboats	12	57	64	0	2	1
Trucks[b]	259	833	2,226	7	190	68
Trains[b]	50	537	1,351	2	29	27
Terminal Equipment	32	406	123	2	5	4
Worker Trips	23	191	13	1	85	18
Total – Project Year 2027[c]	**982**	**3,160**	**13,539**	**319**	**500**	**270**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	57	(379)	413	(5,075)	(615)	(592)
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	**Yes**	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	506	1,834	6,780	163	289	147
Project minus NEPA Baseline	476	1,327	6,759	156	211	123
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Notes:
a) Emissions assume the simultaneous occurrence of maximum theoretical daily equipment activity levels. Such levels would rarely occur during day-to-day terminal operations.
b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.
c) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.
d) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

As noted in the Methodology discussion in Section 3.2.4.1.2, operational emissions of criteria pollutants from cargo handling equipment would be lower with an automated cargo handling system than with the conventional handling system analyzed above. Therefore, potential impacts associated with the automated cargo handling system would be less than shown above.

CEQA Impact Determination

From a CEQA perspective, Alternative 6 peak daily emissions are expected to exceed the NOx threshold in 2015, 2025, and 2027 and the VOC threshold in 2027. Annual emissions of VOC would not exceed the 10 tpy threshold in any study year. The unmitigated air quality impacts associated with Alternative 6 would therefore be significant for NOx in 2015, 2025 and 2027 and VOC in 2027.

Mitigation Measures

To reduce the level of impact during Alternative 6 operation, **MM AQ-9 through MM AQ-16** described above for Impact AQ-3 would be applied to the Alternative 6. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5.

Tables 3.2-95 and 3.2-96 show average daily and peak daily criteria pollutant emissions for each study year and impacts associated with Alternative 6, after mitigation.

From a CEQA perspective, Alternative 6 emissions after mitigation are expected to exceed peak daily thresholds for VOC in 2025 and 2027. Emissions of VOC in 2025 are higher after mitigation due to reduced ship engine efficiency as a result of slower speeds (VSR). However the significant decrease in NOx emissions results in an overall benefit to ozone precursor emissions and reduces NOx emissions to a less than significant level. The air quality impacts associated with Alternative 6 after mitigation are therefore expected to remain significant for VOC in 2025 and 2027.

Residual Impacts

Impacts would be significant and unavoidable for VOC.

NEPA Impact Determination

From a NEPA perspective, Alternative 6 peak daily emissions are expected to exceed SCAQMD thresholds for VOC, CO, NOx, PM_{10} and $PM_{2.5}$ in 2015, 2020, 2025 and 2027 and for SOx in 2025 and 2027. In addition, annual VOC emissions would exceed the annual threshold in 2015, 2020, 2025, and 2027. The unmitigated air quality impacts associated with Alternative 6 are therefore expected to be significant for VOC, CO, NOx, PM_{10} and $PM_{2.5}$ in 2015, 2020, 2025 and 2027 and for SOx in 2025 and 2027.

Mitigation Measures

To reduce the level of impact during Alternative 6 operation, **MM AQ-9 through MM AQ-16** described above for Impact AQ-3 would be applied to the Alternative 6. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5.

Tables 3.2-95 and 3.2-96 show average daily and peak daily criteria pollutant emissions for each study year and impacts associated with Alternative 6, after mitigation.

From a NEPA perspective, Alternative 6 emissions after mitigation are expected to exceed peak daily thresholds for VOC, CO, NOx and $PM_{2.5}$ in 2015, 2020, 2025 and 2027 and for PM_{10} in 2020, 2025, and 2027. Annual VOC emissions would remain above the threshold in 2015, 2020, 2025, and 2027. Peak daily SOx impacts would be reduced to a less than significant level.

Residual Impacts

Impacts would be significant and unavoidable for VOC, CO, NOx, PM_{10}, and $PM_{2.5}$.

Table 3.2-95: Average Daily Operational Emissions With Mitigation – Alternative 6

Emission Source	Average[a] Daily Emissions (lb/day)[e]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2012						
Ships – Transit[b] and Anchoring	123	229	1,977	51	36	29
Ships – Hoteling[c]	56	142	1,563	91	37	29
Tugboats	3	15	57	0	2	2
Trucks[b]	117	358	1,336	3	74	22
Trains[b]	75	280	1,495	1	42	39
Terminal Equipment	25	172	686	1	21	19
Worker Trips	20	208	17	0	33	7
Total – Project Year 2012[d]	**419**	**1,404**	**7,130**	**148**	**245**	**147**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	(80)	(462)	(15)	(2,442)	(317)	(287)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	419	1,404	7,130	148	245	147
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2015						
Ships – Transit[b] and Anchoring	149	270	1,946	49	38	31
Ships – Hoteling[c]	40	106	1,126	85	30	24
Tugboats	4	20	23	0	0	0
Trucks[b]	207	638	2,135	4	110	37
Trains[b]	89	410	1,977	2	52	48
Terminal Equipment	30	247	274	1	12	11
Worker Trips	26	260	20	1	52	11
Total – Project Year 2015[d]	**546**	**1,951**	**7,501**	**142**	**295**	**161**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	46	85	356	(2,448)	(267)	(273)
Thresholds	55	550	55	150	150	55
Significant?	No	No	**Yes**	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	411	1,419	6,472	120	231	134
Project minus NEPA Baseline	134	532	1,029	21	64	26
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	**Yes**	No	No	No

Table 3.2-95: Average Daily Operational Emissions With Mitigation – Alternative 6

Emission Source	Average[a] Daily Emissions (lb/day)[e]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2020						
Ships – Transit[b] and Anchoring	184	331	2,364	59	47	37
Ships – Hoteling[c]	21	61	597	67	20	16
Tugboats	5	25	28	0	1	1
Trucks[b]	235	755	2,185	5	126	46
Trains[b]	63	440	1,648	2	38	35
Terminal Equipment	19	249	75	2	3	2
Worker Trips	21	192	14	1	55	11
Total – Project Year 2020[d]	**548**	**2,053**	**6,911**	**135**	**289**	**149**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	49	187	(234)	(2,455)	(273)	(285)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	379	1,437	5,237	107	206	108
Project minus NEPA Baseline	169	616	1,674	27	84	41
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	No	No
Project Year 2025						
Ships – Transit[b] and Anchoring	221	392	2,757	68	55	44
Ships – Hoteling[c]	17	48	474	53	16	12
Tugboats	6	28	31	0	1	1
Trucks[b]	181	582	1,545	5	134	48
Trains[b]	48	449	1,281	2	28	26
Terminal Equipment	22	282	84	2	3	3
Worker Trips	18	151	11	1	60	12
Total – Project Year 2025[d]	**512**	**1,931**	**6,184**	**130**	**296**	**146**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	13	65	(961)	(2,460)	(266)	(289)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	360	1,364	5,007	118	213	110
Project minus NEPA Baseline	152	567	1,177	12	83	36
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	No	No

Table 3.2-95: Average Daily Operational Emissions With Mitigation – Alternative 6

Emission Source	Average[a] Daily Emissions (lb/day)[e]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2027						
Ships – Transit[b] and Anchoring	241	426	2,994	73	59	47
Ships – Hoteling[c]	9	30	255	45	11	9
Tugboats	6	30	34	0	1	1
Trucks[b]	188	603	1,612	5	138	50
Trains[b]	44	461	1,166	2	25	23
Terminal Equipment	20	266	80	2	3	3
Worker Trips	17	141	10	1	62	13
Total – Project Year 2027[d]	**523**	**1,957**	**6,151**	**128**	**300**	**146**
CEQA Impacts						
CEQA Baseline Emissions	499	1,866	7,145	2,590	562	434
Project minus CEQA Baseline	24	92	(994)	(2,462)	(262)	(289)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	360	1,373	4,951	118	212	109
Project minus NEPA Baseline	164	584	1,200	10	87	37
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	No	No

Notes:

a) Emissions represent annual emissions divided by 365 days per year of operation.
b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.
c) Hoteling emissions include regional power plant emissions from AMP electricity generation.
d) Emissions might not precisely add due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.
e) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Table 3.2-96: Peak Daily Operational Emissions With Mitigation – Alternative 6

Emission Source	Peak[a] Daily Emissions (lb/day)[e]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Project Year 2012						
Ships – Transit[b] and Anchoring	205	381	3,278	84	60	48
Ships – Hoteling[c]	87	223	2,461	140	58	46
Tugboats	5	23	89	0	4	3
Trucks[b]	161	494	1,844	4	102	30
Trains[b]	86	319	1,703	1	48	44
Terminal Equipment	47	280	1,115	1	36	33
Worker Trips	29	296	24	0	47	10
Total – Project Year 2012[d]	**620**	**2,016**	**10,515**	**231**	**354**	**214**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	(304)	(1,523)	(2,611)	(5,163)	(761)	(648)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	620	2,016	10,515	231	354	214
Project minus NEPA Baseline	0	0	0	0	0	0
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
Project Year 2015						
Ships – Transit[b] and Anchoring	425	761	5,411	133	107	85
Ships – Hoteling[c]	59	157	1,663	121	44	35
Tugboats	9	50	58	0	1	1
Trucks[b]	286	880	2,948	6	153	51
Trains[b]	99	453	2,186	2	57	53
Terminal Equipment	48	354	486	2	22	20
Worker Trips	35	347	27	1	69	14
Total – Project Year 2015[d]	**962**	**3,002**	**12,779**	**264**	**452**	**258**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	37	(537)	(347)	(5,130)	(663)	(604)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	606	2,013	9,474	190	333	196
Project minus NEPA Baseline	355	989	3,306	75	120	63
Thresholds	55	550	55	150	150	55

Table 3.2-96: Peak Daily Operational Emissions With Mitigation – Alternative 6

Emission Source	Peak[a] Daily Emissions (lb/day)[e]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Significant?	**Yes**	**Yes**	**Yes**	No	No	**Yes**
Project Year 2020						
Ships – Transit[b] and Anchoring	488	849	5,827	138	116	93
Ships – Hoteling[c]	25	70	687	77	23	18
Tugboats	10	53	60	0	1	1
Trucks[b]	325	1,043	3,017	7	174	63
Trains[b]	68	480	1,797	2	42	38
Terminal Equipment	26	350	106	2	4	4
Worker Trips	29	263	19	1	76	16
Total – Project Year 2020[d]	**972**	**3,109**	**11,513**	**227**	**436**	**233**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	47	(430)	(1,613)	(5,167)	(680)	(629)
Thresholds	55	550	55	150	150	55
Significant?	No	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	546	1,964	7,469	165	286	151
Project minus NEPA Baseline	425	1,144	4,044	62	150	83
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	**Yes**	**Yes**
Project Year 2025						
Ships – Transit[b] and Anchoring	598	1,039	7,122	166	142	113
Ships – Hoteling[c]	27	65	700	73	22	17
Tugboats	11	56	63	0	2	1
Trucks[b]	250	803	2,134	7	184	66
Trains[b]	56	536	1,523	2	33	30
Terminal Equipment	31	393	118	2	5	4
Worker Trips	24	206	15	1	82	17
Total – Project Year 2025[d]	**997**	**3,099**	**11,675**	**251**	**470**	**249**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	73	(440)	(1,451)	(5,143)	(646)	(613)
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	504	1,803	6,810	162	288	148
Project minus NEPA Baseline	494	1,296	4,865	89	182	102
Thresholds	55	550	55	150	150	55

Table 3.2-96: Peak Daily Operational Emissions With Mitigation – Alternative 6

Emission Source	Peak[a] Daily Emissions (lb/day)[e]					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Significant?	**Yes**	**Yes**	**Yes**	No	**Yes**	**Yes**
Project Year 2027						
Ships – Transit[b] and Anchoring	598	1,039	7,122	166	142	113
Ships – Hoteling[c]	14	47	400	68	17	14
Tugboats	12	57	64	0	2	1
Trucks[b]	259	833	2,226	7	190	68
Trains[b]	50	537	1,351	2	29	27
Terminal Equipment	26	336	108	2	4	4
Worker Trips	23	191	13	1	85	18
Total – Project Year 2027[d]	**981**	**3,040**	**11,284**	**247**	**469**	**245**
CEQA Impacts						
CEQA Baseline Emissions	924	3,539	13,126	5,394	1,115	863
Project minus CEQA Baseline	57	(499)	(1,842)	(5,147)	(647)	(618)
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	No	No	No	No	No
NEPA Impacts						
NEPA Baseline Emissions	506	1,834	6,780	163	289	147
Project minus NEPA Baseline	476	1,206	4,504	84	179	98
Thresholds	55	550	55	150	150	55
Significant?	**Yes**	**Yes**	**Yes**	No	**Yes**	**Yes**

Notes:
a) Emissions assume the simultaneous occurrence of maximum theoretical daily equipment activity levels. Such levels would rarely occur during day-to-day terminal operations.
b) Truck, train, ship, and worker commute emissions include transport within the South Coast Air Basin.
c) Hoteling emissions include regional power plant emissions from AMP electricity generation
d) Emissions may not add to totals due to rounding. For further explanation, refer to the discussion in Section 3.2.4.1.
e) The emission estimates presented in this table were calculated using the latest available data, assumptions, and emission factors at the time this document was prepared. Future studies might use updated data, assumptions, and emission factors that are not currently available.

Impact AQ-4: Alternative 6 operations would result in off-site ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-19.

Dispersion modeling of on-site and off-site Project operational emissions was performed to assess the impact of Alternative 6 on local ambient air concentrations. Construction emissions were added to the operational emissions in the model during the periods where construction emissions overlap with operations. A summary of the dispersion modeling results is presented here; the complete dispersion modeling report is included in Appendix E2. Table 3.2-97 presents the maximum off-site ground-level concentrations of NO_2, SO_2, and CO for Alternative 6 without mitigation. Table 3.2-98 shows the maximum CEQA and NEPA PM_{10} and $PM_{2.5}$ concentration increments without mitigation.

As noted in the Methodology discussion in Section 3.2.4.1.2, operational emissions of criteria pollutants from cargo handling equipment would be lower with an automated cargo handling system than with the conventional handling system analyzed above. Therefore, potential impacts associated with the automated cargo handling system would be less than shown below.

Table 3.2-97: Maximum Off-site NO_2, SO_2, and CO Concentrations Associated with Operation of Alternative 6 without Mitigation

Pollutant	Averaging Time	Maximum Modeled Concentration of Alt. 6 (μg/m³)	Background Concentration[b] (μg/m³)	Total Ground Level Concentration[a,e] (μg/m³)	SCAQMD Threshold (μg/m³)
NO_2 [c]	Federal 1-hour[d]	190	146	**336**	188
	State 1-hour	241	235	**476**	339
	State Annual	45	40	**85**	57
	Federal Annual	45	40	85	100
SO_2	Federal 1-hour[d]	6	53	59	196
	State 1-hour	10	228	238	655
	24-hour	1	32	33	105
CO	1-hour	336	4,600	4,966	23,000
	8-hour	157	2,878	3,035	10,000

Notes:
a) Exceedances of the thresholds are indicated in **bold**.
b) The background concentrations were obtained from the North Long Beach Monitoring Station. The maximum concentrations during the years of 2007, 2008, and 2009 were used.
c) NO_2 concentrations were calculated using ozone data from the North Long Beach monitoring station. The 1-hour NO_2 concentration is calculated using the 98^{th} percentile of the daily maximum 1-hour average to compare with the new federal 1-hour NO_2 standard of 0.100 ppm (188 μg/m³) (effective January 22, 2010).
d) According to USEPA guidance, the modeled design values, 98^{th} percentile for 1-hour NO_2 and 99^{th} percentile for 1-hour SO_2, are added to the design background values for NO_2 and SO_2. (USEPA, 2011a).
e) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

Table 3.2-98: Maximum Off-site PM_{10} and $PM_{2.5}$ Concentrations Associated with Operation of the Alternative 6 without Mitigation

	Averaging Time	Maximum Modeled Concentration of Proposed Project[b] ($\mu g/m^3$)	Maximum Modeled Concentration of CEQA Baseline [b] ($\mu g/m^3$)	Maximum Modeled Concentration of NEPA Baseline [b] ($\mu g/m^3$)	Ground Level Concentra-tion CEQA Increment[a,c] ($\mu g/m^3$)	Ground Level Concentration NEPA Increment [a,c] ($\mu g/m^3$)	SCAQMD Threshold ($\mu g/m^3$)
PM_{10}	24-hour	6.2	7.1	5.6	0.6	1.3	2.5
	Annual	1.9	1.9	1.5	0.7	0.7	1.0
$PM_{2.5}$	24-hour	5.0	6.2	4.4	0.1	1.1	2.5
	Federal Annual	1.5	NA	1.1	NA	**0.6**	0.3[d]

Notes:

a) Exceedances of the threshold are indicated in bold. The thresholds for PM_{10} and $PM_{2.5}$ are incremental thresholds; therefore, the incremental concentration without background is compared to the threshold.

b) The maximum concentrations and increments presented in this table do not necessarily occur at the same receptor location. This means that the increments cannot necessarily be determined by simply subtracting the baseline concentrations from the Project concentration. The example provided in the discussion of Impact AQ-7 for the proposed Project describes how the increments are calculated.

c) The CEQA Increment represents the Unmitigated Project minus CEQA baseline. The NEPA Increment represents the Unmitigated Project minus NEPA baseline.

d) SCAQMD does not list a Significant Impact Level for annual $PM_{2.5}$, therefore the modeled annual average $PM_{2.5}$ was compared to the PSD SIL of 0.3 μg/m3 for the determination of NEPA significance only.

CEQA Impact Determination

Operation of this alternative would produce significant off-site ambient concentrations of NO_2 (Federal and state 1-hour, and state annual). Therefore, impacts under CEQA would be significant for NO_2.

Mitigation Measures

Mitigation measures to reduce ambient pollutant concentrations during Project operations under Alternative 6 would be the same as measures applied for Impact AQ-3 for Alternative 6. **MM AQ-9 through MM AQ-16** would be implemented by the responsible parties identified in Section 3.2.4.5. Tables 3.2-99 and 3.2-100 show Alternative 6 concentrations after mitigation. After mitigation, off-site ambient concentrations of NO_2 (Federal and state 1-hour and state annual) would remain significant.

Residual Impacts

Impacts would be significant and unavoidable for Federal and state 1-hour and state annual NO_2.

NEPA Impact Determination

Operation of this alternative would produce significant off-site ambient concentrations for NO_2 (1-hour) and $PM_{2.5}$ (annual). Therefore, significant impacts under NEPA would occur.

Mitigation Measures

Mitigation measures to reduce ambient pollutant concentrations during Project operations under Alternative 6 would be the same as measures applied for Impact AQ-3 for Alternative 6. **MM AQ-9 through MM AQ-16** would be implemented by the responsible parties identified in Section 3.2.4.5. Tables 3.2-99 and 3.2-100 show Alternative 6 concentrations after mitigation. After mitigation, the off-site ambient concentration of NO_2 (Federal 1-hour) would remain significant.

Residual Impacts

Impacts would be significant and unavoidable for NO_2.

Table 3.2-99: Maximum Off-site NO_2 Concentration Associated with Operation of Alternative 6 With Mitigation

Pollutant	Averaging Time	Maximum Modeled Concentration of Alt. 6 ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Ground Level Concentration ($\mu g/m^3$)[e]	SCAQMD Threshold ($\mu g/m^3$)
NO_2 [c]	Federal 1-hour[d]	187	146	**333**	188
	State 1-hour	224	235	**459**	339
	Annual	40	40	**80**	57

Notes:

a) Exceedances of the thresholds are indicated in **bold**.

b) The background concentrations were obtained from the North Long Beach Monitoring Station. The maximum concentrations during the years of 2007, 2008, and 2009 were used.

c) NO_2 concentrations were calculated using ozone data from the North Long Beach monitoring station. The 1-hour NO_2 concentration is calculated using the 98^{th} percentile of the daily maximum 1-hour average to compare with the new federal 1-hour NO_2 standard of 0.100 ppm (188 $\mu g/m^3$) (effective January 22, 2010).

d) According to USEPA guidance, the modeled design value (98^{th}) for 1-hour NO_2 is added to the background design value for NO_2. (USEPA, 2011a).

e) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

Table 3.2-100: Maximum Off-site $PM_{2.5}$ Concentration Associated with Operation of Alternative 6 With Mitigation

	Averaging Time	Maximum Modeled Concentration of Alt. 6[b] ($\mu g/m^3$)	Maximum Modeled Concentration of CEQA Baseline[b] ($\mu g/m^3$)	Maximum Modeled Concentration of NEPA baseline[b] ($\mu g/m^3$)	Ground-Level Concentration CEQA Increment[a,c] ($\mu g/m^3$)	Ground-Level Concentration NEPA Increment[a,c] ($\mu g/m^3$)	Federal Threshold[d] ($\mu g/m^3$)
$PM_{2.5}$	Annual	0.7	NA	1.1	NA	0.1	0.3

Notes:

a) Exceedances of the threshold are indicated in **bold**. The threshold for PM_{10} is an incremental threshold; therefore, the incremental concentration without background is compared to the threshold.

b) The maximum concentrations and increments presented in this table might not occur at the same receptor location. This means that the increments cannot necessarily be determined by simply subtracting the baseline concentrations from Alternative 6 concentration. The example provided in the discussion of Impact AQ-7 for the proposed Project illustrates how the increments are calculated.

c) The CEQA Increment represents Project minus CEQA baseline. The NEPA Increment represents Project minus NEPA baseline.

e) SCAQMD does not list a Significant Impact Level for annual $PM_{2.5}$, therefore the modeled annual average $PM_{2.5}$ was compared to the PSD SIL of 0.3 $\mu g/m^3$ for the determination of NEPA significance only.

Impact AQ-5: Alternative 6 would not generate on-road traffic that would contribute to an exceedance of the 1-hour or 8-hour CO standards.

This alternative would generate less truck traffic than the proposed Project for all analysis years. As discussed in the proposed Project analysis, CO concentrations related to on-road traffic would not exceed state CO standards for any proposed Project study year.

CEQA Impact Determination

Under CEQA, CO standards would not be exceeded, therefore impacts are less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

Under NEPA, CO standards would not be exceeded, therefore impacts are less than significant.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact AQ-6: Alternative 6 would not create an objectionable odor at the nearest sensitive receptor.

Similar to the proposed Project, the mobile nature of the emission sources associated with this alternative would help to disperse emissions. Additionally, the distance between proposed Project emission sources and the nearest residents would be far enough to allow for adequate dispersion of these emissions to below objectionable odor levels. Thus, the potential is low for this alternative to produce objectionable odors that would affect a sensitive receptor.

CEQA Impact Determination

As a result of the above, the potential is low for the proposed Project to produce objectionable odors that would affect a sensitive receptor; and significant odor impacts under CEQA, therefore, are not anticipated.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

As a result of the above, the potential is low for the proposed Project to produce objectionable odors that would affect a sensitive receptor; and significant odor impacts under NEPA, therefore, are not anticipated.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact AQ-7: Alternative 6 would expose receptors to significant levels of toxic air contaminants.

The main sources of TACs from Alternative 6 operations would be DPM emissions from rail, ships, tugboats, terminal equipment, and trucks. DPM emissions from on-dock rail operations would be similar under Alternative 6 to the proposed Project. Similar to the HRA for the proposed Project, PM_{10} and VOC emissions were projected over a 70-year period, from 2012 through 2081. An HRA was performed over this 70-year exposure period.

Table 3.2-101 presents the maximum predicted health impacts associated with this alternative without mitigation. The table includes estimates of individual lifetime cancer risk, chronic noncancer hazard index, and acute noncancer hazard index at the maximally exposed receptors. Results are presented for the future CEQA increment (alternative minus future CEQA baseline) and NEPA increment (alternative minus NEPA baseline).

As noted in the Methodology discussion in Section 3.2.4.1.2, operational emissions of DPM from cargo handling equipment would be lower with an automated cargo handling system than with the conventional handling system analyzed above. Therefore, potential impacts associated with the automated cargo handling system would be less than shown below.

Table 3.2-101: Maximum Incremental CEQA and NEPA Health Impacts Associated With Alternative 6 Without Mitigation, 2012 – 2081

Health Impact	Receptor Type	Maximum Predicted Impact[a,d]					Significance Threshold
		Alternative 6	Future CEQA Baseline	Future CEQA Increment[b,c]	NEPA Baseline	NEPA Increment[b,c]	
Cancer Risk[f]	Residential[e]	47	22	**25 x 10^{-6} (25 in a million)**	40	7 x 10^{-6} (5 in a million)	10 x 10^{-6} (10 in a million)
	Occupational	38	22	**16 x 10^{-6} (16 in a million)**	31	7 x 10^{-6} (7 in a million)	
	Sensitive	15	8	7 x 10^{-6} (7 in a million)	13	2 x 10^{-6} (2 in a million)	
	Student	0.6	0.4	0.2 x 10^{-6} (0.2 in a million)	0.5	0.2 x 10^{-6} (0.2 in a million)	
	Recreational	5	2	3 x 10^{-6} (3 in a million)	4.5	0.8 x 10^{-6} (0.8 in a million)	
Chronic Hazard Index	Residential	0.3	0.5	< 0 [g]	0.2	0.1	1.0
	Occupational	0.6	0.8	< 0 [g]	0.4	0.2	
	Sensitive	0.1	0.4	< 0 [g]	0.1	0.0	
	Student	0.1	0.3	< 0 [g]	0.09	0.0	
	Recreational	0.1	0.4	< 0 [g]	0.1	0.0	
Acute Hazard Index	Residential	1.4	0.2	**1.1**	0.2	**1.1**	1.0
	Occupational	2.0	0.2	**1.7**	0.2	**1.7**	
	Sensitive	0.5	0.06	0.4	0.06	0.4	
	Student	0.5	0.06	0.4	0.06	0.4	
	Recreational	0.6	0.09	0.5	0.09	0.5	

Notes:

h) Exceedances of the significance criteria are in **bold**. The significance thresholds apply to the CEQA and NEPA increments only.

i) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impacts. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.

j) The CEQA increment represents Project minus CEQA baseline. The NEPA increment represents Project minus NEPA baseline.

k) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.

l) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.

m) Construction emissions were modeled with the operational emissions for the determination of cancer risk.

n) When the predicted impact is less than zero, the Project risk is less than the respective baseline.

CEQA Impact Determination

Table 3.2-101 shows that the maximum chronic hazard index CEQA increment associated with the Alternative 6 is predicted to be less than the CEQA baseline for all receptor types.

The maximum future CEQA incremental cancer risks for residential and occupational receptors would exceed the significance threshold of 10 in a million. In addition, the maximum acute hazard index CEQA increment is predicted to be greater than the significance threshold of 1.0 at residential and occupational receptors.

From a CEQA perspective, the 24-hour $PM_{2.5}$ CEQA incremental impact shown in Table 3.2-98 is 0.4 µg/m3. The CEQA incremental impact is less than the SCAQMD threshold of 2.5 µg/m^3, therefore the 24-hour $PM_{2.5}$ concentration is less than significant and a mortality and morbidity determination is not required.

Mitigation Measures

Mitigation measures to reduce TAC emissions would be the same as measures **MM AQ-9 through MM AQ-16** described above for Impact AQ-3. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5.

Residual Impacts

Table 3.2-102 shows that the maximum CEQA acute risk increment at residential receptors is reduced to a less than significant level. The maximum acute risk at occupational receptors remains significant and unavoidable. In addition, the maximum future CEQA cancer risk increment at the residential and occupational receptors remain significant and unavoidable.

See the residual impacts discussion for the proposed Project Impact AQ-7, above, and Appendix E3 for additional detail on the impacted receptors and risk drivers.

NEPA Impact Determination

The maximum NEPA cancer risk increment associated with the unmitigated Alternative 6 is predicted to be 7 in a million (7×10^{-6}), at an occupational receptor. This risk value does not exceed the significance criterion of 10 in a million and would not be considered a significant impact.

The maximum chronic hazard index NEPA increment associated with the unmitigated Alternative 6 is predicted to be 0.2 at an occupational receptor. The acute hazard index NEPA increment is predicted to be 1.8 at an occupational receptor.

From a NEPA perspective, the 24-hour $PM_{2.5}$ NEPA incremental impact shown in Table 3.2-98 is 1.1 $\mu g/m^3$. The NEPA incremental impact is less than the SCAQMD threshold of 2.5 $\mu g/m^3$, therefore the 24-hour $PM_{2.5}$ concentration is less than significant and a mortality and morbidity determination is not required.

Mitigation Measures

Mitigation measures to reduce TAC emissions would be the same as measures **MM AQ-9 through MM AQ-16** described above for Impact AQ-3. These mitigation measures would be implemented by the responsible parties identified in Section 3.2.4.5.

Residual Impacts

The maximum NEPA acute risk increment at residential receptors is reduced to a less than significant level. The maximum acute risk at occupational receptors remains significant and unavoidable.

Table 3.2-102: Maximum Incremental CEQA and NEPA Health Impacts Associated With Alternative 6 With Mitigation, 2012 – 2081

Health Impact	Receptor Type	Maximum Predicted Impact[a,d]					Significance Threshold
		Alternative 6	Future CEQA Baseline	Future CEQA Increment[b,c]	NEPA Baseline	NEPA Increment[b,c]	
Cancer Risk[f]	Residential[e]	45	22	**23×10^{-6} (23 in a million)**	-[g]	-[g]	10×10^{-6} (10 in a million)
	Occupational	29	18	**11×10^{-6} (11 in a million)**	-[g]	-[g]	
Acute Hazard Index	Residential	1.1	0.2	0.9	0.2	0.9	1.0
	Occupational	1.3	0.2	**1.1**	0.2	**1.1**	

Notes:
h) Exceedances of the significance criteria are in **bold**. The significance thresholds apply to the CEQA and NEPA increments only.
i) The maximum increments might not necessarily occur at the same receptor locations as the maximum impacts. This means that the increments cannot necessarily be determined by simply subtracting the baseline impacts from the Project impacts. The example given in the text, before the CEQA Impact Determination, illustrates how the increments are calculated.
j) The CEQA increment represents Project minus CEQA baseline.
k) Data represent the receptor locations with the maximum impacts or increments. The impacts or increments at all other receptors would be less than these values.
l) The cancer risk values reported in this table for the residential receptor are based on the 80th percentile breathing rate.
m) Construction emissions were modeled with the operational emissions for the determination of cancer risk.
n) Unmitigated impacts that were less than the significance threshold were not reanalyzed for mitigation.

Impact AQ-8: Alternative 6 would not conflict with or obstruct implementation of an applicable AQMP.

Similar to the proposed Project, this alternative would comply with SCAQMD rules and regulations, and would be consistent with SCAG regional employment and population growth forecasts. Thus, this alternative would not conflict with or obstruct implementation of the AQMP.

CEQA Impact Determination

This alternative would not conflict with or obstruct implementation of the AQMP; therefore, impacts under CEQA are not anticipated.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

NEPA Impact Determination

This alternative would not conflict with or obstruct implementation of the AQMP; therefore, impacts under NEPA are not anticipated.

Mitigation Measures

No mitigation is required.

Residual Impacts

Impacts would be less than significant.

Impact AQ-9: Alternative 6 would produce GHG emissions that would exceed CEQA and NEPA baseline levels.

Construction activities would include all activities included in the proposed Project in addition to the removal of 10 acres of backlands for railyard expansion and a ninth set of double tracks to meet the terminal needs. All of the activities for the proposed Project in Table 3.2-39 would approximate annual construction GHG emissions for this alternative. However, depending on the overlap of construction activities, emissions for Alternative 6 could be slightly greater than emissions from the proposed Project because of the additional construction activities described.

Table 3.2-103 summarizes the annual GHG emissions that would occur within California from the operation of Alternative 6.

Table 3.2-103: Annual Operational GHG Emissions – Alternative 6 without Mitigation

Project Scenario/ Source Type	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
Project Year 2012					
Ships – Transit	48,660	1	2	0	49,413
Ships – Hoteling	21,378	0	1	0	21,749
Tugboats	340	0	0	0	345
Trucks	59,452	0	0	0	59,497
Trains	43,445	1	4	0	44,572
Terminal Equipment	13,376	0	0	0	13,429
Reefer Refrigerant Losses	0	0	0	1	841
AMP Usage	0	0	0	0	0
On-Terminal Electricity Usage	22,448	1	0	0	22,506
Worker Trips	5,340	0	1	0	5,525
Total For Project Year 2012[a]	**214,440**	**4**	**8**	**1**	**217,876**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	65,198	(1)	4	0	66,612
NEPA Baseline	214,440	4	8	1	217,876
Project Minus NEPA Baseline	0	0	0	0	0
Project Year 2015					
Ships – Transit	56,648	1	3	0	57,523
Ships – Hoteling	19,029	0	1	0	19,393
Tugboats	416	0	0	0	422
Trucks	84,792	0	0	0	84,855
Trains	64,649	2	5	0	66,327
Terminal Equipment	19,733	0	0	0	19,811
Reefer Refrigerant Losses	0	0	0	1	1,192
AMP Usage	7,244	0	0	0	7,259
On-Terminal Electricity Usage	31,823	1	0	0	31,905

Table 3.2-103: Annual Operational GHG Emissions – Alternative 6 without Mitigation

Project Scenario/ Source Type	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
Worker Trips	7,627	0	1	0	7,816
Total For Project Year 2015[a]	**291,961**	**5**	**10**	**1**	**296,503**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	142,719	1	6	1	145,239
NEPA Baseline	215,143	4	8	1	218,469
Project Minus NEPA Baseline	76,817	1	3	0	78,034
Project Year 2020					
Ships – Transit	69,834	2	3	0	70,915
Ships – Hoteling	14,265	0	1	0	14,569
Tugboats	491	0	0	0	499
Trucks	89,518	0	0	0	89,586
Trains	69,560	2	6	0	71,367
Terminal Equipment	21,411	1	0	0	21,495
Reefer Refrigerant Losses	0	0	0	1	1,284
AMP Usage	8,785	0	0	0	8,803
On-Terminal Electricity Usage	25,036	1	0	0	25,101
Worker Trips	6,629	0	0	0	6,730
Total Project Year 2020[a]	**305,529**	**5**	**11**	**1**	**310,347**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	156,287	1	6	1	159,083
NEPA Baseline	215,045	4	8	1	218,469
Project Minus NEPA Baseline	90,484	2	3	0	91,879
Project Year 2025					
Ships – Transit	83,563	2	4	0	84,858
Ships – Hoteling	11,243	0	1	0	11,483
Tugboats	529	0	0	0	537
Trucks	95,974	0	0	0	96,046
Trains	70,769	2	6	0	72,606
Terminal Equipment	23,109	1	0	0	23,200
Reefer Refrigerant Losses	0	0	0	1	1,377
AMP Usage	7,004	0	0	0	7,018
On-Terminal Electricity Usage	26,842	1	0	0	26,911
Worker Trips	6,626	0	0	0	6,748
Total Project Year 2025[a]	**325,658**	**6**	**12**	**1**	**330,784**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	176,416	1	7	1	179,520
NEPA Baseline	232,166	4	9	1	235,867

Table 3.2-103: Annual Operational GHG Emissions – Alternative 6 without Mitigation

Project Scenario/ Source Type	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
Project Minus NEPA Baseline	93,492	2	3	0	94,917
Project Year 2027					
Ships – Transit	91,160	2	4	0	92,573
Ships – Hoteling	11,607	0	1	0	11,854
Tugboats	567	0	0	0	575
Trucks	98,556	0	0	0	98,630
Trains	72,666	2	6	0	74,553
Terminal Equipment	23,889	1	0	0	23,983
Reefer Refrigerant Losses	0	0	0	1	1,414
AMP Usage	7,269	0	0	0	7,284
On-Terminal Electricity Usage	27,564	1	0	0	27,635
Worker Trips	6,702	0	0	0	6,814
Total Project Year 2027[a]	**339,980**	**6**	**12**	**1**	**345,316**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	190,739	1	8	1	194,052
NEPA Baseline	234,217	4	9	1	237,940
Project Minus NEPA Baseline	105,764	2	4	0	107,376

Notes:
a) 1 metric ton equals 1,000 kilograms, 2,205 lbs, or 1.1 U.S. (short) tons.
b) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; and 1,300 for HFC-134a.
c) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

As noted in the Methodology discussion in Section 3.2.4.1.2, operational emissions of GHGs from cargo handling equipment would be similar between an automated cargo handling system and the conventional handling system analyzed above. Therefore, potential impacts associated with the automated cargo handling system would be roughly the same as shown above.

CEQA Impact Determination

Table 3.2-39 shows that total CO_2e emissions during project construction would exceed CEQA baseline construction emissions (which are zero for construction). In addition, the data in Table 3.2-103 show that in each future Project year, annual operational CO_2e emissions would increase from CEQA baseline levels. As a result, Alternative 6 would produce significant levels of GHG emissions under CEQA.

Mitigation Measures

Measures that reduce fuel usage and electricity consumption from Alternative 6 emission sources would reduce proposed GHG emissions. Project mitigation measures that would accomplish this effect include **MM AQ-2 through MM AQ-4** for construction; and **MM AQ-9, MM AQ-10**, and **MM AQ-16 through MM AQ-20** for operations.

Table 3.2-104 presents the annual operational GHG emissions with mitigation. The effects of **MM AQ-9** (AMP) and **MM AQ-10** (VSRP) were included in the emission estimates. The potential effects of the remaining mitigation measures are described qualitatively under each measure's heading in the proposed Project analysis for Impact AQ-9.

Table 3.2-104: Annual Operational GHG Emissions – Alternative 6 with Mitigation

Project Scenario/ Source Type	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
Project Year 2012					
Ships – Transit	48,660	1	2	0	49,413
Ships – Hoteling	21,378	0	1	0	21,749
Tugboats	340	0	0	0	345
Trucks	59,452	0	0	0	59,497
Trains	43,445	1	4	0	44,572
Terminal Equipment	13,376	0	0	0	13,429
Reefer Refrigerant Losses	0	0	0	1	841
AMP Usage	0	0	0	0	0
On-Terminal Electricity Usage	22,448	1	0	0	22,506
Worker Trips	5,340	0	1	0	5,525
Total For Project Year 2012[c]	**214,440**	**4**	**8**	**1**	**217,876**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	65,198	(1)	4	0	66,612
NEPA Baseline	214,440	4	8	1	217,876
Project Minus NEPA Baseline	0	0	0	0	0
Project Year 2015					
Ships – Transit	54,041	1	3	0	54,880
Ships – Hoteling	19,029	0	1	0	19,393
Tugboats	416	0	0	0	422
Trucks	84,792	0	0	0	84,855
Trains	64,649	2	5	0	66,327
Terminal Equipment	19,733	0	0	0	19,811
Reefer Refrigerant Losses	0	0	0	1	1,192
AMP Usage	7,244	0	0	0	7,259
On-Terminal Electricity Usage	31,823	1	0	0	31,905
Worker Trips	7,627	0	1	0	7,816

Table 3.2-104: Annual Operational GHG Emissions – Alternative 6 with Mitigation

Project Scenario/ Source Type	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
Total For Project Year 2015[c]	**289,355**	**5**	**10**	**1**	**293,860**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	140,113	1	6	1	142,596
NEPA Baseline	215,143	4	8	1	218,469
Project Minus NEPA Baseline	74,211	1	3	0	75,391
Project Year 2020					
Ships – Transit	66,471	1	3	0	67,504
Ships – Hoteling	14,265	0	1	0	14,569
Tugboats	491	0	0	0	499
Trucks	89,518	0	0	0	89,586
Trains	69,560	2	6	0	71,367
Terminal Equipment	21,411	1	0	0	21,495
Reefer Refrigerant Losses	0	0	0	1	1,284
AMP Usage	8,785	0	0	0	8,803
On-Terminal Electricity Usage	25,036	1	0	0	25,101
Worker Trips	6,629	0	0	0	6,730
Total Project Year 2020[c]	**302,166**	**5**	**11**	**1**	**306,937**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	152,924	1	6	1	155,673
NEPA Baseline	215,045	4	8	1	218,469
Project Minus NEPA Baseline	87,121	2	3	0	88,468
Project Year 2025					
Ships – Transit	79,204	2	4	0	80,437
Ships – Hoteling	11,243	0	1	0	11,483
Tugboats	529	0	0	0	537
Trucks	95,974	0	0	0	96,046
Trains	70,769	2	6	0	72,606
Terminal Equipment	23,109	1	0	0	23,200
Reefer Refrigerant Losses	0	0	0	1	1,377
AMP Usage	7,004	0	0	0	7,018
On-Terminal Electricity Usage	26,842	1	0	0	26,911
Worker Trips	6,626	0	0	0	6,748
Total Project Year 2025[c]	**321,299**	**6**	**12**	**1**	**326,363**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	172,057	1	7	1	175,099
NEPA Baseline	232,166	4	9	1	235,867
Project Minus NEPA Baseline	89,133	2	3	0	90,496

Table 3.2-104: Annual Operational GHG Emissions – Alternative 6 with Mitigation

Project Scenario/ Source Type	Metric Tons[a] Per Year				
	CO_2	CH_4	N_2O	HFC-134a	CO_2e[b]
Project Year 2027					
Ships – Transit	86,335	2	4	0	87,679
Ships – Hoteling	9,316	0	1	0	9,532
Tugboats	567	0	0	0	575
Trucks	98,556	0	0	0	98,630
Trains	72,666	2	6	0	74,553
Terminal Equipment	23,889	1	0	0	23,983
Reefer Refrigerant Losses	0	0	0	1	1,414
AMP Usage	8,632	0	0	0	8,649
On-Terminal Electricity Usage	27,564	1	0	0	27,635
Worker Trips	6,702	0	0	0	6,814
Total Project Year 2027[c]	**334,227**	**6**	**12**	**1**	**339,466**
CEQA Baseline	149,241	5	5	0	151,264
Project Minus CEQA Baseline	184,986	1	7	1	188,202
NEPA Baseline	234,217	4	9	1	237,940
Project Minus NEPA Baseline	100,010	2	3	0	101,526

Notes:

a) 1 metric ton equals 1,000 kilograms, 2,205 lbs, or 1.1 U.S. (short) tons.

b) CO_2e = the carbon dioxide equivalent emissions of all GHGs combined. The carbon dioxide equivalent emission rate for each GHG represents the emission rate multiplied by its global warming potential (GWP). The GWPs are 1 for CO_2; 21 for CH_4; 310 for N_2O; and 1,300 for HFC-134a.

c) Emissions might not add precisely due to rounding. For more explanation, refer to the discussion in Section 3.2.4.1.

Residual Impacts

Impacts would be significant and unavoidable.

NEPA Impact Determination

There are no science-based GHG significance thresholds, nor has the Federal government or the state adopted any by regulations. In the absence of an adopted or science-based GHG standard, in compliance with the NEPA implementing regulations, a significance determination regarding GHGs will not be made under NEPA.

In accordance with CEQ *Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions*, GHG emissions exceed the CEQ reference level of 25,000 $MTCO_2e$ for further analysis in a NEPA document (CEQ, 2010). Therefore GHG emissions are calculated for Alternative 6 emission sources and mitigation measures are considered for the reduction of GHG emissions.

Mitigation Measures

No mitigation is required.

Residual Impacts

An impact determination is not applicable.

3.2.4.5 Summary of Impact Determinations

The following Table 3.2-105 summarizes the CEQA and NEPA impact determinations of the proposed Project and alternatives related to Air Quality, Meteorology and Greenhouse Gases, as described in the detailed discussion in Section 3.2.4.3. This table is meant to allow easy comparison between the potential impacts of the proposed Project and alternatives with respect to this resource. Identified potential impacts may be based on Federal, State, or City of Los Angeles significance criteria, Port criteria, and the scientific judgment of the report preparers.

For each type of potential impact, the table describes the impact, notes the CEQA and NEPA impact determinations, describes any applicable mitigation measures, and notes the residual impacts (i.e., the impact remaining after mitigation). All impacts, whether significant or not, are included in this table.

Table 3.2-105: Summary Matrix of Potential Impacts and Mitigation Measures for Air Quality and Greenhouse Gases Associated with the Proposed Project and Alternatives

Alternative	Environmental Impacts	Impact Determination	Mitigation Measures	Impacts after Mitigation
Proposed Project	**AQ-1:** The proposed Project would result in construction-related emissions that exceed an SCAQMD threshold of significance in Table 3.2-16.	CEQA: Impacts would be significant for VOC, CO, NO_x, PM_{10}, and $PM_{2.5}$.	**MM AQ-1.** Harbor Craft Used during construction. **MM AQ-2.** Cargo Ships. **MM AQ-3.** Fleet Modernization for On-Road Trucks. **MM AQ-4.** Fleet Modernization for Construction Equipment. **MM AQ-5.** Best Management Practices. **MM AQ-6.** Additional Fugitive Dust Controls. **MM AQ-7.** General Mitigation Measure. **MM AQ-8.** Special Precautions near Sensitive Sites.	CEQA: Impacts would remain significant and unavoidable for VOC, CO, NO_x, PM_{10}, and $PM_{2.5}$.
		NEPA: Impacts would be significant for VOC, CO, NO_x, PM_{10}, and $PM_{2.5}$.		NEPA: Impacts would remain significant and unavoidable for VOC, CO, NO_x, PM_{10}, and $PM_{2.5}$.
	AQ-2: Proposed Project construction would result in off-site ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-17.	CEQA: Maximum off-site ambient air pollutant concentrations would be significant for PM_{10} (24-hour and annual average) and NO_2 (1-hour and state annual average). Overlap of construction and operations would be significant for PM2.5 (24-hour).	**MM AQ-1 through MM AQ-8**	CEQA: Significant and unavoidable for PM_{10} (24-hour average) and NO_2 (1-hour average).
		NEPA: Maximum off-site ambient air pollutant concentrations would be significant for PM_{10} (24-hour and annual average), $PM_{2.5}$ (annual average), and NO_2 (Federal 1-hour average). Overlap of construction and operations would be significant for PM2.5 (24-hour).		NEPA: Maximum off-site ambient air pollutant concentrations would remain significant and unavoidable for PM_{10} (24-hour and annual average), $PM_{2.5}$ (annual average) and NO_2 (Federal 1-hour).

Table 3.2-105: Summary Matrix of Potential Impacts and Mitigation Measures for Air Quality and Greenhouse Gases Associated with the Proposed Project and Alternatives

Alternative	Environmental Impacts	Impact Determination	Mitigation Measures	Impacts after Mitigation
	AQ-3: The proposed Project would result in operational emissions that exceed 10 tons per year of VOCs or an SCAQMD threshold of significance in Table 3.2-18.	CEQA: Significant for NOx in 2015, 2025, and 2027 and VOC in 2027.	**MM AQ-9.** Alternative Maritime Power (AMP). **MM AQ-10.** Vessel Speed Reduction Program (VSRP). **MM AQ-11.** Cleaner OGV Engines. **MM AQ-12.** OGV Engine Emissions Reduction Technology Improvements. **MM AQ-13.** Yard Tractors at Berths 302-306 Terminal. **MM AQ-14.** Yard Equipment at Berth 302-306 Railyard. **MM AQ-15.** Yard Equipment at Berths 302-306 Terminal. **MM AQ-16.** Truck Idling Reduction Measure. The following lease measures would also be implemented to reduce impacts: **LM AQ-1.** Periodic Review of New Technology and Regulations. **LM AQ-2.** Substitution of New Technology.	CEQA: Significant and unavoidable for VOC in 2025 and 2027.
		NEPA: Significant for CO, VOC, NOx, PM_{10}, and $PM_{2.5}$ in 2015, 2020, 2025, and 2027 and for SOx in 2025 and 2027.		NEPA: Significant and unavoidable for CO, VOC, NOx, and $PM_{2.5}$ in 2015, 2020, 2025, and 2027 and for PM_{10} in 2020, 2025 and 2027.
	AQ-4: Proposed Project operations would result in off-site ambient air pollutant concentrations that exceed a SCAQMD threshold of	CEQA: Significant for state and Federal 1-hour and state annual NO_2.	**MM AQ-9 through MM AQ-16**	CEQA: Significant and unavoidable for state and Federal 1-hour and state annual NO_2.

Table 3.2-105: Summary Matrix of Potential Impacts and Mitigation Measures for Air Quality and Greenhouse Gases Associated with the Proposed Project and Alternatives

Alternative	Environmental Impacts	Impact Determination	Mitigation Measures	Impacts after Mitigation
	significance in Table 3.2-19.	NEPA: Significant for Federal 1-hour NO_2 and annual $PM_{2.5}$.		NEPA: Significant and unavoidable for Federal 1-hour NO_2.
	AQ-5: The proposed Project would not generate on-road traffic that would contribute to an exceedance of the 1-hour or 8-hour CO standards.	CEQA: Less than significant	Mitigation not required	CEQA: Less than significant
		NEPA: Less than significant		NEPA: Less than significant
	AQ-6: The proposed Project would not create an objectionable odor at the nearest sensitive receptor.	CEQA: Less than significant	Mitigation not required	CEQA: Less than significant
		NEPA: Less than significant		NEPA: Less than significant
	AQ-7: The proposed Project would expose receptors to significant levels of TACs.	CEQA: The cancer risk (future) and acute hazard index would be significant for residential and occupational receptors. The chronic hazard index would be less than significant for all receptors.	**MM AQ-1 through MM AQ-16**	CEQA: The cancer risk (future) would be significant and unavoidable for residential and occupational receptors. The acute hazard index would be significant and unavoidable for occupational receptors. The chronic hazard index would be less than significant for all receptors.
		NEPA: The acute hazard index would be significant for residential and occupational receptors. The cancer risk and chronic hazard index would be less than significant for all receptors.		NEPA: The acute hazard index would be significant and unavoidable for occupational receptors. The cancer risk and chronic hazard index would be less than significant for all receptors.
	AQ-8: The proposed Project would not conflict with or obstruct implementation of an applicable AQMP.	CEQA: Less than significant	Mitigation not required.	CEQA: Less than significant.
		NEPA: Less than significant		NEPA: Less than significant

Table 3.2-105: Summary Matrix of Potential Impacts and Mitigation Measures for Air Quality and Greenhouse Gases Associated with the Proposed Project and Alternatives

Alternative	Environmental Impacts	Impact Determination	Mitigation Measures	Impacts after Mitigation
	AQ-9: The proposed Project would produce GHG emissions that would exceed CEQA and NEPA baseline levels.	CEQA: Significant	**MM AQ-2 through MM AQ-4, MM AQ-9, MM AQ-10, MM AQ-16** **MM AQ-17. Compact Fluorescent Light Bulbs.** **MM AQ-18. Energy Audit.** **MM AQ-19. Recycling.** **MM AQ-20. Tree Planting.**	CEQA: Significant and unavoidable.
		NEPA: Not applicable	Not applicable	NEPA: Not applicable
Alternative 1 – No Project	**AQ-1:** Alternative 1 would not result in construction-related emissions that exceed an SCAQMD threshold of significance in Table 3.2-16.	CEQA: No impact	Mitigation not required	CEQA: No impact
		NEPA: Not applicable	Mitigation not applicable	NEPA: Not applicable
	AQ-2: Alternative 1 construction would not result in off-site ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-17.	CEQA: No impact	Mitigation not required	CEQA: No impact
		NEPA: Not applicable	Mitigation not applicable	NEPA: Not applicable
	AQ-3: Alternative 1 would result in operational emissions that exceed 10 tons per year of VOCs or an SCAQMD threshold of significance in Table 3.2-18.	CEQA: Less than significant	Mitigation not required	CEQA: less than significant
		NEPA: Not applicable	Mitigation not applicable	NEPA: Not applicable
	AQ-4: Alternative 1 operations would not result in off-site ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-19.	CEQA: Significant for NO_2 (Federal and state 1-hour and state annual average)	Mitigation measures are not applicable to Alternative 1 because there would be no discretionary actions subject to CEQA	CEQA: Significant and unavoidable for federal and state 1-hour and state annual NO_2.
		NEPA: Not applicable	Mitigation not applicable	NEPA: Not applicable
	AQ-5: Alternative 1 would not	CEQA: Less than significant	Mitigation not required	CEQA: Less than significant

Table 3.2-105: Summary Matrix of Potential Impacts and Mitigation Measures for Air Quality and Greenhouse Gases Associated with the Proposed Project and Alternatives

Alternative	Environmental Impacts	Impact Determination	Mitigation Measures	Impacts after Mitigation
	generate on-road traffic that would contribute to an exceedance of the 1-hour or 8-hour CO standards.	NEPA: Not applicable	Mitigation not applicable	NEPA: Not applicable
	AQ-6: Alternative 1 would not create an objectionable odor at the nearest sensitive receptor.	CEQA: Less than significant	Mitigation not required	CEQA: Less than significant
		NEPA: Not applicable	Mitigation not applicable	NEPA: Not applicable
	AQ-7: Alternative 1 would expose receptors to significant levels of TACs.	CEQA: The cancer risk (future) would be significant for residential receptors. The chronic and acute hazard indices would be less than significant for all receptors.	Mitigation measures are not applicable to Alternative 1 because there would be no discretionary actions subject to CEQA	CEQA The cancer risk (future) would be significant and unavoidable for residential receptors. The chronic and acute hazard indices would be less than significant for all receptors.
		NEPA: Not applicable	Mitigation not applicable	NEPA: Not applicable
	AQ-8: Alternative 1 would not conflict with or obstruct implementation of an applicable AQMP.	CEQA: Less than significant	Mitigation not required	CEQA: Less than significant
		NEPA: Not applicable	Mitigation not applicable	NEPA: Not applicable
	AQ-9: Alternative 1 would produce GHG emissions that would exceed CEQA and NEPA baseline levels.	CEQA: Significant	Mitigation measures are not applicable to Alternative 1 because there would be no discretionary actions subject to CEQA	CEQA: Significant and unavoidable
		NEPA: Not applicable	Mitigation not applicable	NEPA: Not applicable
Alternative 2 – No Federal Action	**AQ-1:** Alternative 2 would result in construction-related emissions that exceed an SCAQMD threshold of significance in Table 3.2-16.	CEQA: Impacts would be significant for NO_x	**MM AQ-1 through MM AQ-8**	CEQA: Significant and unavoidable for NO_x
		NEPA: No impact	Mitigation not required	NEPA: No impact
	AQ-2: Alternative 2 construction would result in off-site ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-17.	CEQA: Less than significant.	Mitigation not required.	CEQA: Less than significant.
		NEPA: No impact.		NEPA: No impact.

Table 3.2-105: Summary Matrix of Potential Impacts and Mitigation Measures for Air Quality and Greenhouse Gases Associated with the Proposed Project and Alternatives

Alternative	Environmental Impacts	Impact Determination	Mitigation Measures	Impacts after Mitigation
	AQ-3: Alternative 2 would result in operational emissions that exceed 10 tons per year of VOCs or an SCAQMD threshold of significance in Table 3.2-18.	CEQA: Less than significant	Mitigation not required.	CEQA: Less than significant.
		NEPA: No impact		NEPA: No impact.
	AQ-4: Alternative 2 operations would result in off-site ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-19.	CEQA: Significant for federal and state 1-hour and state annual NO_2.	**MM AQ-9 through MM AQ-16**	CEQA: Significant and unavoidable for federal and state 1-hour and state annual NO_2.
		NEPA: No impact	Mitigation not required	NEPA: No impact
	AQ-5: Alternative 2 would not generate on-road traffic that would contribute to an exceedance of the 1-hour or 8-hour CO standards.	CEQA: Less than significant	Mitigation not required	CEQA: Less than significant
		NEPA: No impact		NEPA: No impact
	AQ-6: Alternative 2 would not create an objectionable odor at the nearest sensitive receptor.	CEQA: Less than significant	Mitigation not required	CEQA: Less than significant
		NEPA: No impact		NEPA: No impact
	AQ-7: Alternative 2 would expose receptors to significant levels of TACs.	CEQA: The cancer risk (future) would be significant for residential receptors. The chronic and acute hazard indices would be less than significant for all receptors..	**MM AQ-9 through MM AQ-16**	CEQA: The cancer risk (future) would be significant and unavoidable for residential receptors. The chronic and acute hazard indices would be less than significant for all receptors.
		NEPA: No impact	Mitigation not required	NEPA: No impact
	AQ-8: Alternative 2 would not conflict with or obstruct implementation of an applicable AQMP.	CEQA: Less than significant	Mitigation not required.	CEQA: Less than significant
		NEPA: Less than significant		NEPA: Less than significant
	AQ-9: Alternative 2 would produce GHG emissions that would exceed CEQA and NEPA baseline levels.	CEQA: Significant	**MM AQ-2 through MM AQ-4, MM AQ-16, MM AQ-17, MM AQ-20**	CEQA: Significant and unavoidable.
		NEPA: Not applicable	Mitigation not applicable	NEPA: Not applicable

Table 3.2-105: Summary Matrix of Potential Impacts and Mitigation Measures for Air Quality and Greenhouse Gases Associated with the Proposed Project and Alternatives

Alternative	Environmental Impacts	Impact Determination	Mitigation Measures	Impacts after Mitigation
Alternative 3 – Reduced Project: Four New Cranes	**AQ-1:** Alternative 3 would result in construction-related emissions that exceed an SCAQMD threshold of significance in Table 3.2-16.	CEQA: Significant for VOC, NO_x, and $PM_{2.5}$.	**MM AQ-1 through MM AQ-8**	CEQA: Significant and unavoidable for VOC, NOx and $PM_{2.5}$.
		NEPA: Impacts would be significant for VOC, NO_x, and $PM_{2.5}$.		NEPA: Significant and unavoidable for VOC, NOx and $PM_{2.5}$.
	AQ-2: Alternative 3 construction would result in off-site ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-17.	CEQA: Significant for NO_2 (Federal and state 1-hour). Overlap of construction and operations would be significant for PM2.5 (24-hour).	**MM AQ-1 through MM AQ-8**	CEQA: Significant and unavoidable for NO_2 (Federal and state 1-hour).
		NEPA: Significant for $PM_{2.5}$ (annual average) and NO_2 (Federal 1-hour average). Overlap of construction and operations would be significant for PM2.5 (24-hour).		NEPA: Significant and unavoidable for $PM_{2.5}$ (annual average) and NO_2 (Federal 1-hour average).
	AQ-3: Alternative 3 would result in operational emissions that exceed 10 tons per year of VOCs or an SCAQMD threshold of significance in Table 3.2-18.	CEQA: Less than signficant	Mitigation not required.	CEQA: Less than significant
		NEPA: Significant for NOx in 2015, 2020, 2025, and 2027 and VOC in 2020, 2025, and 2027.	**MM AQ-9 through MM AQ-16**	NEPA: Significant and unavoidable for VOC in 2020, 2025, and 2027 and NOx in 2020.
	AQ-4: Alternative 3 operations would result in off-site ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-19.	CEQA: Significant for Federal and state 1-hour and state annual NO_2.	**MM AQ-9 through MM AQ-16**	CEQA: Significant and unavoidable for Federal and state 1-hour and state annual NO_2.
		NEPA: Significant for Federal 1-hour NO_2.		NEPA: Significant and unavoidable for Federal 1-hour NO_2.
	AQ-5: Alternative 3 would not generate on-road traffic that would contribute to an exceedance of the 1-hour or 8-hour CO standards.	CEQA: Less than significant	Mitigation not required.	CEQA: Less than significant
		NEPA: Less than significant		NEPA: Less than significant
	AQ-6: Alternative 3 would not create an objectionable odor at the nearest sensitive receptor.	CEQA: Less than significant	Mitigation not required.	CEQA: Less than significant
		NEPA: Less than significant		NEPA: Less than significant

Table 3.2-105: Summary Matrix of Potential Impacts and Mitigation Measures for Air Quality and Greenhouse Gases Associated with the Proposed Project and Alternatives

Alternative	Environmental Impacts	Impact Determination	Mitigation Measures	Impacts after Mitigation
	AQ-7: Alternative 3 would expose receptors to significant levels of TACs.	CEQA: The cancer risk (future) and acute hazard index would be significant for residential and occupational receptors. The chronic hazard index would be less than significant for all receptors.	**MM AQ-9 through MM AQ-16**	CEQA: The cancer risk (future) would be significant and unavoidable for residential receptors. The acute hazard index would be significant and unavoidable for occupational receptors. The chronic hazard index would be less than significant for all receptors..
		NEPA: The acute hazard index would be significant for residential and occupational receptors. The cancer risk and chronic hazard index would be less than significant for all receptors.		NEPA: The acute hazard index would be significant for occupational receptors. The cancer risk and chronic hazard index would be less than significant for all receptors.
	AQ-8: Alternative 3 would not conflict with or obstruct implementation of an applicable AQMP.	CEQA: Less than significant	Mitigation not required.	CEQA: Less than significant
		NEPA: Less than significant		NEPA: Less than significant
	AQ-9: Alternative 3 would produce GHG emissions that would exceed CEQA and NEPA baseline levels.	CEQA: Significant	**MM AQ-2 through MM AQ-4, MM AQ-9, MM AQ-10, MM AQ-16 through MM AQ-20**	CEQA: Significant and unavoidable
		NEPA: Not applicable.	NEPA: Not applicable.	NEPA: Not applicable
Alternative 4 – Reduced Project: No New Wharf	**AQ-1:** Alternative 4 would result in construction-related emissions that exceed an SCAQMD threshold of significance in Table 3.2-16.	CEQA: Significant for VOC, NO_x, PM_{10}, and $PM_{2.5}$.	**MM AQ-1 through MM AQ-8**	CEQA: Significant and unavoidable for VOC, NO_x, PM_{10}, and $PM_{2.5}$.
		NEPA: Significant for VOC, NO_x, PM_{10}, and $PM_{2.5}$.		NEPA: Significant and unavoidable for VOC, NO_x, and $PM_{2.5}$.
	AQ-2: Alternative 4 construction would result in off-site ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-17.	CEQA: Significant for PM_{10} (annual average) and NO_2 (Federal 1-hour average). Overlap of construction and operations would be significant for PM2.5 (24-hour).	**MM AQ-1 through MM AQ-8**	CEQA: Significant and unavoidable for PM_{10} (annual average) and NO_2 (Federal 1-hour average).

Table 3.2-105: Summary Matrix of Potential Impacts and Mitigation Measures for Air Quality and Greenhouse Gases Associated with the Proposed Project and Alternatives

Alternative	Environmental Impacts	Impact Determination	Mitigation Measures	Impacts after Mitigation
		NEPA: Significant for PM_{10} (annual average), $PM_{2.5}$ (annual average), and NO_2 (Federal 1-hour average). Overlap of construction and operations would be significant for PM2.5 (24-hour).		NEPA: Significant and unavoidable for PM_{10} and $PM_{2.5}$ (annual average) and NO_2 (Federal 1-hour average).
	AQ-3: Alternative 4 would result in operational emissions that exceed 10 tons per year of VOCs or an SCAQMD threshold of significance in Table 3.2-18.	CEQA: Less than significant	Mitigation not required.	CEQA: Less than significant
		NEPA: Significant for VOC and NOx in 2015, 2020, 2025, and 2027.	**MM AQ-9 through MM AQ-16**	NEPA: Significant and unavoidable for VOC and NO_X in 2020, 2025, and 2027 .
	AQ-4: Alternative 4 operations would result in off-site ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-19.	CEQA: Significant for Federal and state 1-hour and state annual NO_2.	**MM AQ-9 through MM AQ-16**	CEQA: Significant and unavoidable for Federal and state 1-hour and state annual NO_2.
		NEPA: Significant for 1-hour NO_2 and annual $PM_{2.5}$.		NEPA: Significant and unavoidable for 1-hour NO_2.
	AQ-5: Alternative 4 would not generate on-road traffic that would contribute to an exceedance of the 1-hour or 8-hour CO standards.	CEQA: Less than significant	Mitigation not required.	CEQA: Less than significant
		NEPA: Less than significant		NEPA: Less than significant
	AQ-6: Alternative 4 would not create an objectionable odor at the nearest sensitive receptor.	CEQA: Less than significant	Mitigation not required.	CEQA: Less than significant
		NEPA: Less than significant		NEPA: Less than significant
	AQ-7: Alternative 4 would expose receptors to significant levels of TACs.	CEQA: The cancer risk (future) and acute hazard index would be significant for residential and occupational receptors. The chronic hazard index would be less than significant for all receptors.	**MM AQ-1 through MM AQ-16**	CEQA: The cancer risk (future) would be significant and unavoidable for residential and occupational receptors. The acute hazard index would be significant and unavoidable for occupational receptors. The chronic hazard index would be less than significant for all receptors.

Table 3.2-105: Summary Matrix of Potential Impacts and Mitigation Measures for Air Quality and Greenhouse Gases Associated with the Proposed Project and Alternatives

Alternative	Environmental Impacts	Impact Determination	Mitigation Measures	Impacts after Mitigation
		NEPA: The acute hazard index would be significant for residential, and occupational receptors. The cancer risk and chronic hazard index would be less than significant for all receptors.		NEPA: The acute hazard index would be significant for occupational receptors. The cancer risk and chronic hazard index would be less than significant for all receptors.
	AQ-8: Alternative 4 would not conflict with or obstruct implementation of an applicable AQMP.	CEQA: Less than significant	Mitigation not required	CEQA: Less than significant
		NEPA: Less than significant		NEPA: Less than significant
	AQ-9: Alternative 4 would produce GHG emissions that would exceed CEQA and NEPA baseline levels.	CEQA: Significant	**MM AQ-2 through MM AQ-4, MM AQ-9, MM AQ-10, MM AQ-16 through MM AQ-20**	CEQA: Significant and unavoidable.
		NEPA: Not applicable	Mitigation not applicable	NEPA: Not applicable
Alternative 5 – Reduced Project: No Space Assignment	**AQ-1:** Alternative 5 would result in construction-related emissions that exceed an SCAQMD threshold of significance in Table 3.2-16.	CEQA: Significant for VOC, CO, NO_x, PM_{10}, and $PM_{2.5}$.	**MM AQ-1 through MM AQ-8**	CEQA: Significant and unavoidable for VOC, CO, NO_x, PM_{10}, and $PM_{2.5}$.
		NEPA: Significant for VOC, CO, NO_x, PM_{10}, and $PM_{2.5}$.		NEPA: Significant and unavoidable for VOC, CO, NO_x, PM_{10}, and $PM_{2.5}$.
	AQ-2: Alternative 5 construction would result in off-site ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-17.	CEQA: Significant for PM_{10} (24-hour and annual average) and NO_2 (state and Federal 1-hour and state annual average). Overlap of construction and operations would be significant for PM2.5 (24-hour).	**MM AQ-1 through MM AQ-8**	CEQA: Significant and unavoidable for PM_{10} (24-hour average) and NO_2 (state and Federal 1-hour average)

Table 3.2-105: Summary Matrix of Potential Impacts and Mitigation Measures for Air Quality and Greenhouse Gases Associated with the Proposed Project and Alternatives

Alternative	Environmental Impacts	Impact Determination	Mitigation Measures	Impacts after Mitigation
		NEPA: Significant for PM_{10} (24-hour and annual average), $PM_{2.5}$ (annual average), and NO_2 (1-hour average). Overlap of construction and operations would be significant for PM2.5 (24-hour).		NEPA: Significant and unavoidable for PM_{10} and $PM_{2.5}$ (annual average) and NO_2 (1-hour average).
	AQ-3: Alternative 5 would result in operational emissions that exceed 10 tons per year of VOCs or an SCAQMD threshold of significance in Table 3.2-18.	CEQA: Significant for NOx and VOC in 2015, 2025, and 2027.	**MM AQ-9 through MM AQ-16**	CEQA: Significant and unavoidable for VOC.
		NEPA: Significant for CO, VOC, NOx, PM_{10}, and $PM_{2.5}$ in 2015, 2020, 2025, and 2027 and for SOx in 2025 and 2027.		NEPA: Significant and unavoidable for CO, VOC, NOx, PM_{10}, and $PM_{2.5}$.
	AQ-4: Alternative 5 operations would result in off-site ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-19.	CEQA: Significant for Federal and state 1-hour and state annual NO_2.	**MM AQ-9 through MM AQ-16**	CEQA: Significant and unavoidable for state and Federal 1-hour and state annual NO_2.
		NEPA: Significant for Federal 1-hour NO_2 and annual $PM_{2.5}$.		NEPA: Significant and unavoidable for Federal 1-hour NO_2.
	AQ-5: Alternative 5 would not generate on-road traffic that would contribute to an exceedance of the 1-hour or 8-hour CO standards.	CEQA: Less than significant	Mitigation not required.	CEQA: Less than significant
		NEPA: Less than significant		NEPA: Less than significant
	AQ-6: Alternative 5 would not create an objectionable odor at the nearest sensitive receptor.	CEQA: Less than significant	Mitigation not required.	CEQA: Less than significant
		NEPA: Less than significant		NEPA: Less than significant

Table 3.2-105: Summary Matrix of Potential Impacts and Mitigation Measures for Air Quality and Greenhouse Gases Associated with the Proposed Project and Alternatives

Alternative	Environmental Impacts	Impact Determination	Mitigation Measures	Impacts after Mitigation
	AQ-7: Alternative 5 would expose receptors to significant levels of TACs.	CEQA: The cancer risk (future) and acute hazard index would be significant for residential and occupational receptors. The chronic hazard index would be less than significant for all receptors.	**MM AQ-1 through MM AQ-16**	CEQA: The cancer risk (future) would be significant and unavoidable for residential and occupational receptors. The acute hazard index would be significant and unavoidable for occupational receptors. The chronic hazard index would be less than significant for all receptors.
		NEPA: The acute hazard index would be significant for residential, and occupational receptors. The cancer risk and chronic hazard index would be less than significant for all receptors.		NEPA: The acute hazard index would be significant for occupational receptors. The cancer risk and chronic hazard index would be less than significant for all receptors.
	AQ-8: Alternative 5 would not conflict with or obstruct implementation of an applicable AQMP.	CEQA: Less than significant	Mitigation not required.	CEQA: Less than significant
		NEPA: Less than significant		NEPA: Less than significant
	AQ-9: Alternative 5 would produce GHG emissions that would exceed CEQA and NEPA baseline levels.	CEQA: Significant	**MM AQ-2 through MM AQ-4, MM AQ-9, MM AQ-10, MM** AQ**-16 through MM AQ-20**	CEQA: Significant and unavoidable.
		NEPA: Not applicable	Mitigation not applicable	NEPA: Not applicable
Alternative 6 – Proposed Project with Expanded On-Dock Railyard	**AQ-1:** Alternative 6 would result in construction-related emissions that exceed an SCAQMD threshold of significance in Table 3.2-16.	CEQA: Significant for VOC, CO, NO_x, PM_{10}, and $PM_{2.5}$.	**MM AQ-1 through MM AQ-8**	CEQA: Significant and unavoidable for VOC, CO, NO_x, PM_{10}, and $PM_{2.5}$.
		NEPA: Significant for VOC, CO, NO_x, PM_{10}, and $PM_{2.5}$.		NEPA: Significant and unavoidable for VOC, CO, NO_x, PM_{10}, and $PM_{2.5}$.

Table 3.2-105: Summary Matrix of Potential Impacts and Mitigation Measures for Air Quality and Greenhouse Gases Associated with the Proposed Project and Alternatives

Alternative	Environmental Impacts	Impact Determination	Mitigation Measures	Impacts after Mitigation
	AQ-2: Alternative 6 construction would result in off-site ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-17.	CEQA: Significant for PM_{10} (24-hour and annual average) and NO_2 (1-hour and state annual average). Overlap of construction and operations would be significant for PM2.5 (24-hour).	**MM AQ-1 through MM AQ-8**	CEQA: Significant and unavoidable for PM_{10} (24-hour and annual average) and NO_2 (1-hour and state annual average).
		NEPA: Significant for PM_{10} (24-hour and annual average), $PM_{2.5}$ (annual average), and NO_2 (1-hour average). Overlap of construction and operations would be significant for PM2.5 (24-hour).		NEPA: Significant and unavoidable for PM_{10} (24-hour and annual average) and $PM_{2.5}$ (annual average) and NO_2 (1-hour average).
	AQ-3: Alternative 6 would result in operational emissions that exceed 10 tons per year of VOCs or an SCAQMD threshold of significance in Table 3.2-18.	CEQA: Significant for NOx in 2015, 2025, and 2027 and VOC in 2027.	**MM AQ-9 through MM AQ-16**	CEQA: Significant and unavoidable for VOC in 2025 and 2027.
		NEPA: Significant for CO, VOC, NOx, PM_{10}, and $PM_{2.5}$ in 2015, 2020, 2025, and 2027 and for SOx in 2025 and 2027.		NEPA: Significant and unavoidable for CO, VOC, NOx, and $PM_{2.5}$ in 2015, 2020, 2025, and 2027 and for PM_{10} in 2020, 2025 and 2027.
	AQ-4: Alternative 6 operations would result in off-site ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-19.	CEQA: Significant for Federal and state 1-hour and state annual NO_2.	**MM AQ-9 through MM AQ-16**	CEQA: Significant and unavoidable for Federal and state 1-hour and state annual NO_2.
		NEPA: Significant for Federal 1-hour NO_2 and annual $PM_{2.5}$.		NEPA: Significant and unavoidable for Federal 1-hour NO_2.
	AQ-5: Alternative 6 would not generate on-road traffic that would contribute to an exceedance of the 1-hour or 8-hour CO standards.	CEQA: Less than significant	Mitigation not required	CEQA: Less than significant
		NEPA: Less than significant		NEPA: Less than significant
	AQ-6: Alternative 6 would not create an objectionable odor at the nearest sensitive receptor.	CEQA: Less than significant	Mitigation not required	CEQA: Less than significant
		NEPA: Less than significant		NEPA: Less than significant

Table 3.2-105: Summary Matrix of Potential Impacts and Mitigation Measures for Air Quality and Greenhouse Gases Associated with the Proposed Project and Alternatives

Alternative	Environmental Impacts	Impact Determination	Mitigation Measures	Impacts after Mitigation
	AQ-7: Alternative 6 would expose receptors to significant levels of TACs.	CEQA: The cancer risk (future) and acute hazard index would be significant for residential and occupational receptors. The chronic hazard index would be less than significant for all receptors.	**MM AQ-1 through MM AQ-16**	CEQA: The cancer risk (future) would be significant and unavoidable for residential and occupational receptors. The acute hazard index would be significant and unavoidable for occupational receptors. The chronic hazard index would be less than significant for all receptors.
		NEPA: The acute hazard index would be significant for residential and occupational receptors. The cancer risk and chronic hazard index would be less than significant for all receptors.		NEPA: The acute hazard index would be significant for occupational receptors. The cancer risk and chronic hazard index would be less than significant for all receptors.
	AQ-8: Alternative 6 would not conflict with or obstruct implementation of an applicable AQMP.	CEQA: Less than significant	Mitigation not required.	CEQA: Less than significant
		NEPA: Less than significant		NEPA: Less than significant
	AQ-9: Alternative 6 would produce GHG emissions that would exceed CEQA and NEPA baseline levels.	CEQA: Significant	**MM AQ-2 through MM AQ-4, MM AQ-9, MM AQ-10, MM AQ-16through MM AQ-20**	CEQA: Significant and unavoidable
		NEPA: Not applicable	Mitigation not applicable	NEPA: Not applicable

3.2.4.6 Mitigation Monitoring

Following is the mitigation monitoring program:

AQ-1: The proposed Project would result in construction-related emissions that exceed an SCAQMD threshold of significance in Table 3.2-16 (*Also applies to Impact AQ-1 for Alternatives 2-6)*	
Mitigation Measure	**MM AQ-1. Harbor Craft Used during Construction.** Starting January 1, 2011, with some exceptions, harbor craft will be upgraded to Tier 3 or better engines.
Timing	During specified construction phases.
Methodology	LAHD will include MM AQ-1 in the contract specifications for construction. LAHD will monitor implementation of mitigation measures during construction.
Responsible Parties	LAHD
Mitigation Measure	**MM AQ-2. Cargo Ships** ▪ All ships & barges used primarily to deliver construction-related materials to a LAHD-contractor construction site shall comply with the expanded Vessel Speed Reduction Program (VSRP) of 12 knots between 40 nautical miles (nm) from Point Fermin and the Precautionary Area. ▪ These ships must also use low-sulfur fuel (maximum sulfur content of 0.2 percent) in auxiliary engines, main engines, and boilers within 40 nm of Point Fermin.
Timing	During specified construction phases.
Methodology	LAHD will include MM AQ-2 in the contract specifications for construction. LAHD will monitor implementation of mitigation measures during construction.
Responsible Parties	LAHD
Mitigation Measure	**MM AQ-3. Fleet Modernization for On-Road Trucks** 1. Trucks hauling material such as debris or any fill material will be fully covered while operating off Port property. 2. Idling will be restricted to a maximum of 5 minutes when not in use. 3. EPA Standards: a. For On-road trucks except for Import Haulers and Earth Movers: Comply with 2004 or 2007 on-road emission standards for PM_{10} and NOx b. For Import Haulers: Comply with 1998 or 2004 on-road emission standards for PM_{10} and NOx c. For Earth Movers: Comply with 1998 or 2004 on-road emission standards for PM_{10} and NOx
Timing	During specified construction phases.
Methodology	LAHD will include MM AQ-3 in the contract specifications for construction. LAHD will monitor implementation of mitigation measures during construction.

Responsible Parties	LAHD
Mitigation Measure	**MM AQ-4. Fleet Modernization for Construction Equipment** 1. All dredging equipment shall be electric. 2. Construction equipment will incorporate, where feasible, emissions-savings technology such as hybrid drives and specific fuel economy standards. 3. Idling will be restricted to a maximum of 5 minutes when not in use. 4. Equipment Engine Specifications: a. Meet Tier 2, 3, or 4 standards depending on timing. b. Two categories of exceptions exist
Timing	During specified construction phases.
Methodology	LAHD will include MM AQ-4 in the contract specifications for construction. LAHD will monitor implementation of mitigation measures during construction.
Responsible Parties	LAHD
Mitigation Measure	**MM AQ-5. Best Management Practices.** LAHD shall implement BMPs to reduce air emissions from all LAHD-sponsored construction projects, including: 1. Use of diesel oxidation catalysts and catalyzed diesel particulate traps 2. Maintain equipment according to manufacturers' specifications 3. Restrict idling of construction equipment and on-road heavy-duty trucks to a maximum of 5 minutes when not in use 4. Install high-pressure fuel injectors on construction equipment vehicles 5. Maintain a minimum buffer zone of 300 meters between truck traffic and sensitive receptors 6. Enforce truck parking restrictions 7. Provide on-site services to minimize truck traffic in or near residential areas, including, but not limited to, the following services: meal or cafeteria services, automated teller machines, etc. 8. Re-route construction trucks away from congested streets or sensitive receptor areas. 9. Provide dedicated turn lanes for movement of construction trucks and equipment on- and off-site. 10. Use electric power in favor of diesel power where available.
Timing	During specified construction phases.
Methodology	LAHD will include MM AQ-5 in the contract specifications for construction. LAHD will monitor implementation of mitigation measures during construction.
Responsible Parties	LAHD

Mitigation Measure	**MM AQ-6. Additional Fugitive Dust Controls.** 1. SCAQMD Rule 403 requires a Fugitive Dust Control Plan be prepared and approved for construction sites. Construction contractors are required to obtain a 403 Permit from SCAQMD prior to construction. 2. Applicable Rule 403 measures/BMPs to reduce dust should be included in the contractor's Fugitive Dust Control Plan, at a minimum.
Timing	During specified construction phases.
Methodology	LAHD will include MM AQ-6 in the contract specifications for construction. LAHD will monitor implementation of mitigation measures during construction.
Responsible Parties	LAHD
Mitigation Measure	**MM AQ-7. General Mitigation Measure.** For any of the above mitigation measures (MM AQ-1 through AQ-6), if a CARB-certified technology becomes available and is shown to be as good as or better in terms of emissions performance than the existing measure, the technology could replace the existing measure pending approval by the Port. Measures will be set at the time a specific construction contract is advertised for bids.
Timing	During specified construction phases.
Methodology	LAHD will include MM AQ-7 in the contract specifications for construction. LAHD will monitor implementation of mitigation measures during construction.
Responsible Parties	LAHD
Mitigation Measure	**MM AQ-8. Special Precautions near Sensitive Sites.** All construction activities located within 1,000 feet of sensitive receptors (defined as schools, playgrounds, daycares, and hospitals) shall notify each of these sites in writing at least 30 days before construction activities begin.
Timing	During specified construction phases.
Methodology	LAHD will include MM AQ-8 in the contract specifications for construction. LAHD will monitor implementation of mitigation measures during construction.
Responsible Parties	LAHD
Residual Impacts	Significant and unavoidable
AQ-2: Proposed Project construction would result in off-site ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-17. (*Also applies to Impact AQ-2 for Alternatives 2-6)*	
Mitigation Measure	See Mitigation Measures MM AQ-1 through MM AQ-8 above.
Residual Impacts	Significant and unavoidable

0AQ-3: The proposed Project would result in operational emissions that exceed 10 tons per year of VOCs or a SCAQMD threshold of significance in Table 3.2-18. (*Also applies to Impact AQ-3 for Alternatives 3-6)*	
Mitigation Measure	**MM AQ-9. Alternative Maritime Power (AMP).** APL ships calling at Berths 302-306 must use AMP at the following percentages while hoteling in the Port: ▪ **2017: 70 percent of total ship calls** ▪ **2026: 95 percent of total ship calls** *****While the terminal is expected to meet 95 percent AMP, certain events such as equipment failure may mean less than 95 percent of ships would comply with this measure in certain years (the Port expects compliance to be 92 to 93 percent in such cases). A compliance change of 2 to 3 percent would not affect significance findings in this analysis. Use of AMP would enable ships to turn off their auxiliary engines during hoteling, leaving the boiler as the only source of direct emissions. An increase in regional power plant emissions associated with AMP electricity generation is also assumed. Including the emissions from ship boilers and regional power plants, a ship hoteling with AMP reduces its criteria pollutant emissions 71 to 93 percent, depending on the pollutant, compared to a ship hoteling without AMP and burning residual fuel in the boilers.
Timing	During operation
Methodology	LAHD will include this mitigation measure in lease agreements with tenants.
Responsible Parties	APL, LAHD.
Mitigation Measure	**MM AQ-10. Vessel Speed Reduction Program.** All ships calling at Berths 302-306 shall comply with the expanded VSRP of 12 knots between 40 nm from Point Fermin and the Precautionary Area in the following implementation schedule: ▪ 2014 and thereafter: 95 percent Currently, the VSR program is a voluntary program. This mitigation measure requires APL to participate in the VSR program at higher rates than it currently is achieving. The average cruise speed for a container vessel ranges from about 18 to 25 knots, depending on the size of a ship (larger ships generally cruise at higher speeds). For a ship with a 24-knot cruise speed, for example, a reduction in speed to 12 knots reduces the main engine load factor from 83 percent to 10 percent, due to the cubic relationship of load factor to speed. The corresponding reduction in overall container ship transit emissions (main engine, auxiliary engines, and boiler), from the SCAQMD overwater boundary to the berth, is approximately 19 percent for VOC, 37 percent for CO, 56 percent for NO_X, 58 percent for SO_X, and 53 percent for PM_{10}.
Timing	During operation
Methodology	LAHD will include this mitigation measure in lease agreements with tenants.
Responsible Parties	APL, LAHD.

Mitigation Measure	**MM AQ-11. Cleaner OGV Engines.** The Tenant shall seek to maximize the number of vessels calling at the Berths 302-306 terminal that meet the IMO NOx limit of 3.4 g/kW-hr. The IMO Tier 2 NOx standards came into effect January 1, 2011 for new vessels. IMO Tier 3 NOx standards will become effective January 1, 2016 for new vessels operating in Emission Control Areas. When ordering new ships bound for the Port of Los Angeles, the purchaser shall confer with the ship designer and engine manufacturer to determine the feasibility of incorporating all emission reduction technology and/or design options. On an individual OGV basis, 15 percent reduction in NOx emissions will result from compliance with the IMO Tier 2 standard compared to Tier 1 standard and 80 percent reduction in NOx emissions will result from compliance with the IMO Tier 3 standard compared to Tier 1 standard. However for the purposes of this analysis the benefits of this measure are not quantified.
Timing	During operation
Methodology	LAHD will include this mitigation measure in lease agreements with tenants.
Responsible Parties	APL, LAHD.
Mitigation Measure	**MM AQ-12. OGV Engine Emissions Reduction Technology Improvements.** When using or retrofitting existing ships bound for the Port of Los Angeles, the Tenant shall determine the feasibility of incorporating all emission reduction technology and/or design options . Such technology shall be designed to reduce criteria pollutant emissions (NOX and DPM). Some examples of potential methods for reducing emissions from large marine diesel engines include: ▪ Direct Water Injection ▪ Fuel Water Emulsion ▪ Humid Air Motor ▪ Exhaust Gas Recirculation ▪ Selective Catalytic Reduction ▪ Continuous Water Injection ▪ Slide Valves This measure focuses on reducing DPM and NO_X emissions from the existing fleet of vessels. This measure is coupled with the Port's Technology Advancement Program (TAP) which will evaluate potential technologies. The Tenant will work with the Port in their effort to streamline the evaluation process of emissions reduction technologies under the TAP program and the verification process through CARB in order to achieve the greatest level of emissions reduction from ocean going vessels as quickly as possible. Because the effectiveness of this measure has not been established, this measure is not quantified in this study.
Timing	During operation
Methodology	LAHD will include this mitigation measure in lease agreements with tenants.
Responsible Parties	APL, LAHD.

Mitigation Measure	**MM AQ-13. Yard Tractors at Berths 302-306 Terminal.** By the end of 2013, all yard tractors operated at the terminal shall meet USEPA Tier 4 non-road or 2007 on-road emission standards. In 2013, this measure would require the all yard tractors to meet the equivalent of the Tier 4 diesel engine standards. This study assumes that this requirement would be met by replacing the yard tractor engines or adding diesel emission controls to meet the equivalent of the Tier 4 diesel engine standards.
Timing	During operation
Methodology	LAHD will include this mitigation measure in lease agreements with tenants.
Responsible Parties	APL, LAHD.
Mitigation Measure	**MM AQ-14**. **Yard Equipment at Berth 302-306 Rail Yard.** All diesel-powered equipment operated at the Berths 302-306 terminal rail yard shall implement the requirements discussed below in **MM AQ-15.** **MM AQ-15. Yard Equipment at Berths 302-306 Terminal.** ▪ By the end of 2012: all terminal equipment equipped with Tier 1 and 2 engines less than 750hp must meet 2010 on-road or Tier 4 standards by 2012. ▪ By the end of 2012, the highest available Verified Diesel Emissions Controls (VDECs) shall be installed on all Tier 3 equipment. ▪ By the end of 2015: all terminal equipment equipped with Tier 3 engines shall meet USEPA Tier 4 non-road engine standards. For toppicks and sidepicks, the use of emulsified diesel fuel plus a DOC is verified by CARB as a Level 2 control strategy, which means that NO_X and PM_{10} emissions would be reduced by at least 20 and 50 percent, respectively, compared to conventional diesel fuel. This measure would also reduce emissions of VOC and CO by at least 40 percent, according to additional CARB documentation (CARB, 2000). SO_X emissions would not be affected. For other types of terminal equipment, this measure would provide a health risk benefit if some of the equipment purchased in accordance with this measure were alternative fueled. However, this study conservatively assumed that all equipment purchased in accordance with this measure would be diesel fueled. For diesel-fueled equipment, this measure would provide a short-term reduction in criteria pollutant emissions (roughly until 2015, although it varies by equipment type) compared to unmitigated emissions. Eventually, however, the CARB Regulation for Mobile Cargo-Handling Equipment (CHE) at Ports and Intermodal Rail Yards (discussed in Section 3.2.3.2) would cause the unmitigated fleet to “catch up” to the mitigated fleet, at which point there would be no substantial difference in emissions.
Timing	During operation
Methodology	LAHD will include this mitigation measure in lease agreements with tenants.
Responsible Parties	APL, LAHD.

Mitigation Measure	**MM AQ-16. Truck Idling Reduction Measure.** Within six months of the effective date and thereafter for the remaining term of the Permit and any holdover, the terminal operator shall ensure that truck idling is reduced to less than 30 minutes in total or 10 minutes at any given time while on the terminal through measures that include but are not limited to, the following: ▪ The operator shall maximize the durations when the main gates are left open, including during off-peak hours (6pm to 7am) ▪ The operator shall implement an appointment-based system for receiving and delivering containers to minimize truck queuing (trucks lining up to enter and exit the terminal's gate) ▪ The operator shall design the main entrance and exit gates to exceed the average hourly volume of trucks that enter and exit the gates (truck flow capacity) to ensure queuing is minimized. This measure could potentially reduce on-terminal truck idling emissions. Because the effectiveness of this measure has not been established, this measure is not quantified in this study.
Timing	During operation
Methodology	LAHD will include this mitigation measure in lease agreements with tenants.
Responsible Parties	APL, LAHD.
Lease Measure	**LM AQ-1. Periodic Review of New Technology and Regulations.** The Port shall require the Berths 302-306 tenant to review, in terms of feasibility and benefits, any Port-identified or other new emissions-reduction technology, and report to the Port. Such technology feasibility reviews shall take place at the time of the Port's consideration of any lease amendment or facility modification for the proposed Project site. If the technology is determined by the Port to be feasible in terms of cost, technical and operational feasibility, the tenant shall work with the Port to implement such technology. Potential technologies that may further reduce emission and/or result in cost-savings benefits for the tenant may be identified through future work on the CAAP, Technology Advancement Program, Zero Emissions Technology Program, and terminal automation. Over the course of the lease, the tenant and the Port shall work together to identify potential new technologies. Such technology shall be studied for feasibility, in terms of cost, technical and operational feasibility, and emissions reduction benefits. As partial consideration for the Port agreement to issue the permit to the tenant, the tenant shall implement not less frequently than once every 7 years following the effective date of the permit, new air quality technological advancements, subject to mutual agreement on operational feasibility and cost sharing, which shall not be unreasonably withheld. The effectiveness of this measure depends on the advancement of new technologies and the outcome of future feasibility or pilot studies. As discussed in Section 3.2.4.1, if the tenant requests future Project changes that would require environmental clearance and a lease amendment, future CAAP mitigation measures would be incorporated into the new lease at that time.
Timing	During operation
Methodology	LAHD will include this mitigation measure in lease agreements with tenants.

Responsible Parties	APL, LAHD.
Lease Measure	**LM AQ-2. Substitution of New Technology**. If any kind of technology becomes available and is shown to be as good or as better in terms of emissions reduction performance than the existing measure, the technology could replace the existing measure pending approval by the Port of Los Angeles. The technology's emissions reductions must be verifiable through USEPA, CARB, or other reputable certification and/or demonstration studies to the Port's satisfaction.
Timing	During operation
Methodology	LAHD will include this mitigation measure in lease agreements with tenants.
Responsible Parties	APL, LAHD.
AQ-4: Proposed Project operations would result in off-site ambient air pollutant concentrations that exceed a SCAQMD threshold of significance in Table 3.2-19. (*Also applies to Impact AQ-4 for Alternatives 2-6)*	
Mitigation Measure	See Mitigation Measures MM AQ-9 through MM AQ-16 above.
Residual Impacts	Significant
AQ-7: The proposed Project would expose receptors to significant levels of TACs. (*Also applies to Impact AQ-7 for Alternatives 2-6)*	
Mitigation Measure	See Mitigation Measures MM AQ-1 through MM AQ-16 above.
Residual Impacts	Significant
AQ-9: The proposed Project would produce GHG emissions that would exceed CEQA and NEPA baseline levels. (*Also applies to Impact AQ-9 for Alternatives 2-6)*	
Mitigation Measures	See Mitigation Measures MM AQ-1 through MM AQ-16 above.
Mitigation Measure	**MM AQ-17. Compact Fluorescent Light Bulbs.** All interior buildings on the premises shall exclusively use fluorescent light bulbs, compact fluorescent light bulbs, or a technology with similar energy-saving capabilities, for ambient lighting within all terminal buildings. The tenant shall also maintain and replace any Port-supplied compact fluorescent light bulbs. Fluorescent light bulbs produce less waste heat and use substantially less electricity than incandescent light bulbs. Although not quantified in this analysis, implementation of this measure is expected to reduce the Project's GHG emissions by less than 0.1 percent.
Timing	During operation
Methodology	LAHD will include this mitigation measure in lease agreements with tenants.

Responsible Parties	APL, LAHD.
Mitigation Measure	**MM AQ-18. Energy Audit.** The tenant shall conduct an energy audit by a third party of its choice every 5 years and install innovative power saving technology (1) where it is feasible; and (2) where the amount of savings would be reasonably sufficient to cover the costs of implementation. Such systems help to maximize usable electric current and eliminate wasted electricity, thereby lowering overall electricity use. This mitigation measure primarily targets large on-terminal electricity consumers such as on-terminal lighting and shoreside electric gantry cranes. These sources consume the majority of on-terminal electricity, and account for about 1 percent of overall Project GHG emissions. Therefore, implementation of power saving technology at the terminal could reduce overall Project GHG emissions by a fraction of 1 percent.
Timing	During operation
Methodology	LAHD will include this mitigation measure in lease agreements with tenants.
Responsible Parties	APL, LAHD.
Mitigation Measure	**MM AQ-19. Recycling.** The tenant shall ensure a minimum of 40 percent of all waste generated in all terminal buildings is recycled by 2014 and 60 percent of all waste generated in all terminal buildings is recycled by 2016. Recycled materials shall include: (a) white and colored paper; (b) post-it notes; (c) magazines; (d) newspaper; (e) file folders; (f) all envelopes including those with plastic windows; (g) all cardboard boxes and cartons; (h) all metal and aluminum cans; (i) glass bottles and jars; and; (j) all plastic bottles. In general, products made with recycled materials require less energy and raw materials to produce than products made with un-recycled materials. This savings in energy and raw material use translates into GHG emission reductions. The effectiveness of this mitigation measure was not quantified due to the lack of a standard emission estimation approach.
Timing	During operation
Methodology	LAHD will include this mitigation measure in lease agreements with tenants.
Responsible Parties	APL, LAHD.
Mitigation Measure	**MM AQ-20. Tree Planting.** The applicant shall plant shade trees around the main terminal building, and the tenant shall maintain all trees through the life of the lease. Trees act as insulators from weather, thereby decreasing energy requirements. Onsite trees also provide carbon storage (AEP, 2007). Although not quantified, implementation of this measure is expected to reduce Project GHG emissions by less than 0.1 percent.
Timing	During operation
Methodology	LAHD will include this mitigation measure in lease agreements with tenants.
Responsible Parties	APL, LAHD.
Residual Impacts	Significant

3.2.5 Significant Unavoidable Impacts

Emissions from proposed Project construction would increase relative to CEQA and NEPA baseline emissions for VOC, CO, NOx, PM_{10}, and $PM_{2.5}$. After mitigation, the proposed Project and Alternatives 5 and 6 would result in significant and unavoidable impacts for VOC, CO, NOx, PM_{10}, and $PM_{2.5}$ emissions under CEQA and NEPA. Alternative 4 after mitigation would result in significant and unavoidable impacts for VOC, NOx, PM_{10}, and $PM_{2.5}$ under CEQA and VOC, NOx, and $PM_{2.5}$. Alternative 3 after mitigation would result in significant and unavoidable impacts for VOC, NOx, and $PM_{2.5}$ emissions under CEQA, and for NOx, and $PM_{2.5}$ emissions under NEPA. Alternative 2 would result in significant and unavoidable impacts for NOx after mitigation under CEQA (no NEPA impacts would occur).

Construction of the proposed Project and Alternatives 3 through 6 construction would exceed the Federal and state 1-hour and state annual NO_2 and annual PM_{10} ambient thresholds under CEQA and NEPA, in addition to the annual $PM_{2.5}$ significance threshold under NEPA only. Therefore, construction emissions for the proposed Project and Alternatives 3 through 6 would result in significant and unavoidable impacts due to increased NO_2 and PM_{10} under CEQA and NO_2, PM_{10} and $PM_{2.5}$ levels under NEPA. Construction of Alternative 2 would result in a 1-hour NO_2 impact under CEQA and NEPA. Therefore construction emissions for Alternative 2 would result in significant and unavoidable impacts due to increased NO_2 levels under CEQA and NEPA.

Peak daily emissions from the operation of the proposed Project and Alternatives 5 through 6 would increase relative to CEQA baseline emissions for VOC, CO, NOx, SOx, PM_{10}, and $PM_{2.5}$ during one or more project analysis years. The proposed Project and Alternatives 5 and 6 would result in significant and unavoidable impacts for VOC and NOx emissions under CEQA and VOC, CO, NOx, PM_{10}, and $PM_{2.5}$ under NEPA. Peak daily emissions from the operation of Alternative 3 and 4 after mitigation would be significant and unavoidable for VOC and NOx under NEPA. No CEQA impacts would occur for Alternatives 3 or 4. Peak daily emissions from Alternative 2 would not exceed the CEQA baseline for any Project analysis year; therefore there would be no impacts under CEQA (no NEPA impacts would occur).

Impacts from operation of the proposed Project and Alternatives 3 through 6 would result in significant and unavoidable impacts after mitigation from exceeding SCAQMD ambient thresholds for NO_2 under CEQA and NEPA.

Construction and operational emissions of TACs under the proposed Project and Alternatives 2 through 6 would not increase cancer risks from CEQA Baseline levels to above the significance criterion of 10 in a million (10×10^{-6}) risk or above the chronic hazard index of 1.0 to off-site residential, occupational, student, sensitive, and recreational receptors. The construction and operational emissions of TACs under the proposed Project and Alternatives 3 through 6 after mitigation would increase the acute hazard index from both CEQA and NEPA baseline levels to above the significance criterion of 1.0 to off-site occupational receptors. Impacts would be significant and unavoidable under CEQA and NEPA.

The proposed Project and Alternatives 2 through 6 would contribute to significant and unavoidable impacts to global climate change under CEQA. No significance determination has been made for NEPA.

This page intentionally left blank